

# 5 Year Reviw: Teenage Pregnancy; Delivery and Outcome

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## Abstract

**Background:** Teenage pregnancy is a high-risk pregnancy and has often been reported to be associated with adverse pregnancy outcomes, specifically low birth weight, small for gestational age neonates, prematurity, and higher rates of neonatal and infant morbidity and mortality. This study aims to determine and compare the outcome of teenage pregnancies to other pregnancies in Jos University Teaching Hospital over a four-year period. **Aim:** The objective of this study was to determine the obstetric and fetal outcomes of teenage pregnancy at Jos University Teaching Hospital. **Materials and Methods:** A prospective case–control review of all teenage pregnancies seen at the Jos University Teaching Hospital between January 1, 2008, and December 31, 2012. The study population consists of all teenage mothers who carried their pregnancies to at least 28 completed and delivered between January 1, 2008, and December 31, 2012. Obstetric and neonatal outcomes were compared between the two groups. **Results:** During the study period, there were 9916 deliveries out of which 381 (3.6%) were by teenage mothers, their ages ranged from 13 to 19 years. The mean age was  $18.19 \pm 1.05$  years compared to the control of  $27.10 \pm 3.72$  years with a range of 20–35 years,  $P < 0.05$ . The mean birth weight for the study was  $2.90 \pm 0.49$  compared to the control  $3.16 \pm 1.02$ . There was a statistically significant difference in the mean birth weight in the two groups,  $P < 0.05$ . Birth asphyxia was 14 (3.7%) among the teenage deliveries as compared to 295 (4.1%) in the control group. The number of stillbirths (2 [0.3%] vs. 11 [0.15%]) was lower in the control group. **Conclusion:** This study shows that teenage mothers appear to be at increased risk of low birth weight and neonatal morbidity.

**Keywords:** Delivery, Jos, outcome, pregnancy, teenage

## INTRODUCTION

Teenage pregnancy is defined as pregnancy occurring among women between 13 and 19 years of age.<sup>[1]</sup> Teenage pregnancy is universal, occurring in all known cultures past and present.<sup>[1]</sup> One in four girls in the world become a mother before the age of 19 years.<sup>[1]</sup> Every year an excess of 14 million teenage girls give birth to a child; most of these young mothers live in nonindustrialised countries.<sup>[1]</sup> Teenage pregnancy is coming up as one of the most important social and public health problems all over the world with a varying prevalence rate.<sup>[2]</sup> Worldwide, rates of teenage pregnancy range from 143/1000 in some sub-Saharan African countries to 2.9/1000 in South Korea.<sup>[3,4]</sup> The teenage birth rate in the United States of America (USA) is the highest in the developed world.<sup>[3,4]</sup> One out of every five young women aged 15–19 in Nigeria has either given birth or is expecting their first child. Young women who live in rural areas are much more likely to start having children than those who live in urban areas (27% compared to 8%). The state with the lowest rate of teenage pregnancy is Lagos (1%), while the state with the highest rate is Bauchi (41%).<sup>[5]</sup> The teenage birth rates in Sweden (7.7/1000),

Denmark (8.3/1000), and Finland (9.8/1000) are low compared with the rates in Germany (12.5/1000), Canada (24.2/1000), the United Kingdom (28.4/1000), and the USA (54.4/1000).<sup>[6,7]</sup> In recent years, the incidence is increasing due to declining age at menarche, early sexual debut, multiple sexual partners, and poor awareness of contraceptive methods including emergency contraception.<sup>[1,2,8]</sup> A high fertility rate, prevailing social norms and customs, poverty, and ignorance make early marriage a common feature in developing countries.<sup>[3,9]</sup> However, in developed countries, teenage pregnancy is usually outside marriage and unplanned. In the USA, 82% of teen pregnancies are unplanned and they account for one in five of unintended pregnancies.<sup>[3,9]</sup>

Several polls have indicated that peer pressure, alcohol, and inhibition-reducing drugs encourage unintended sex.<sup>[10,11]</sup>

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Teenage girls in relationships with older boys and in particular adult men are more likely to become pregnant and carry it to term than when involved with someone of their own age.<sup>[10,11]</sup> Teenage pregnancies have often been reported to be associated with adverse pregnancy outcomes, specifically low birth weight, small for gestational-age infants, prematurity, and higher rates of neonatal and postneonatal morbidity and mortality.<sup>[12,13]</sup> There is much controversy over whether the risk associated with teenage motherhood are attributable to biological factors, lifestyles, or socioeconomic conditions. Biological immaturity in teenage mothers itself is an inherent risk factor for poor outcomes that even adequate prenatal care does not completely eliminate the risk in the very young adolescent (<16 years).<sup>[12]</sup> Since many teenage pregnancies are unplanned, unwanted, or discovered late, a pregnant teenager may lack the emotional maturity to take responsibility for a pregnancy after she has decided to carry to term. Emotional stress has been found to cause endocrine disturbance and preterm delivery.<sup>[2,14]</sup>

Many pregnant teenagers are subject to nutritional deficiencies due to poor eating habits common in adolescence such as snacking.<sup>[15]</sup> Inadequate nutrition is even more common in developing countries.<sup>[15]</sup> Obstetric fistula is also a common complication in developing countries.<sup>[15]</sup> Low prepregnancy body mass index, inadequate weight gain during pregnancy, substance abuse, and cigarette smoking are factors associated with poor outcomes of teenage pregnancies.<sup>[16]</sup> Maternal complications associated with teenage pregnancy include anaemia, hypertensive disorders, urinary tract infections, increased operative deliveries, and short interpregnancy intervals.<sup>[17]</sup> In countries where maternity care service is based on insurance and the availability of service is dependent on the economic circumstances of the mother, poor attendance by teenagers has been reported.<sup>[6]</sup> This could be that the social economic status of the women affects access to maternal health. The reverse is the case in countries like Finland where maternity care service is free.<sup>[6]</sup> It has also resulted in improved outcomes of teenage pregnancy.<sup>[6]</sup>

We, therefore, sought to determine the proportion of teenage pregnancies and their associated obstetric and fetal outcomes in northern Nigeria.

## MATERIALS AND METHODS

This was a retrospective case–control review of all teenage pregnancies seen at the Jos University Teaching Hospital between January 1, 2008, and December 31, 2012. The outcome was analysed and compared with controls using SPSS Inc. Released 2007. SPSS for Windows, Version 16.0. Chicago, SPSS Inc. Statistical differences were calculated using the Student's *t*-test and Chi-square. The study population consisted of all teenage mothers who carried their pregnancies to 28 completed weeks and above and delivered between January 1, 2008, and December 31, 2012. Ethical clearance was gotten for the studies.

## Inclusion and exclusion criteria

Included in the study were all teenage mothers who carried their pregnancies to 28 completed weeks and above and delivered between January 1, 2008, and December 31, 2012. Singleton delivery to a mother, beyond 28 weeks of gestation, in the age group 20–34 years, and parity of 4 and below were extracted and were taken as the control for the study.

In both groups, the following were the exclusion criteria: multiple pregnancies, previous uterine scar, grand multiparity, maternal age  $\geq 35$  years, retroviral disease patients, and those with major illnesses existing before pregnancy such as sickle cell disease, renal disease, cardiac disease, chronic hypertension, and diabetes mellitus. This is because such pregnancies carry an unusual risk of adverse outcomes.

The labour ward registers were examined on a weekly basis and records of all teenage mothers who carried their pregnancies to 28 completed weeks and above and delivered between January 1, 2008, and December 31, 2012, were extracted. The next singleton delivery to a mother in the age group 20–34 years and parity of 4 and below were extracted and were taken as the control for the study. The case notes of the patients were retrieved, and data related to the age, parity, educational status, complications in pregnancy, labour and delivery, and neonatal outcomes were extracted and recorded on a predesigned proforma as shown below.

The following definitions were used to record pregnancy outcomes:

Anaemia was taken as packed cell volume of <30% at any stage of pregnancy. Hypertension was taken as twice repeated diastolic blood pressure measurements of 90 mmHg or above at least six h apart.

Proteinuria was taken as 2+ on dipstick urine test.

Postpartum haemorrhage is recorded as blood loss of  $\geq 500$  mL or 1000 mL following vaginal delivery or caesarean section, respectively.

Patients who were first seen in labour were regarded as not booked for antenatal care. Preterm birth is defined as delivery before 37 completed weeks of gestation from the first day of the last menstrual period.

Low birth weight was taken as birth weight  $\leq 2500$  g, while birth asphyxia was recorded as Apgar score of <7 at five min.

Obstetric and neonatal complications were compared between the two groups. Statistical test used was Chi-squared and Student's *t*-test was used. SPSS version 16 was used.

## RESULTS

During the study period, there were 9916 deliveries out of which 381 (3.6%) were by teenage mothers, their age ranged from 13 to 19 years. Mean age was  $18.19 \pm 1.05$  years compared to the control  $27.10 \pm 3.72$  which ranges between 20 and 35 years, *t*-test = 469.677, *P* < 0.05.

Table 1 shows the relationship between antenatal care attendances of teenage mothers with those of nonteenage mothers. Majority 335 (88.1%) of the teenage mothers were nulliparous compared with only 2681 (37.6%) of the controls. In this study, 6654 (92.9) of the controls had antenatal care compared with 345 (90.6) of the teenage mothers. The number of unbooked teenagers 36 (9.4) statistical analysis shows no significant relationship between teen pregnancies and unbooked status compared to the control ( $P = 0.064$ ).

In Table 1, it can be seen that 94 (24.7) of the teenagers had no formal education compared with 1895 (25.2) of the controls. Two thousand four hundred ninety-three (34.9) of the controls had secondary school education and 2246 (31.4) had education up to tertiary level compared with only 25 (6.6) of the teenage mothers.

Table 2 compares the modes of delivery of teenage and nonteenage mothers. Caesarean section rate (48 [12.6%] vs. 1286 [17.1%]) was lower in the teenage group while more teens had spontaneous vaginal delivery (33 [87.6%] vs. 6246 [82.9%]).

Table 3, the mean birth weight for the study was  $2.90 \pm 0.49$  compared to the control  $3.16 \pm 1.02$ . There was a statistically significant difference in the mean birth weight in the two groups,  $t = 2.639$ ,  $P < 0.05$ .

Table 4, the prevalence of low birth weight was 19 (5.0%) among the teens as compared to 320 (4.5%) among the control, Table 4 birth asphyxia was 14 (3.7%) among the teens deliveries as compared to 295 (4.1%) in the control group and Table 4, still birth (2 [0.3%] vs. 11 [0.15%]) was lower in the control group.

## DISCUSSION

The incidence of teenage pregnancy was 3.7% in this study. This is comparable to the 5.9%, 5.3%, and 4.1% reported by Gharoro and Igbafe, Udo *et al.*, Kumar *et al.*, and Jimoh and Ishaq,<sup>[2,18-21]</sup> respectively, but lower than 11.8% reported by Nwobodo and Kasimu<sup>[22]</sup> It is, however, similar to what was reported by Amadi *et al.* (7.5%).<sup>[23]</sup> Amobi *et al.* conducted a community-based study and reported a prevalence rate of 45.4% in Abia, South East Nigeria.<sup>[24]</sup> This is quite high being compared to this study which was a hospital-based study. The incidence in this study being lower compared to other studies could be due to the study being done in the urban setting of Jos. It could be that teenagers in urban settings have a higher chance of good social and educational support hence deferring pregnancy till later age. The mean age of 18.19 years in this study is the same with that observed by Jimoh and Ishaq<sup>[20,21]</sup> but higher than the 17.8 years reported by Nwobodo and Kasimu<sup>[22]</sup> As was documented by Kumar *et al.* and Jimoh and Ishaq, majority of teenagers were primigravidas.<sup>[2,21]</sup>

Knowledge of and access to antenatal care facilities may also be limited by the low literacy level and low level of antenatal

**Table 1: Antenatal care and educational status of the teenage mothers**

| Variable              | Teen, n (%) | Control, n (%) | Statistics     |
|-----------------------|-------------|----------------|----------------|
| Booking status        |             |                |                |
| Booked                | 345 (90.6)  | 6654 (92.9)    | $\chi^2=3.435$ |
| Unbooked              | 36 (9.4)    | 497 (7.1)      | $P=0.064$      |
| Educational status    |             |                |                |
| Not formally educated | 94 (24.7)   | 1895 (25.2)    | $\chi^2=128.9$ |
| Primary               | 50 (13.1)   | 611 (8.5)      | $P<0.001$      |
| Secondary             | 212 (55.6)  | 2493 (34.9)    |                |
| Tertiary              | 25 (6.6)    | 2246 (31.4)    |                |

**Table 2: Mode delivery, maternal, and fetal outcome**

| Variable                       | Teen, n (%) | Control, n (%) | Statistics      |
|--------------------------------|-------------|----------------|-----------------|
| Mode of delivery               |             |                |                 |
| CS                             | 48 (12.6)   | 1286 (17.1)    | $\chi^2=98.68$  |
| SVD                            | 33 (87)     | 6246 (82.9)    | $P=0.00001$     |
| Fetal outcome                  |             |                |                 |
| Alive                          | 2 (0.3)     | 11 (0.15)      | $\chi^2=1.139$  |
| Stillborn                      | 379 (99.7)  | 7140 (99.85)   | $P=0.286$       |
| Maternal status after delivery |             |                |                 |
| Alive                          | 381 (100.0) | 7146 (99.03)   | $\chi^2=0.001$  |
| Dead                           | 0           | 5 (0.07)       | $P=0.99$        |
| Hypertensive disorders         |             |                |                 |
| PIH                            | 1 (0.3)     | 11 (0.2)       | $\chi^2=4.0154$ |
| Preeclampsia                   | 2 (0.5)     | 3 (0.04)       | $P=0.134299$    |
| Eclampsia                      | 6 (1.6)     | 52 (0.7)       |                 |

CS: Cesarean section, SVD: Spontaneous vaginal delivery, PIH: Pregnancy-induced hypertension

**Table 3: Age of teen mothers and their babies' parameters**

| Variable                   | Teen          | Control       | t       | P     |
|----------------------------|---------------|---------------|---------|-------|
| Age                        | 18.19±1.05    | 27.10±3.72    | 469.677 | 0.000 |
| Blood loss                 | 197.89±109.97 | 219.73±148.50 | 2.811   | 0.005 |
| Apgar 5 <sup>th</sup> min  | 7.46±1.68     | 7.61±2.24     | 1.258   | 0.208 |
| Apgar 10 <sup>th</sup> min | 8.56±1.71     | 8.83±3.43     | 1.538   | 0.125 |
| Head circumference         | 34.0±3.42     | 34.86±15.2    | 1.007   | 0.314 |
| Birth length               | 51.36±28.75   | 50.59±20.53   | 0.571   | 0.568 |
| Placenta weight            | 564.51±128.03 | 630.46±303.54 | 2.382   | 0.017 |
| Birth weight               | 2.90±0.49     | 3.16±1.02     | 2.639   | 0.008 |

Mean birth weight in the two groups,  $t=2.639$ ,  $P<0.05$ . Placenta weight in the two groups,  $t=2.382$ ,  $P<0.05$

attendance observed in the teenagers in this study. Low literacy and low level of antenatal care were also reported by Kumar *et al.*, Jimoh and Ishaq, and Nwobodo and Kasimu<sup>[2,21,22]</sup> However, Nadarajah and Leong *et al.* reported higher antenatal attendance by teenagers compared with older mothers.<sup>[25]</sup> In this study, cesarean section rate was lower (12.6%) in teenage pregnancies compared with controls (17.1%). This is contrary to the report by Nwobodo and Kasimu<sup>[22]</sup> Jimoh and Ishaq, however, found no statistically significant difference in cesarean section rates among both groups,<sup>[21]</sup> while Raatikainen

**Table 4: Birth weight, asphyxia, and babies outcome**

|                | Birth weight                     |             | Asphyxial                 |           | Baby condition             |           |
|----------------|----------------------------------|-------------|---------------------------|-----------|----------------------------|-----------|
|                | Low                              | Normal      | Yes                       | No        | Alive                      | Dead      |
| Teen, n (%)    | 19 (5)                           | 365 (95)    | 14 (3.7)                  | 367 (96)  | 375 (98.4)                 | 6 (1.6)   |
| Control, n (%) | 320 (4.5)                        | 6831 (95.5) | 295 (4.1)                 | 6856 (93) | 7048 (98.6)                | 103 (1.4) |
|                | $\chi^2=0.221$ , df=1, $P=0.639$ |             | $\chi^2=0.187$ , $P=0.66$ |           | $\chi^2=0.046$ , $P=0.830$ |           |

*et al.* and Jolly *et al.* reported lower caesarean section rates in teenage mothers.<sup>[6,13]</sup>

The lower rate of caesarean sections in teenage pregnancy in this study could be explained by significantly lower birth weight compared to the control which could favor vaginal delivery from lower risk of fetopelvic disproportions.

Pregnancy-induced hypertension (PIH), preeclampsia, and eclampsia occurred more commonly in teenagers compared to controls. Similar finding was reported by Kumar *et al.*, Jimoh and Ishaq, and Nwobodo and Kasimu.<sup>[2,21,22]</sup> Similar findings were also found by a study done in eastern Nigeria which found that PIH is 15.1% among teenage pregnancies.<sup>[22]</sup> Although the proportion of teenagers in this study with PIH was low in comparison to that done in eastern Nigeria, it was slightly higher when compared to the control. Age is a risk factor for hypertensive disorders in pregnancy,<sup>[26]</sup> more so in the teenage age group. It comes as no surprise as the teenage pregnancy in this study had a higher proportion of PIH, which is a milder form on the spectrum of hypertensive disorders of pregnancy.

The higher prevalence of low birth weight, birth asphyxia, and stillbirths observed among teenage mothers by Kumar *et al.*, Chen *et al.*, Jimoh and Ishaq, and van der Klis *et al.* was also observed in this study.<sup>[2,8,21,27]</sup> The higher proportion of low birth weight, birth asphyxia, and stillbirth in this study could result from poor fetoplacental transfer which may be due to other medical conditions in pregnancy, inadequate pelvic. Every day, approximately 800 women die from preventable causes related to pregnancy and childbirth. Young adolescents face a higher risk of complications and death as a result of pregnancy than older women.<sup>[28]</sup> This was in contrast to that obtained in this study as no teenage death was recorded following delivery as compared to the control which was about 0.07%. The risk of maternal mortality is highest for adolescent girls under 15 years old. Complications in pregnancy and childbirth are the leading causes of death among adolescent girls in most developing countries.<sup>[29,30]</sup> The high prevalence of hypertensive disorders, anemia, and poor nutritional status associated with teenage motherhood may be responsible for the poor neonatal outcome observed.

The limitations of our study would include the fact that being a hospital-based study, the incidence of teenage pregnancy, complications of pregnancy, and neonatal outcomes observed in this study may not be a true reflection of the prevalence in the community. In addition, it is a referral center, and mothers

with complications in pregnancy are referred from within and outside Plateau state leading to the pooling of cases with complications.

## CONCLUSION

This study shows that teenage mothers appear to be at increased risk during childbearing with poor obstetric outcomes and increased perinatal morbidity and mortality. The implication is that teenage pregnancies continue to contribute to poor maternal and neonatal outcomes.

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## Conflicts of interest

There are no conflicts of interest.

## REFERENCES

- da Silva MO. Teenage sexual behaviour: Trends and determinants. In: Studd J, editor. Progress in Obstetrics and Gynaecology. Vol. 15. London: Churchill Livingstone; 2003. p. 123-33.
- Kumar A, Singh T, Basu S, Pandey S, Bhargava V. Outcome of teenage pregnancy. Indian J Pediatr 2007;74:927-31.
- Treffers PE. Teenage pregnancy, a worldwide problem. Ned Tijdschr Geneesk 2003;147:2320-5.
- UNICEF: A League Table of Teenage Births in Rich Nations; 2001. Reference Properly. Available from: <https://www.unicef-irc.org/publications/328-a-league-table-of-teenage-births-in-rich-nations.html>. [Last assessed on 2014 Jan 01].
- Nigeria Demographic and Health Survey 2018 – Summary Report [SR264]. Available from: <https://dhsprogram.com>. [Last assessed 2023 May 17].
- Raatikainen K, Heiskanen N, Verkasalo PK, Heinonen S. Good outcome of teenage pregnancies in high-quality maternity care. Eur J Public Health 2006;16:157-61.
- Darroch JE, Singh S, Frost JJ. Differences in teenage pregnancy rates among five developed countries: The roles of sexual activity and contraceptive use. Fam Plann Perspect 2001;33:244-50, 281.
- Chen XK, Wen SW, Fleming N, Demissie K, Rhoads GG, Walker M. Teenage pregnancy and adverse birth outcomes: A large population based retrospective cohort study. Int J Epidemiol 2007;36:368-73.
- US Teenage Pregnancy Statistics, National and State Trends and Trends by Ethnicity; 2006. Available from: <https://www.kff.org/wp-content/uploads/sites/2/2014/10/ustptrends.pdf>. [Last accessed on 2015 Jan].
- Collin A. Peer pressure and teen sex. Psychol Today 2003;20:18-20.
- Ellis BJ, Bates JE, Dodge KA, Fergusson DM, Horwood LJ, Pettit GS, *et al.* Does father absence place daughters at special risk for early sexual activity and teenage pregnancy? Child Dev 2003;74:801-21.
- Abu-Heija A, Ali AM, Al-Dakheil S. Obstetrics and perinatal outcome of adolescent nulliparous pregnant women. Gynecol Obstet Invest 2002;53:90-2.
- Jolly MC, Sebire N, Harris J, Robinson S, Regan L. Obstetric risks of pregnancy in women less than 18 years old. Obstet Gynecol 2000;96:962-6.



14. Tambyrajia RL, Mongelli M. Sociobiological variables and pregnancy outcome. *Int J Gynaecol Obstet* 2000;70:105-12.
15. Peña E, Sánchez A, Solano L. Profile of nutritional risk in pregnant adolescents. *Arch Latinoam Nutr* 2003;53:141-9.
16. Chang SC, O'Brien KO, Nathanson MS, Mancini J, Witter FR. Characteristics and risk factors for adverse birth outcomes in pregnant black adolescents. *J Pediatr* 2003;143:250-7.
17. Nili F, Rahmati MR, Sharifi SM. Maternal and neonatal outcome in teenage pregnancies in Tehran Valiasr Hospital. *Acta Med Iran* 2002;40:55-8.
18. Gharoro EP, Igbafe AA. Maternal age at first birth and obstetric outcome. *Niger J Clin Pract* 2002;5:20-4.
19. Udo A, Ekott M, Ekanem E. Teenage pregnancy and adverse birth outcomes in Calabar, Nigeria. *Internet J Gynecol Obstet* 2013;17(2).
20. Mutihir JT. Teenage pregnancy in Jos, North-central Nigeria. *Highland Med Res J* 2005;3:87-97.
21. Jimoh SA, Ishaq FA. Outcome of teenage pregnancies in Ilorin, Nigeria. *Trop J Obstet Gynaecol* 2004;21:27-31.
22. Nwobodo NI, Kasimu UA. Obstetric outcome of teenage pregnancies at a tertiary care hospital in Sokoto, Nigeria. *Trop J Obstet Gynaecol* 2005;22:168-70.
23. Amadi AN, Aluka C, Kamanu CI, Njoku OO. Teenage pregnancy and obstetric complications in Aba, Nigeria. *J Med Invest Pract* 2001;2:52-4.
24. Amobi IO, Benjamin SC, Douglas FE, Obinna EO. Determinants of teenage pregnancy in rural communities of Abia state, South-East Nigeria. *J Coll Med* 2004;9:28-33.
25. Nadarajah S, Leong NK. Adolescent pregnancies managed at KK Hospital. *Singapore Med J* 2000;41:29-31.
26. Tebeu PM, Foumane P, Mbu R, Fosso G, Biyaga PT, Fomulu JN. Risk factors for hypertensive disorders in pregnancy: A report from the Maroua Regional Hospital, Cameroon. *J Reprod Infertil* 2011;12:227-34.
27. van der Klis KA, Westenberg L, Chan A, Dekker G, Keane RJ. Teenage pregnancy: Trends, characteristics and outcomes in South Australia and Australia. *Aust N Z J Public Health* 2002;26:125-31.
28. Maternal Mortality. Available from: <http://www.who.int/mediacentre/factsheets/>. [Last accessed on 2013 Jun 15].
29. Conde-Agudelo A, Belizán JM, Lammers C. Maternal-perinatal morbidity and mortality associated with adolescent pregnancy in Latin America: Cross-sectional study. *Am J Obstet Gynecol* 2005;192:342-9.
30. Patton GC, Coffey C, Sawyer SM, Viner RM, Haller DM, Bose K, *et al.* Global patterns of mortality in young people: A systematic analysis of population health data. *Lancet* 2009;374:881-92.