Teenage pregnancy

CPD

Linda Mann, Deborah Bateson, Kirsten I Black

Background
Teenage pregnancy rates are falling in many high-resource settings, but for those who do conceive, the socioeconomic and educational disadvantage that ensues is often long lasting and intergenerational. The adverse maternal and neonatal outcomes can be ameliorated through antenatal and postnatal care that attends to the special needs of this group.

Objective
The aim of this article is to provide an overview of the social, obstetric and medical complications of teenage pregnancy and the role of the general practitioner (GP) in mitigating adverse outcomes.

Discussion
Management and prevention of teenage pregnancy requires broad efforts that involve schools, health services and the community. The GP has a key role in providing supportive continuity of care that spans the antenatal and crucial postnatal periods.

TEENAGE PREGNANCY is a global health issue that adversely affects birth outcomes and can lead to intergenerational cycles of poverty and ill-health. In all settings, teenage pregnancies are more likely to occur in communities affected by social and economic disadvantage.[1] In Australia, as in many high-income countries, the incidence of births in women and girls aged under 20 years has been falling over the past decade, dropping from 18.4 per 1000 in 2008 to 9.5 per 1000 in 2018.[2,3] While this overall decline is generally regarded as a welcome trend, the pathways leading to teenage parenthood are diverse, and not all pregnancies are unintended or unwanted.[4] While pregnancy in the teenage years can have a transformative impact on changing unhealthy behaviours and relationships for some individuals,[5] this is not universal.

The social and health implications of teenage pregnancies include increased exposure to domestic violence (which may be exacerbated by the pregnancy), mental health disorders, substance use, sexually transmissible infections (STIs), financial stress and homelessness. Importantly, an individual's education and training can be disrupted by teenage pregnancy, with variable opportunity for resumption. While teenage mothers are often motivated to do the best for their babies and to continue to develop themselves as parents and into adult life,[6] they may be particularly susceptible to breaches of their rights to healthcare and education.[7] Primary and secondary care services need to be teenage friendly to optimise engagement of young women who choose to continue a pregnancy.[8] Similarly, schools and training facilities can enhance continuity of education by supporting return to study, breastfeeding and affordable childcare.

Teenage fertility rates

The teenage fertility rate is defined as the number of births per 1000 females aged 15–19 years (rates in girls under the age of 15 years are unstable because of low numbers and are not routinely collected).[2,7] Rates of teenage fatherhood are not collected. National data from the Australian Bureau of Statistics show a decrease in teenage fertility rates over time (Figure 1), albeit with wide variation across different populations.[9] While the rate in 2015 for non-Indigenous teenage girls was nine per 1000 teenagers, it was 53 per 1000 among teenagers who identify as Aboriginal or Torres Strait Islander, with the rate highest in populations living in remote areas. Figure 2 shows that teenage pregnancy rates increased as remoteness increased, but this trend was more marked

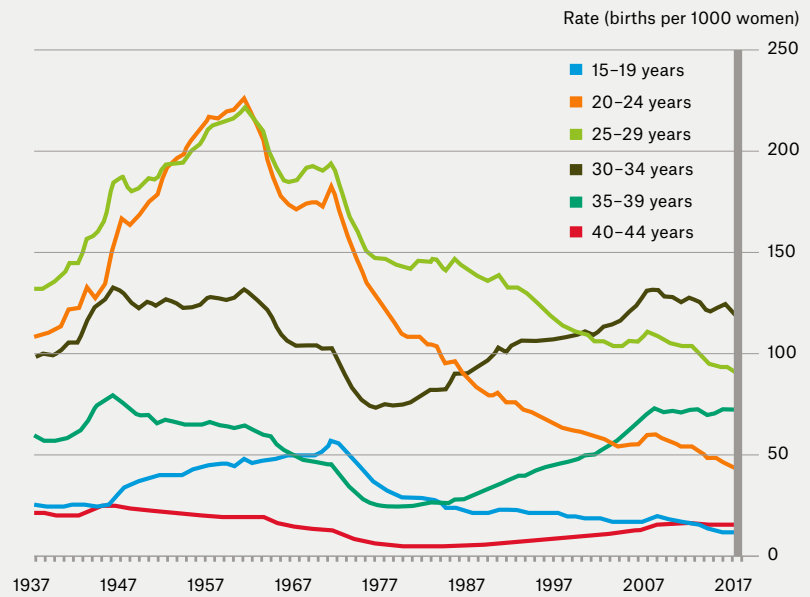

Figure 1. Age-specific fertility rates of selected age groups in Australia: 1937–2017[9]
Reproduced with permission from the Australian Bureau of Statistics (2018)

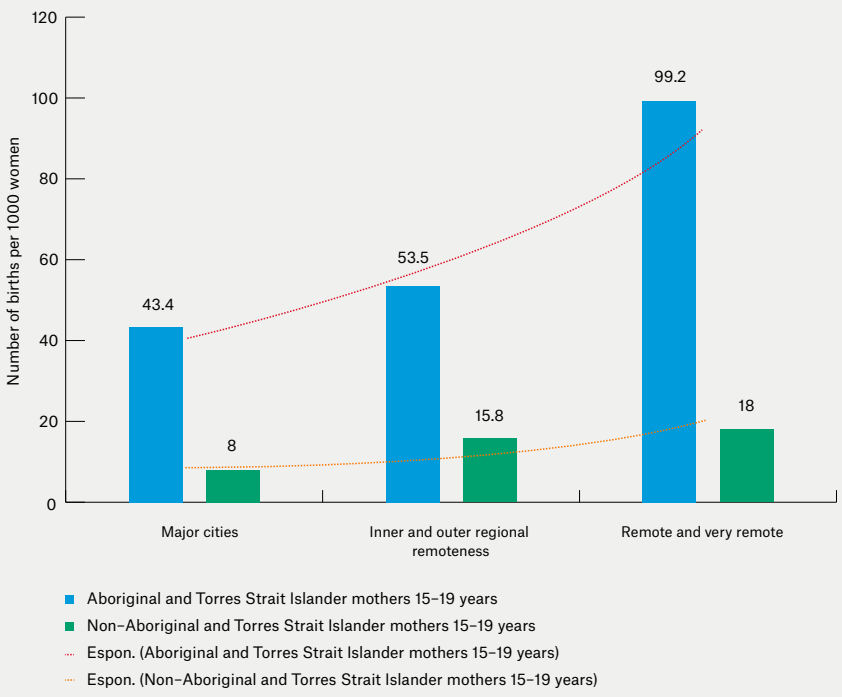

Figure 2. Comparison of Aboriginal and Torres Strait Islander and non–Aboriginal and Torres Strait Islander fertility rates in 2015 by remoteness[7]
Reproduced with permission from the Australian Human Rights Commission 2017

among Aboriginal and Torres Strait Islander teenage girls when compared with non-Indigenous teenage girls.[7]

Teenage abortion rates

In Australia, there are no national abortion statistics.[10] Individual states that collect abortion data, including South Australia and Western Australia, report a declining trend in teenage abortion rates over the past five years.[11,12] This parallels trends in the USA, which have been attributed to a combination of increasing access to effective methods of contraception, changing social norms and media influences.[13]

Factors associated with teenage pregnancy

In Australia, teenagers who become pregnant are more likely to be socioeconomically disadvantaged and to have experienced unstable housing arrangements and social welfare dependence, compared with teenagers who do not become pregnant.[7] It is not uncommon for teenage pregnancy to occur in an intergenerational pattern in which the pregnant teenagers were born to young mothers who themselves experienced social, financial, medical, educational and employment difficulties.[7,14] There is also an association between domestic violence and childhood sexual or physical abuse and teenage pregnancy.[15] Nevertheless, qualitative studies have found that young women often show high levels of resilience and use any resources available to them to make their lives, and their children's lives, happy and meaningful.[16]

Management of teenage pregnancy

Supporting the pregnant teenager

Providing quality healthcare to young women requires an understanding of the particular issues that are associated with teenage pregnancy and how to manage them (Box 1). In addition, programs supporting Aboriginal and Torres Strait Islander women must be culturally appropriate, and Aboriginal controlled models of pregnancy care have been developed in various parts of the country to address this.[17] General practitioners (GPs) play

a part in recognising such vulnerability and improving the health literacy of these young people to support them in what is often a scary time, which can enhance the outcome for this pregnancy and for a future family. The principals of care, along with some key actions, are listed in Table 1.

Exposure to sexually transmissible infections

STIs are an important consideration in teenage pregnancies because of the higher incidence of STIs among young women when compared with pregnant women over the age of 25 years.[18,19] While screening for human immunodeficiency virus occurs in all pregnancies, there is no current national guidance for routine chlamydia screening in pregnancy; however, screening those at risk (including those under the age of 30 years) in the first trimester is recommended.[20] Early testing aims to prevent adverse effects such as intrauterine growth restriction, preterm birth and stillbirth,[21] whereas retesting during the third trimester (usually defined as week 27–40 of pregnancy) aims to prevent maternal postnatal complications such as endometritis[21] and chlamydia infection in the neonate. Syphilis has had a resurgence in Australia,[22] and in 2017, rates among women were highest in the 15–19-year age group (15.9 per 100,000).[23] There were more than 44 congenital syphilis notifications between 2008 and 2017, and more than half of those were in Aboriginal and Torres Strait Islander populations. Routine testing for syphilis is recommended at the first antenatal contact, with repeat testing recommended between 28 and 32 weeks and at the time of birth for women at high risk of infection or reinfection. In areas affected by the ongoing syphilis outbreak, testing is recommended at the first antenatal visit, at 28 and 36 weeks, at the time of birth and again six weeks after the birth.[22]

Table 1. Components of teenage-friendly healthcare

Principles	Actions
Provide a welcoming environment	Ensure waiting room and reception area are adolescent friendly, with magazines geared toward adolescents, as well as posters and brochures with targeted health messages.
Ensure services are easily accessible	Ensure access to general practice care is inexpensive (or free via bulk billing).
Provide clarity regarding confidentiality and its limits	Establish a trusting relationship by reassuring regularly about confidentiality.
Provide care that is respectful and inclusive	Ensure care is supportive and not judgemental. Be a dependable authority whom teenage mothers can rely on.[61]
Provide accessible information	Be aware of current web- and application-based resources.
Use an empowering approach	Ask how things are at home; seek information about difficulties. Focus on the 'LIVES' principles: Listen, Inquire, Validate, Enhance safety, and Support (LIVES).
Value the role of fathers	Where possible, encourage involvement of the fathers in the pregnancy and birth.

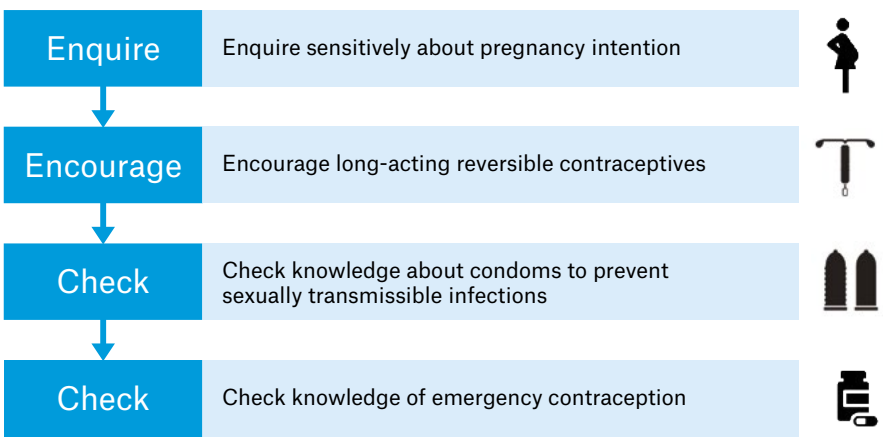

Figure 3. The healthcare practitioner's role in reducing teenage pregnancy

Smoking

Maternal tobacco smoking and second-hand smoke exposure during pregnancy are the leading preventable causes for a variety of unfavourable pregnancy outcomes. Teenage girls have a higher rate of smoking than older pregnant women during the first 20 weeks of pregnancy (32%, compared with 21%) and also later in pregnancy (25%, compared with 16%).[24] Smoking in pregnancy increases the risk of miscarriage, low infant birthweight and preterm delivery.[25] There is also increasing evidence for longer-term adverse health outcomes related to body mass index, with a recent meta-analysis finding that children of women who smoked during pregnancy had an increased risk of obesity in childhood when compared with children of women who did not smoke.[26] Smoking cessation in early pregnancy can almost eliminate these risks.

It is recommended that smoking be addressed at every GP visit during pregnancy in view of its serious health impact. Although there is a dearth of evidence for the effectiveness of smoking cessation programs for teenagers,[27] current programs and interventions may be beneficial. Behavioural counselling that includes providing information on the health effects, problem solving and

facilitating social support and referral to Quitline is regarded as first-line treatment in pregnancy.[28] The use of nicotine replacement therapy may increase cessation rates and is considered safer than continued smoking, with no adverse fetal effects.[29] For Aboriginal and Torres Strait Islander patients, government-funded nicotine replacement is available through the 'Close the Gap' scheme.

Another form of nicotine delivery is electronic cigarettes or e-cigarettes, with ever use approximately 7% among young Australians aged 12–17 years.[30] Although the aerosol of e-cigarettes generally has fewer harmful substances than cigarette smoke, e-cigarettes and other products containing nicotine are not regarded as safe to use during pregnancy. Further, there is insufficient evidence to know whether e-cigarettes help people to quit smoking.

Alcohol and other drugs

Young people are starting to drink at a later age,[31] and teenagers who become pregnant are less likely to drink any alcohol before pregnancy when compared with women over the age of 20 years.[32] They are also more likely to cease alcohol intake with recognition of pregnancy. However, asking about alcohol use is essential, as fetal alcohol spectrum disorder has lifelong consequences for the individual and their family and is extremely costly to the health, education, disability and justice systems.[33] Screening for other drugs is also important, with data from the USA suggesting that a sixth of younger pregnant women use marijuana in pregnancy, with a significant association between drug use and a composite outcome of spontaneous preterm birth, hypertensive disorders of pregnancy, stillbirth or small size for gestational age.[34] Recognition of the use of these drugs requires enquiry about them. GPs are well placed to develop a trusting relationship that allows regular discussion about drug use with teenagers.

Complications of pregnancy

Maternal outcomes

Overall, pregnancy in the teenage years carries an increased risk of some medical and obstetric complications but a decreased risk of others. Recent studies suggest that the most commonly cited adverse outcomes of preterm birth and low birthweight may relate mainly to issues of sociodemographic disadvantage and substance use in pregnancy.[35] Therefore, support from a multidisciplinary team – ideally including the GP, midwife, obstetrician and social work team – throughout pregnancy is vital.

Antenatal outcomes

In terms of antenatal care, teenage girls are less likely to have five or more antenatal visits (90%) than a comparative cohort aged 20–24 years[24] and more often present later for care. Aboriginal and Torres Strait Islander teenage girls attend even fewer antenatal appointments, with almost a tenth attending only one or two visits.[24] Characteristics that encourage attendance for Aboriginal and Torres Strait Islander teenage girls are the presence of Aboriginal health workers or liaison officers, a continuous relationship with the care provider and support for attendance.[36] Collaborative care models that involve the partners and other family members in the visits may be beneficial.

In the antenatal period, teenage girls have an increased risk of depression,[37] iron deficiency anaemia[38] and urinary tract infections, compared with adult women. They also have higher rates of hypertensive disorders of pregnancy, compared with adult women.[39] However, when compared with older mothers, teenagers have a decreased risk of gestational diabetes and venous thromboembolism.[24,32,40]

Perinatal outcomes

Most studies have found a two-fold increase in the incidence of preterm delivery (<37 weeks' gestation) when compared with women aged 20–30 years, so providing education about the signs and symptoms of early labour is important.[41] With regards to mode of delivery, teenage girls when compared with adult women are more likely to have a vaginal birth (69%, compared with 65%) and less likely to have a caesarean section (18%, compared with 23%).[24]

Neonatal outcomes

Infants born to teenage mothers are more likely to be preterm, have low birthweight and be small for gestational age.[42] Additionally, there is a strong association between teenage births and increased perinatal mortality,[43] neonatal mortality,[43] child mortality[44] and stillbirth. A recent Australian report on teenage mothers documented the rates of preterm birth and low birthweight among the babies of teenage mothers to be 11% and 8.9%, respectively; these figures were 9.9% and 7.6%, respectively, for mothers aged 20–24 years. These outcomes are worsened if the teenage mother is from a low socioeconomic or Aboriginal or Torres Strait Islander background. Similarly, stillbirth and neonatal death rates have also been found to be higher in babies born to Australian mothers aged <20 years compared with mothers aged 20–24 years: 13.9 in comparison to 7.8 stillbirths per 1000 births, and 4.3 in comparison to 2.9 neonatal deaths per 1000 live births.[24] Pregnant teenagers need to be educated about the importance of fetal movements and what to do if there is a change in the pattern of fetal movements. It is important that healthcare practitioners understand these risks and monitor fetal development and maternal health more carefully in the third trimester, with consideration of extra assessments of fetal wellbeing including ultrasonography at 36 weeks' gestation.

Postnatal care

One of the key issues in postnatal care is supporting breastfeeding, with qualitative studies suggesting that teenagers may not seek assistance with lactation difficulty.[45] Teenage mothers may also need advice regarding a healthy diet, with a systematic review finding that intakes of energy, fibre and a number of key micronutrients were below recommended levels in this group.[46] A struggle with mental health issues in the postpartum period is not uncommon among young mothers, who have a known elevated risk of postpartum depression,[47] which can exacerbate the parenting difficulties they may experience. Connection to a GP and continuity of care is particularly helpful for young families, who benefit from continued

non-judgemental and knowledgeable medical care.

Teenage mothers have an elevated risk of rapid repeated pregnancy within two years of their first pregnancy.[48] Ideally, contraception should be provided in the immediate postpartum period before hospital discharge, using long-acting reversible contraception (LARC; ie implants and intrauterine devices) methods that have been shown to be the most effective at reducing future unintended pregnancy[49] while having no impact on breastfeeding nor infant growth and development.[50] Postnatal home visits from midwives can also improve contraception outcomes and should be encouraged.[51] GPs have a crucial role in ensuring young women are informed about their contraceptive options prior to and after delivery, and in explaining the advantages of the LARC methods.

Box 1. Interventions and practice recommendations for the general practitioner to manage teenage pregnancy (adapted from Marino et al)[62]

Act to reduce the risk of unintended adolescent pregnancy

- In a sensitive and developmentally appropriate way, explore pregnancy intentions and contraceptive beliefs. Do this over time to accommodate changes in social situation.
- Encourage long-acting reversible contraception (LARC), which has been shown to be more reliable in this age group and should be the first-line recommendation.
- Check that young men and women know how to obtain and use condoms for sexually transmissible infection prevention.
- Check knowledge of emergency contraception.

When unintended adolescent pregnancy occurs

- Provide nonjudgemental support and counselling, including all options (check with local teaching hospital social work department or Public Health Networks for referral pathways).
- Screen for sexual abuse and exploitation, and be aware of the possibility of coercive relationships when the adolescent is pregnant to an older partner.

Antenatal care

- Refer to the local specialist service for teenage girls (or Aboriginal or Torres Strait Islanders if applicable/available).
- Recognise that teenagers may have less anatomical knowledge and will be less likely to understand what is happening to their bodies so may benefit from explanations at all stages.
- Assess nutritional adequacy.
- Use the local protocols for antenatal care, with special consideration of fetal growth.
- Screen for chlamydia as recommended in the first trimester; consider retesting later in pregnancy.
- Screen routinely for alcohol use, substance use, violence and mood disorders each trimester.
- Provide access to smoking cessation support.
- Teach about signs and symptoms of preterm labour and the importance of noting fetal movements.
- Discuss contraceptive options before delivery.
- Encourage and facilitate breastfeeding.
- Include fathers where possible.

Postpartum and beyond

- Encourage uptake of home visiting programs and the use of early childhood facilities and age-appropriate mothers' groups.
- Encourage return to school, education or training and continuing healthy lifestyle changes made during pregnancy.
- Encourage continuity of breastfeeding, direct education on safe use of formula and provide ongoing advice about infant nutrition.
- Assess nutritional adequacy, particularly of breastfeeding mothers.
- Provide access to smoking cessation support.

Long-term outcomes

Teenage pregnancy is a contributing factor to lifelong socioeconomic disadvantage and health disparities for the mother and her child.[52] When compared with women who become pregnant during adulthood, teenage mothers are more likely to have limited social support, low educational attainment, fewer employment opportunities,[40,53] poorer mental health[37] and higher rates of substance use.[37,54] There is a significant body of research showing an association between teenage motherhood and depression[55] and anxiety.[56] These factors can adversely affect parenting ability and have an impact on behavioural outcomes for their children.[37]

Preventing teenage pregnancy

Addressing teen pregnancy prevention requires broad efforts that involve schools, health services and the community (Figure 3). Specifically, a combination of sexuality education and contraception interventions is effective in reducing unintended pregnancies in teenagers.[57] Use of contraception at first intercourse has been reported by 90% of Australians, and condoms are the most common method used by young people; this is followed by the oral contraceptive pill, which is often initiated for non-contraceptive indications.[58] However, inconsistent use of condoms and contraceptive pills leading to unintended pregnancy is common in teenagers, and they may benefit from use of the LARC methods. The CHOICE study in the USA showed that 70% of women who are given balanced advice about the range of contraceptive options and provided with free treatment chose LARC,[59] but only 4% of Australian teenage girls use these methods.[60] The GP has a key role in identifying teenagers who may be at risk of unintended pregnancy and sensitively enquiring about their plans for conception. At-risk groups include Aboriginal and Torres Strait Islander teenage girls, disadvantaged or rural/remote residents, teenagers born to teenage mothers, those living in a home that is disrupted or abusive, those with a history of sexual abuse and those who have already

had a child. Although many teenagers source their contraceptive methods from pharmacies and supermarkets, a presentation to a GP is an opportunity to provide information about condoms for STI prevention, LARC methods and emergency contraception should their method not be used or not be used consistently.[60] The Family Planning Alliance of Australia provides training in intrauterine device and contraceptive implant insertion (http://familyplanningallianceaustralia.org.au/services).

Conclusion

For some young women, a pregnancy in adolescence can have a transformative impact on changing unhealthy behaviours and relationships. However, for many, teenage pregnancy is accompanied by adverse perinatal outcomes and long-term social and educational consequences. The GP is ideally placed to foster a supportive health environment for these families by offering regular and reliable care in a non-judgemental approach. Evidence supports the use of LARC methods to prevent unwanted teenage pregnancy and to reduce rapid repeat pregnancy after delivery.

Authors

Linda Mann MBBS, BScMed, FRACGP, DipRANZCOG, Principal GP, Your Doctors, NSW

Deborah Bateson MA (Oxon), MSc (LSHTM), MB BS, Medical Director, Family Planning, NSW; Clinical Associate Professor, Discipline of Obstetrics, Gynaecology and Neonatology, Faculty of Medicine and Health, University of Sydney, NSW

Kirsten I Black MBBS, MMed, FRANZCOG, FFSRH, DDU, Joint Head of the Discipline of Obstetrics, Gynaecology and Neonatology, Faculty of Medicine and Health, University of Sydney, NSW. kirsten.black@sydney.edu.au

Competing interests: DB reports that in her role as Medical Director of Family Planning NSW, she has attended advisory committee meetings for Bayer and MSD but has never received any personal remuneration for these services. DB is an investigator on an investigator-initiated research study supported in part by an untied grant from MSD. Family Planning NSW receives sponsorship for educational courses from Bayer. KIB reports she attended an international advisory board on immediate postpartum contraception for Bayer. She did not retain any fees personally. Bayer manufacture one of the LARC methods mentioned briefly in the article.

Funding: None.

Provenance and peer review: Commissioned, externally peer reviewed.

References

1. Blum RW, Gates WH. Girlhood, not motherhood: Preventing adolescent pregnancy. New York: UNFPA, 2015.
2. Australian Bureau of Statistics. Teenage fertility rate lowest on record. Belconnen, ACT: ABS, 2016. Available at www.abs.gov.au/ausstats/abs@.nsf/lookup/3301.0Media%20Release12015 [Accessed 20 April 2020].
3. Australian Bureau of Statistics. Fertility, by age, by state. Belconnen, ACT: ABS, 2019. Available at http://stat.data.abs.gov.au/Index.aspx?DatasetCode=FERTILITY_AGE_STATE# [Accessed 20 April 2020].
4. Smith JL, Skinner SR, Fenwick J. How Australian female adolescents prioritize pregnancy protection: A grounded theory study of contraceptive histories. J Adolesc Res 2011;26(5):617–44. doi: 10.1177/0743558411402338.
5. Larkins SL, Page RP, Panaretto KS, et al. The transformative potential of young motherhood for disadvantaged Aboriginal and Torres Strait Islander women in Townsville, Australia. Med J Aust 2011;194(10):551–55. doi: 10.5694/j.1326-5377.2011.tb03100.x
6. Corcoran J. Teenage pregnancy and mental health. Societies 2016;6(21):1–9. doi: 10.3390/soc6030021.
7. Australian Human Rights Commission. Children's Rights Report 2017. Sydney: Australian Human Rights Commission, 2017.
8. Chown P, Kang M, Sanci L, Newnha V, Bennett DL. Adolescent health: Enhancing the skills of general practitioners in caring for young people from culturally diverse backgrounds. GP Resource Kit. 2nd edn. Sydney: NSW Centre for the Advancement of Adolescent Health and Transcultural Mental Health Centre, 2008.
9. Australian Bureau of Statistics. Fertility rates. Belconnen, ACT: ABS, 2018. Available at www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/3301.0Main%20Features42017?opendocument&tabname=Summary&prodno=3301.0&issue=2017&num=&view= [Accessed 20 April 2020].
10. Marino JL, Sawyer SM. Monitoring the missing half: Why reporting adolescent births is insufficient. Med J Aust 2019;210(5):198–201e1. doi: 10.5694/mja2.50047.
11. Pregnancy Outcome Unit. Pregnancy outcome in South Australia 2016. Adelaide: SA Health, Government of South Australia, 2018.
12. Galrao M, Hutchinson M, Joyce A. Induced abortions in Western Australia 2016–2018. Sixth report of the Western Australian abortion notification system. Canberra: DoH, Western Australia, 2019.
13. Boonstra HD. What is behind the declines in teen pregnancy rates? Guttmacher Policy Rev 2014;17(3):15–21.
14. Kim K. Intergenerational transmission of age at first birth in the United States: Evidence from multiple surveys. Popul Res Policy Rev 2014;33:649–71. doi: 10.1007/s11113-014-9328-7.
15. Madigan S, Wade M, Tarabulsy G, Jenkins JM, Shouldice M. Association between abuse history and adolescent pregnancy: A meta-analysis. J Adolesc Health 2014;55(2):151–59. doi: 10.1016/j.jadohealth.2014.05.002.
16. McDermott E, Graham H. Resilient young mothering: Social inequalities, late modernity and the 'problem' of 'teenage' motherhood. J Youth Stud 2005;8(1):59–79. doi: 10.1080/13676260500063702.
17. Ampersand Health Science Writing. Evidence evaluation report – Models for Aboriginal and Torres Strait Islander women's antenatal care. Canberra: DoH, 2017.
18. Middleton M, McDonald A. Sexually transmissible infections among young people in Australia: An overview. HIV Australia 2013;11(1):9–10.
19. The Kirby Institute. HIV, viral hepatitis and sexually transmissible infections in Australia: Annual surveillance report 2016. Sydney: The Kirby Institute, UNSW, 2016.
20. Department of Health. Clinical practice guidelines: Pregnancy care. Canberra: DoH, 2019.
21. Olson-Chen C, Balaram K, Hackney DN. *Chlamydia trachomatis* and adverse pregnancy outcomes: Meta-analysis of patients with and without Infection. Matern Child Health J 2018;22(6):812–21. doi: 10.1007/s10995-018-2451-z.
22. Department of Health. Multijurisdictional syphilis outbreak surveillance report: October 2019. Canberra: DoH, 2019.
23. The Kirby Institute. HIV, viral hepatitis and sexually transmissible infections in Australia: Annual surveillance report 2018. Sydney: Kirby Institute, UNSW, 2018.
24. Australian Institute of Health and Welfare. Teenage mothers in Australia 2015. Cat. no. PER 93. Canberra: AIHW, 2018.
25. Ko T-J, Tsai L-Y, Chu L-C, et al. Parental smoking during pregnancy and its association with low birth weight, small for gestational age, and preterm birth offspring: A birth cohort study. Pediatr Neonatol 2014;55(1):20–27. doi: 10.1016/j.pedneo.2013.05.005.
26. Magalhães EIDS, Sousa BA, Lima NP, Horta BL. Maternal smoking during pregnancy and offspring body mass index and overweight: A systematic review and meta-analysis. Cad Saude Publica 2019;35(12):e00176118. doi: 10.1590/0102-311X00176118.
27. McDermott E, Graham H. Young mothers and smoking: Evidence of an evidence gap. Soc Sci Med 2006;63(6):1546–49. doi: 10.1016/j.socscimed.2006.03.025.
28. Patnode CD, Henderson JT, Thompson JH, Senger CA, Fortmann SP, Whitlock EP. Behavioral counseling and pharmacotherapy interventions for tobacco cessation in adults, including pregnant women: A review of reviews for the U.S. preventive services task force. Rockville, MD: Agency for Healthcare Research and Quality, 2015.
29. Coleman T, Chamberlain C, Davey M-A, Cooper SE, Leonardi-Bee J. Pharmacological interventions for promoting smoking cessation during pregnancy. Cochrane Database Syst Rev 2015;(12):CD010078. doi: 10.1002/14651858.CD010078.pub2.
30. Australian Institute of Health and Welfare. National drug strategy household survey 2016: Detailed findings. Drug Statistics series no. 31. Cat. no. PHE 214. Canberra: AIHW, 2017.
31. Australian Institute of Health and Welfare. Alcohol, tobacco and other drugs in Australia. Canberra: AIHW, 2019. Available at www.aihw.gov.au/reports/alcohol/alcohol-tobacco-other-drugs-australia/contents/introduction [Accessed 20 April 2020].
32. Daniels S, Robson D, Flatley C, Kumar S. Demographic characteristics and pregnancy outcomes in adolescents – Experience from an Australian perinatal centre. Aust N Z J Obstet Gynaecol 2017;57(6):630–35. doi: 10.1111/ajo.12651.

33. Popova S, Lange S, Burd L, Rehm J. The economic burden of fetal alcohol spectrum disorder in Canada in 2013. Alcohol Alcohol 2016;51(3):367–75. doi: 10.1093/alcalc/agv117.
34. Rodriguez CE, Sheeder J, Allshouse AA, et al. Marijuana use in young mothers and adverse pregnancy outcomes: A retrospective cohort study. BJOG 2019;126(12):1491–97. doi: 10.1111/1471-0528.15885.
35. Wong SPW, Twynstra J, Gilliland JA, Cook JL, Seabrook JA. Risk factors and birth outcomes associated with teenage pregnancy: A Canadian sample. J Pediatr Adolesc Gynecol 2020;33(2):153–59. doi: 10.1016/j.jpag.2019.10.006.
36. Reibel T, Morrison L, Griffin D, Chapman L, Woods H. Young Aboriginal women's voices on pregnancy care: Factors encouraging antenatal engagement. Women Birth 2015;28(1):47–53. doi: 10.1016/j.wombi.2014.10.003.
37. Hodgkinson S, Beers L, Southammakosane C, Lewin A. Addressing the mental health needs of pregnant and parenting adolescents. Pediatrics 2014;133(1):114–22. doi: 10.1542/peds.2013-0927.
38. Baker PN, Wheeler SJ, Sanders TA, et al. A prospective study of micronutrient status in adolescent pregnancy. Am J Clin Nutr 2009;89(4):1114–24. doi: 10.3945/ajcn.2008.27097.
39. Azevedo WF, Diniz MB, Fonseca ES, Azevedo LM, Evangelista CB. Complications in adolescent pregnancy: Systematic review of the literature. Einstein (Sao Paulo) 2015;13(4):618–26. doi: 10.1590/S1679-45082015RW3127.
40. Lewis LN, Skinner SR. Adolescent pregnancy in Australia. In: Cherry AL, Dillon ME, editors. International handbook of adolescent pregnancy. New York: Springer, 2014; p. 191–203.
41. Khashan AS, Baker PN, Kenny LC. Preterm birth and reduced birthweight in first and second teenage pregnancies: A register-based cohort study. BMC Pregnancy Childbirth 2010;10:36. doi: 10.1186/1471-2393-10-36.
42. Chen X-K, 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(2):368–73. doi: 10.1093/ije/dyl284.
43. Shrim A, Ates S, Mallozzi A, et al. Is young maternal age really a risk factor for adverse pregnancy outcome in a Canadian tertiary referral hospital? J Pediatr Adolesc Gynecol 2011;24(4):218–22. doi: 10.1016/j.jpag.2011.02.008.
44. Chen X-K, Wen SW, Fleming N, Yang Q, Walker MC. Increased risks of neonatal and postneonatal mortality associated with teenage pregnancy had different explanations. J Clin Epidemiol 2008;61(7):688–94. doi: 10.1016/j.jclinepi.2007.08.009.
45. Wambach KA, Cohen SM. Breastfeeding experiences of urban adolescent mothers. J Pediatr Nurs 2009;24(4):244–54. doi: 10.1016/j.pedn.2008.03.002.
46. Marvin-Dowle K, Burley VJ, Soltani H. Nutrient intakes and nutritional biomarkers in pregnant adolescents: A systematic review of studies in developed countries. BMC Pregnancy Childbirth 2016;16:268. doi: 10.1186/s12884-016-1059-9.
47. Reid V, Meadows-Oliver M. Postpartum depression in adolescent mothers: An integrative review of the literature. J Pediatr Health Care 2007;21(5):289–98. doi: 10.1016/j.pedhc.2006.05.010.
48. Baldwin MK, Edelman AB. The effect of long-acting reversible contraception on rapid repeat pregnancy in adolescents: A review. J Adolesc Health 2013;52(4 Suppl):S47–53. doi: 10.1016/j.jadohealth.2012.10.278.
49. Norton M, Chandra-Mouli V, Lane C. Interventions for preventing unintended, rapid repeat pregnancy among adolescents: A review of the evidence and lessons from high-quality evaluations. Glob Health Sci Pract 2017;5(4):547–70. doi: 10.9745/GHSP-D-17-00131.
50. Tocce K, Sheeder J, Arango N, Teal S. Immediate postpartum LARC in adolescents: Implants versus IUDS. Contraception 2013;88(3):437–38. doi: 10.1016/j.contraception.2013.05.033.
51. Quinlivan JA, Box H, Evans SF. Postnatal home visits in teenage mothers: A randomised controlled trial. Lancet 2003;361(9361):893–900. doi: 10.1016/S0140-6736(03)12770-5.
52. Ruedinger E, Cox JE. Adolescent childbearing: Consequences and interventions. Current Opin Pediatrics 2012;24(4):446–52. doi: 10.1097/MOP.0b013e3283557b89.
53. Thompson G, Madigan S, Wentzel K, Dineley B, Lorber S, Shouldice M. Demographic characteristics and needs of the Canadian urban adolescent mother and her child. Paediatr Child Health 2015;20(2):72–76. doi: 10.1093/pch/20.2.72.
54. Bottorff JL, Poole N, Kelly MT, Greaves L, Marcellus L, Jung M. Tobacco and alcohol use in the context of adolescent pregnancy and postpartum: A scoping review of the literature. Health Soc Care Community 2014;22(6):561–74. doi: 10.1111/hsc.12091.
55. Siegel RS, Brandon AR. Adolescents, pregnancy, and mental health. J Pediatr Adolesc Gynecol 2014;27(3):138–50. doi: 10.1016/j.jpag.2013.09.008.
56. Ross LE, McLean LM. Anxiety disorders during pregnancy and the postpartum period: A systematic review. J Clin Psychiatry 2006;67(8):1285–98. doi: 10.4088/jcp.v67n0818.
57. Oringanje C, Meremikwu MM, Eko H, Esu E, Meremikwu A, Ehiri JE. Interventions for preventing unintended pregnancies among adolescents. Cochrane Database Syst Rev 2009(4):CD005215. doi: 10.1002/14651858.CD005215.pub2.
58. Claringbold L, Sanci L, Temple-Smith M. Factors influencing young women's contraceptive choices. Aust J Gen Pract 2019;48(6):389–94. doi: 10.31128/AJGP-09-18-4710.
59. Chow EPF, Wigan R, McNulty A, et al. Early sexual experiences of teenage heterosexual males in Australia: A cross-sectional survey. BMJ Open 2017;7(10):e016779. doi: 10.1136/bmjopen-2017-016779.
60. Coombe J, Harris ML, Wigginton B, Lucke J, Loxton D. Contraceptive use at the time of unintended pregnancy: Findings from the contraceptive use, pregnancy intention and decisions study. Australian Fam Physician 2016;45(11):842–48.
61. Turner L, Spencer L, Strugnell J, et al. Young people have their say: What makes a youth-friendly general practice? Aust Fam Physician 2017;46(1):70–74.
62. Marino JL, Lewis LN, Bateson D, Hickey M, Skinner SR. Teenage mothers. Aust Fam Physician 2016;45(1):712–17.

correspondence **ajgp@racgp.org.au**