Review topic:

Young People’s Sexual and Reproductive Health

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Citation for review topic:

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Cover Artwork: Hector’s dolphins (Cephalorhynchus hectori) - by Karen Davis
Introduction

Having sex for the first time is a major milestone in life that almost everyone reaches. In New Zealand, around 37% of secondary school students have had sex by the age of 16 years and around 46% by the age of 17 or more.1 Becoming sexually active brings both risks and rewards. Policy makers are generally most concerned with the risks, particularly the risks of early unintended pregnancy and sexually transmitted infections and the associated costs to society. Good sexual health, however, is more than not contracting a sexually transmitted infection and not being involved in an unintended pregnancy. It has both individual and public health dimensions, as indicated by the following broad definition of sexual health, developed in the US:

‘Sexual health is a state of well-being in relation to sexuality across the life span that involves physical, emotional, mental, social, and spiritual dimensions. Sexual health is an intrinsic element of human health and is based on a positive, equitable, and respectful approach to sexuality, relationships, and reproduction, that is free of coercion, fear, discrimination, stigma, shame, and violence. It includes: the ability to understand the benefits, risks, and responsibilities of sexual behaviour; the prevention and care of disease and other adverse outcomes; and the possibility of fulfilling sexual relationships. Sexual health is impacted by socioeconomic and cultural contexts—including policies, practices, and services—that support healthy outcomes for individuals, families, and their communities.’2

Supporting young people to attain sexual health as defined above is clearly not something the health system can accomplish on its own, nevertheless there is an important role for the health system in helping young people to avoid unwanted pregnancy, providing care to young pregnant women, and preventing and treating sexually transmitted infections.

This in-depth topic considers ways of improving the sexual and reproductive health of New Zealand adolescents and young adults. It focuses on the prevention of unintended teenage pregnancy but also touches on the prevention of sexually transmitted infections. It does not deal with maternity services for pregnant teenagers or services for teenage parents because a previous in-depth topic in this series of reports (2012) was entitled Services and Interventions for Women Experiencing Multiple Adversities in Pregnancy and this included a substantial section on services for teenage parents.3

It begins by summarising what is known about the sexual behaviour of young people in New Zealand. It then reviews sexuality education, sexual and reproductive health services for young people, and contraceptive options for young people (with a particular focus on long-acting reversible methods). It concludes with some recommendations for improving the sexual and reproductive health of New Zealand young people and preventing unintended teenage pregnancies.

This choice of areas for review was influenced by the 2013 report of the Health Committee (one of the select committees of the New Zealand Parliament) Inquiry into improving child health outcomes and preventing child abuse with a focus from preconception until three years of age.4 One of the major recommendations which came out of the inquiry was as follows:

‘We recommend to the Government that it develop a co-ordinated cross-sectoral action plan with the objective of giving New Zealand world-leading, best-practice evidence-based sexuality and reproductive health education, contraception, sterilisation, termination, and sexual health services, distributed to cover the whole country. The plan should be developed within 12 to 18 months of this report being published, and be matched with appropriate, sustainable resourcing. The plan should also be monitored by trends in teenage pregnancy, sexually transmitted diseases, unplanned pregnancy, and terminations.’

It should be borne in mind that in developed countries teenage pregnancy (except in the youngest teenagers) is not so much a medical problem as a social problem.5 Many of the adverse medical outcomes attributed to teenage pregnancy, such as prematurity and low birth weight, are probably mostly due to the poor socio-economic circumstances and associated risk-taking behaviours that predispose young women to early pregnancy.6,7 It should not be assumed that if women in the most deprived communities would only delay their first birth by five years or ten years, then that alone would inevitably improve outcomes for them and their children.
The sexual health and behaviour of New Zealand’s young people

The only recently published surveys of the sexual health and behaviour of New Zealand young people are the Youth 2000 series of surveys of secondary school students, conducted in 2001, 2007, and 2012, and the 2009 Tertiary Student Health Survey.

Information from the Youth 2000 Survey Series

The 2012 survey found that, out of all 8,500 participating students, 24% reported that they had ever had sex and 19% that they were currently sexually active (these categories did not include sexual abuse). There were no significant differences between males and females. As could be expected, the proportions of students reporting having ever had sex and being currently sexually active increased with increasing age. Of students aged 17 years or older, 46% reported that they had ever had sex and 36% were currently sexually active.

Most students (93% of males and 92% of females) were attracted only to the opposite sex, while 4% of students were attracted to the same-sex or to both sexes and 4% were either not sure of their sexual attractions or were attracted to neither sex.

Of the students who were sexually active, 58% reported always using contraception to prevent pregnancy. Forty-four percent had talked to their partner about preventing sexually transmitted infections and 46% reported always using a condom to protect against sexually transmitted infections. Seventeen percent of the students who were currently sexually active reported that they did not or only sometimes used condoms or other contraception. This proportion was greater among younger students and students living in high deprivation areas.

Comparing results from the 2000, 2007 and 2012 surveys shows that the percentage of students who always use contraception to prevent pregnancy and the percentage who always use condoms to prevent sexually transmitted infections have not changed over time. The percentage of students who reported ever having had sex was lower in 2012 (24%) than in 2001 (31%) and 2007 (36%) but this may have been because the 2012 survey question about having ever had sex explicitly told students not to count abuse or unwanted sexual experiences, whereas in 2007 and 2001 this was not stated.

Information from the 2009 Tertiary Student Health Survey

This survey involved 2,922 students aged 17 to 24 years from all eight New Zealand universities (50.6% of the 5,770 invited to participate). Sixty-nine percent of both men and women reported having had sexual intercourse, and the median age at first sex was 16 for women and 17 for men. The median number of sexual partners ever was three for both men and women. The median number of partners in the last year was one although about 25% of students had three or more. Most students (66%) reported that the person they last had sex with was someone they were in a ‘steady relationship’ or were ‘living together, engaged, or married’ but 3% of women and 11% of men reported having ‘just met’ the person they last had sex with. Fifty-eight percent of men and 51% of women reported using a condom the last time they had sex. Those with a higher number of sexual partners in the last 12 months were less likely to report having used a condom at last sex (51% of those with one partner vs. 42% of those with nine or more partners).

Overall, 32% of respondents reported that they had been drinking alcohol the last time they had sex. Adverse sexual experiences (unsafe sex, regretted sex, experiencing unwanted sexual advances) as a result of a respondent’s own or others’ drinking were common.

Of the women survey participants, 112 (5.8% of those who had ever had sex) reported having had an unintended pregnancy and 74% of these had resulted in a termination.

Around 95% of students reported sexual attraction to the opposite sex mainly. Men were more likely than women to report being exclusively heterosexual (90.8% vs. 83.2%). About 2% of both men and women reported attraction to both sexes equally and about 3% of men and 1% of women reported same sex attraction only or mainly.

Information from official and health services statistics

Some indirect information about the sexual health and behaviour of New Zealand’s young people can be gained by looking at official statistics and data collected by health services. Information on rates of sexually transmitted infections in young people is analysed by The Institute of Environmental Science and Research (ESR) which collects surveillance information on STIs from diagnostic laboratories and from sexual health and family
planning clinics. The ESR has stated that laboratory information is the best indicator of disease incidence for chlamydia and gonorrhoea in most DHBs and that surveillance of genital herpes and genital warts is solely clinic based. The Abortion Supervisory Committee collects and analyses data on abortions performed in New Zealand.

**Teenage births in New Zealand**

Information on trends in teenage births in New Zealand can be found in the ‘Births’ section beginning on page Error! Bookmark not defined. of this report. The New Zealand teenage birth rate in 2014 was 23.9 per 1,000 women aged 15–19 years. New Zealand’s teenage birth rate is declining and births to teenage mothers are increasingly concentrated in teenagers aged 18 and 19 years. In 2013, almost three quarters (71.6%) of all teenage births were to 18 and 19 year olds (up from 66.6% in 2006). Few teenagers have more than one birth as teenagers. Of the women who had a baby aged 15 years in 2008, only 2% had a second or subsequent birth before their 20th birthday.

Māori have a higher rate of teenage births than the national rate (53.2 vs. 22.0 per 1,000 in 2013) but the Māori rate is declining at a similar rate to the national rate. Teenage birth rates are significantly higher than the national average in Northland and Gisborne, and significantly lower in metropolitan Auckland, Wellington and Canterbury, as well as in the rest of the South Island. Nationally there is a very strong correlation between the level of socioeconomic deprivation (NZDep score) and teenage birth rates and, in the regions with high teenage birth rates, a relatively large proportion of the teenage population live in high deprivation areas. Māori teenage birth rates are higher than European rates at all levels of deprivation, indicating that socioeconomic deprivation is not the sole reason for higher teenage birth rates among Māori, and that other factors, such as a cultural preference for early motherhood, may play a part.

**International comparisons in teenage birth rates**

As can be seen from Figure 111, New Zealand has a teenage birth rate that is high compared to other OECD countries, with the exception of the United States. Teenage birth rates have declined in all the countries shown in Figure 111, but not to the same degree.

![Figure 1. Teenage birth rates in selected OECD countries 2005 to 2015](http://data.worldbank.org/indicator/SP.ADO.TFRT)
Sexually transmitted infections in New Zealand young people

Chlamydia is the most commonly reported STI in New Zealand.\textsuperscript{14} This infection is often asymptomatic (in around 25\% of male cases and 70\% of female cases) but can have serious consequences if untreated, including pelvic inflammatory disease, ectopic pregnancy and both female and male infertility.\textsuperscript{14} In 2013, the ESR reported that 68\% (19,327) of positive chlamydia cases were young people aged 15–24 years.\textsuperscript{14} National disease rates were 3,080 per 100,000 for 15–19 year olds and 2,981 per 100,000 for 20–24 year olds. There were marked geographic variations in young people’s chlamydia rates. Lakes and Tairawhiti DHBs had rates around twice the national rate. Rates for young females, but not young males, declined from 2009 to 2013 (by 27\% in females aged 15–19 years and by 17\% in females aged 20–24). Testing rates were 205 per 1,000 for 15–19 year olds and 298 per 1,000 for 20–24 year olds. Young women were around five times more likely to have tests than young men but the men’s tests were more likely to be positive.

Gonorrhoea is also most commonly reported in young people. In 2013, 59\% of positive cases were aged 15–24 years. National rates were 358 per 100,000 for 15–19 year olds and 277 per 100,000 for 20–24 year olds. From 2009 to 2013, there was a 43\% increase in the rate of gonorrhoea in females in the 15–19 years age group (from 312 to 445 cases per 100,000) and a small increase in the rate for 15–19 year old males. Rates for young people in Tairawhiti, Lakes and Hawke’s Bay DHBs were much higher than the national rate.\textsuperscript{14}

The number of cases of genital warts in young people has been decreasing since 2009, which is likely to be related to the introduction of HPV vaccination onto the routine immunisation schedule for girls aged 12 years from late 2008, together with a catch-up programme targeting girls born on or after 1 January 1990.\textsuperscript{14,20,21}

Abortions in young New Zealand women

In the year ended December 2014, 44\% of all abortions were performed in women aged less than 25 years.\textsuperscript{22} In 2014 1,758 women aged 15–19 years and 4,024 women aged 20–24 years had an abortion. These figures correspond to abortion rates of 11.5 per 1,000 for women aged 15–19 years and 25.2 per 1,000 for women aged 20–24 years.\textsuperscript{22} Information on previous abortions and contraceptive use by age has not been reported for those who had abortions in 2014\textsuperscript{22} but, in 2013, 12\% of the 15–19 year olds and 32\% of the 20–24 year olds who had an abortion had previously had one or more abortions.\textsuperscript{21} In 2013, Fifty-nine percent of the 15–19 year olds and 55\% of the 20–24 year olds who had an abortion had not used contraception.\textsuperscript{21}

Since 2007, there has been a steady decline in abortion rates for young women. The fall has been especially dramatic for 15–19 year olds (from 27 per 1,000 in 2007 to 11.5 per 1000 in 2014).\textsuperscript{22} The Abortion Supervisory Committee attributed this to the licencing and funding of a long acting subcutaneous implant in August 2010.\textsuperscript{22}

Sexuality education

Young people learn about relationships and sexuality in many ways: from parents and other family members, peers, their first sexual partner, teachers, health professionals, movies, television, radio, popular music, advertising, books, magazines and other print media, the internet, social media, video games and pornography.\textsuperscript{24} This section discusses only formal sexuality education, in other words, planned health promotion interventions intended to equip young people with the knowledge and skills that will make them more likely to attain physical, emotional, mental and social wellbeing in relation to their sexuality. It takes the standpoint that all young people have a fundamental right to the information and services necessary to maintain their sexual health. It has a focus on preventing sexually transmitted infections and unintended pregnancies, not because rates of unintended pregnancy or STIs are the only or the best indicators of a population’s sexual health but because these indicators are relatively easy to quantify and commonly used as outcome measures in research studies, for assessing trends in sexual health, and for international comparisons.

Sexuality education in schools

Schools are in a special position to influence the wellbeing of adolescents since almost everyone attends school. The World Health Organization has recognised this and, in 1995, it launched the Global School Health Initiative to help improve the health of students, staff, parents and community members and increase the number of Health-Promoting Schools. Its publication Family Life, Reproductive Health, and Population Education: Key elements of a Health-Promoting School\textsuperscript{25}, states that: ‘When schools do not address family life, reproductive health, and population issues, they miss an opportunity to positively affect students’ education, quality of life and relationships, and ultimately the economy and productivity of nations’. It sets out a series of well-referenced arguments that make a case for family life, reproductive health, and population education and can be used to convince families, community members, and religious leaders that schools are able to address these issues in an
appropriate and effective way that does not lead to promiscuity. It notes that adolescents who engage in one type of risky behaviour, such as unprotected sex, are more likely to engage in other risky behaviours such as tobacco and drug use or violence, and so addressing one risky behaviour may have a positive influence on other risky behaviours.

Sexuality education in New Zealand schools

Sexuality education is one of seven key learning areas in the health and physical education section of The New Zealand Curriculum (the Ministry of Education’s statement of official policy relating to teaching and learning in New Zealand schools).26 Health education is the only part of a school’s curriculum regarding which boards of trustees are legally required to consult with their school’s community on how the school will implement the curriculum.27 Under section 25AA of the Education Act 1989 (updated in 2001), the parent of a student enrolled at any State school may get their child excluded from tuition in specified parts of the health curriculum related to sexuality education.28 All students study health and physical education from Years 1 to 10, but not all senior students choose to study health as one of their NCEA subjects.

The Ministry of Education has recently (in 2015) released new guidelines on sexuality education.27 These suggest that in the junior primary years discussions about identity, personal health, body parts, and families are woven into learning throughout the year, but that in later years specific time is devoted to learning about sexuality. They state that the Education Review Office has found that schools with effective sexuality education programmes spend at least 12–15 hours per year on sexuality education, with significantly more time allocated for programmes for senior secondary students (in years 11 to 13)29, and they recommend that all senior students engage in sexuality education, not just those studying health to achieve NCEA qualifications.

The new guidelines promote holistic and comprehensive sexuality education that not only equips students with the knowledge and skills to take care of their sexual and reproductive health, but also gives them opportunities to learn about, consider and discuss issues relating to relationships, gender, sexual identities, sexual orientation, sexual behaviour, consent and coercion, rights and responsibilities, societal attitudes and messages, sexual harassment, and pornography.27 The guidelines stress the importance of a school-wide culture where diversity is valued and students feel supported, visible and safe, regardless of their sexual and gender identity.

The research literature on sexuality education for young people

Introduction

From a global perspective the AIDS pandemic has been the main impetus for improving sexuality education. In Western developed countries, however, prevention of teenage pregnancy is the main aim of sexuality education. There is a very substantial research literature devoted to the evaluation of educational interventions to improve adolescent sexual and reproductive health.

Programme content categorises sexuality education programmes as belonging to one of three broad types:30

- **Abstinence-only** programmes promote abstinence as the only way to avoid adverse sexual health outcomes. Some stress abstinence until marriage. They generally include messages about the psychological and health benefits of abstinence and the dangers of sexual activity.31 They do not include information on safer sex strategies or contraception. If they mention condoms and contraception it is only to highlight their failure rates.32

- **Abstinence-plus** programmes have abstinence as their main message but also provide information on safer sex practices and contraception.

- **Comprehensive** programmes are similar to abstinence-plus programmes but have a focus on safer sex practices and contraception, with the benefits of delaying sex being included in the information provided. Some also provide information on, or access to, contraceptive and sexual health services. Some are part of comprehensive youth development programmes.31

Some background to research on sexuality education interventions

Evaluations of sexuality education programmes have used a variety of outcome measures to assess programmes’ effectiveness: pregnancy rates, STI rates, self-reported behavioural outcomes (condom use, delayed sex or abstinence, number of sexual partners) and proxy measures (such as changes in sexual health knowledge, attitudes and intentions, and self-efficacy).30 A study using pregnancy, birth or STI rates as outcome measures needs to be large and have long term follow-up to be likely to measure statistically significant results, and will therefore be expensive to carry out. This is probably the main reason why there have been relatively few studies that have used these outcome measures and most studies have relied on participants self-reporting outcomes.
Most studies of sexual health interventions for young people have been conducted in the US and a majority of the US studies targeted African Americans. A number of influential reviews have included only studies of prevention programmes that were conducted in the US.

It is worth remembering that health care in the US is characterised by a mix of public and private funding and that individual states have considerable autonomy. Teen pregnancy programmes tend to be commercial products (developed and researched with the help of funding from various sources including government, academic, charitable and faith-based organisations) that can be purchased by schools or healthcare providers. The US Department of Health and Human Services, through the Office of Adolescent Health’s Teen Pregnancy Program funds only evidence-based programs, that have been shown, in at least one program evaluation, to have a positive impact on preventing teen pregnancies, sexually transmitted infections, or sexual risk behaviours, therefore there is an incentive for programme developers to undertake robust evaluations of their programmes’ efficacy (using RCTs or quasi-experimental methods) and publish the results of these evaluations in peer-reviewed academic journals.

It has been argued that evidence-based interventions tend to have a narrow focus on preventing pregnancy and STIs and that they do not take account of the broad context of adolescents’ lives or the psychosocial and structural factors that shape the ways adolescents conduct their sexual lives. Schaet et al. state that there is extensive social and behavioural research documenting the influence of gender inequity, ideologies and stereotypes; sexual orientation; school and peer culture; poverty (both at the individual and neighbourhood level); racism and socio-political issues on adolescent sexual health and behaviour. They point out that, in the most disadvantaged communities, young women may feel that their life prospects are made no worse by an early pregnancy and young men may view sexual activity as a pathway to social status rather than an obstacle to socio-economic achievement. They suggest that sexuality education needs to recognise students’ diverse life courses and family formations and create opportunities for them to discuss sexual agency and risk in the context of their broader life aspirations and the multiple factors that constrain those aspirations.

Kirby’s 2007 review
In his comprehensive 2007 review for the US National Campaign to Prevent Teen and Unplanned Pregnancy, entitled Emerging Answers 2007: Research Finding on Programs to Reduce Teen Pregnancy and Sexually Transmitted Diseases, Kirby described the programmes and approaches that have reduced teen sexual risk-taking and teen pregnancy or STIs in the US. He provided a list of programmes with strong evidence of impact and described the characteristics of effective sex and STI/HIV education programmes that contributed to their success. The review considered only primary prevention of teen pregnancy (not prevention of repeat pregnancies in teen mothers), and it did not consider the efficacy of the various contraceptive measures, nor same-sex aspects of STI and HIV prevention. Studies were eligible for inclusion in the review if they had been conducted in the US between 1990 and 2007; were focussed on teens aged 12 to 18 years; examined impacts on sexual behaviour, use of condoms or other contraceptives, combined measures of sexual risk, and pregnancy, birth or STI rates; had a reasonably strong experimental or quasi-experimental research design and a sample size of at least 100 teens; measured behaviour for a sufficient length of time; and used appropriate statistical analysis.

Of the 115 studies were included in the review, 56 measured the impact of curriculum-based sex and STI/HIV education programmes and 59 measured the effect of other types of programmes (such as clinic programmes, school-based health services, welfare reforms, and early childhood or youth development programmes). Seventy had an experimental design (they were RCTs) while 45 had a good quasi-experimental design (they compared a study group with a comparison group believed to be similar to the study group although participants were not randomly assigned to one or the other group). Eighty-three of the 115 studies measured outcomes for one year or more, 40 measured outcomes for two years or more, and 26 measured outcomes for three years or more. A
large majority of the studies were underpowered and so, while they found intervention effects, these were often not statistically significant. Kirby stated that this produced a conservative bias which was probably quite large (in other words, programmes may be more effective than study results indicated).

The aim of educational interventions is to change the behaviour that leads to unintended pregnancy and STIs. Kirby stated that interventions to prevent pregnancy need to encourage both abstaining from sex (including delaying first sex, returning to abstinence, and avoiding unwanted, unintended and unprotected sex) and effective use of contraception, while interventions for reducing STIs need to encourage abstaining from sex, limiting the number of sexual partners (especially concurrent partners), increasing the time between sexual partners, reducing the frequency of sex, using condoms, getting tested and treated for STIs, and vaccination against Hepatitis B and HPV. He noted that most US teen pregnancy prevention programmes address all the relevant behaviours (abstinence and use of contraception) but most STI prevention programmes do not as they tend to address only abstinence and condom use. He stated that some STI programmes place some (lesser) emphasis on STI testing and treatment but very few emphasise the importance of having few sexual partners and almost none mention avoiding concurrent partners (and having sex with people who have them), increasing the time between partners and the value of long-term committed and caring relationships.

In addition to addressing the behaviours that lead to unintended pregnancy and STIs, interventions may address the risk factors for risky sexual behaviour. Kirby stated that research has identified more than 500 factors that either increase or decrease the chances that teens will engage in risky sexual behaviour and that some are easier to modify than others. He stated that the factors most strongly related to sexual behaviour are teens’ own sexual beliefs, values and attitudes, and that the risk and protective factors most easily changed by teen pregnancy/STI prevention programmes are the sexual ones: sexual knowledge and values, perception of peer norms, motivation and self-efficacy. He suggested that identifying groups of teens at high risk because of factors such as community and/or family disorganisation and disadvantage is useful (even though these risk factors may not be changeable in the short term) because high-risk teens can be targeted with more intensive and effective interventions.

**Curriculum-based educational programmes**

Kirby’s review reported on studies of 56 curriculum-based programmes. Eight focussed on reducing teen pregnancy, 24 on preventing STIs/HIV, and 24 on both. Eight were abstinence programmes and the remaining 48 were comprehensive programmes which encouraged both abstinence and contraceptive use.

A substantial proportion of programmes significantly reduced one or more types of risky sexual behaviour and they did not increase sexual behaviour among young people, as has been feared. Most of the studies that measured pregnancy, birth rates or STI rates did not find statistically significant effects. As explained earlier, this may reflect the difficulties and expense of conducting studies that are adequately powered to detect statistically significant results. Twelve studies measured programme impact on self-reported pregnancy rates: nine found no significant results while two found a significant decrease, and one a significant increase. Four studies measured impact on birth rates: one found a significant decrease and three found no significant impact. Ten studies measured effects on STI rates: seven found no significant results; one found a significant increase in self-reported STIs, which may have been because the programme encouraged young people to be tested and treated; and two found significant decreases in STI rates based on laboratory tests.

The review examined abstinence and comprehensive programmes separately, although the author noted that programmes fell on a continuum and were not easy to categorise. The main findings were as follows:

- A number of abstinence programmes, including abstinence-until-marriage programmes, have been rigorously evaluated and found not to have any effect on delaying initiation of sex, age at first sex, return to abstinence, contraceptive or condom use or number of sexual partners. Abstinence programmes do not seem to have any negative effects and they do not appear to hasten or increase sexual activity or reduce condom or contraceptive use.

- In contrast, comprehensive programmes have shown strong evidence of positive effects on behaviour and no significant negative effects. Two-thirds of comprehensive programmes delayed initiation of sex, reduced frequency of sex, reduced number of sexual partners, increased condom use, increased contraceptive use, or reduced risky sexual behaviour. None hastened sexual initiation or increased the frequency of sex. Almost all had a positive impact on one or more factors affecting behaviour. They improved factors such as knowledge about the risks and consequences of pregnancy and STIs; attitudes and values related to having...
sex and using condoms or contraception; perceptions of peer norms about sex and contraception; confidence in ability to refuse unwanted sex, insist on condom or contraceptive use, or actually use condoms or contraception; intentions to avoid sex or use contraception; and communication with parents and other adults about sexual matters.

- Among the weaknesses of the research studies were: few described programmes adequately; none dealt with students engaging in same-sex behaviour; some had implementation problems; an unknown number had measurement problems; and many were inadequately powered and did not adjust for multiple tests of significance or clustering. There may have been publication bias because studies with positive results are more likely to be published.

The characteristics of effective education programmes

Kirby identified 17 characteristics of effective sex and STI/HIV education programmes. He stated that most of the programmes with these 17 characteristics were effective; most effective programmes had most of the 17 characteristics; and programmes with these characteristics were more effective than those without. The 17 characteristics fell into three categories: those related to the process of developing the curriculum; those related to the overall design and teaching strategies of the curriculum itself; and those related to the process of implementing the curriculum. They are presented in Table 95. Kirby suggested that the first 13 characteristics can be used to select programmes likely to be effective, to adapt selected programmes to make them more effective, or to develop new programme curricula from scratch, and that the final four characteristics can be used as a guide for implementing effective curricula.

Table 1. The characteristics of effective curriculum-based programmes

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<tr>
<th>The process of developing the curriculum</th>
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<tr>
<td>1. Involved multiple people with expertise in theory, research, and STI/HIV education to develop the curriculum</td>
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<td>2. Assessed relevant needs and assets of the target group</td>
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<tr>
<td>3. Used a logic model approach that specified the health goals, the types of behaviour affecting those goals, the risk and protective factors affecting those types of behaviour, and activities to change those risk and protective factors</td>
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<td>4. Designed activities consistent with community values and available resources (e.g. staff time, staff skills, facility space and supplies)</td>
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<td>5. Pilot-tested the programme</td>
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<th>The contents of the curriculum itself*</th>
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<tr>
<td>6. Focussed on clear health goals—the prevention of STI/HIV, pregnancy or both</td>
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<tr>
<td>7. Focussed narrowly on specific types of behaviour leading to those health goals (e.g. abstaining from sex or using condoms or other contraceptives), gave clear messages about these types of behaviour, and discussed situations that might lead to unwanted and/or unprotected sex and how to avoid them</td>
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<tr>
<td>8. Addressed sexual psychosocial risk and protective factors that affect sexual behaviour (e.g. knowledge, perceived risks, values, attitudes, perceived norms, and self-efficacy) and changed them</td>
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Activities and teaching methods

9. Created a safe social environment for young people to participate

10. Included multiple activities to change each of the targeted risk and protective factors

11. Employed instructionally sound teaching methods that actively involved participants, that helped them personalise the information, and that were designed to change the targeted risk and protective factors

12. Employed activities, instructional methods, and behavioural messages that were appropriate to the teens’ culture, developmental age and sexual experience

13. Covered topics in a logical sequence

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<th>The process of implementing the curriculum</th>
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<tr>
<td>14. Secured at least minimal support from appropriate authorities, such as departments of health, school districts, or community organisations</td>
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<td>15. Selected educators with desired characteristics (whenever possible), trained them, and provided monitoring supervision and support</td>
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<td>16. If needed, implemented activities to recruit and retain teens and overcome barriers to their involvement (e.g. publicised the programme, offered food or obtained consent)</td>
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<td>17. Implemented virtually all activities with reasonable fidelity</td>
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Kirby D. 2007. Emerging answers 200734 https://thenationalcampaign.org/sites/default/files/resource-primary-download/EA2007_full_0.pdf. * This section is based on a review of the curricula for 19 effective programmes, five of which were from outside the US.

Gender and power issues as part of sexuality education

To be able to protect their own sexual health, young women need to be empowered to see themselves as equal partners in their relationships, and as individuals capable of being active participants in society. In their 2014 review of sexuality education in the global context, Haberland and Rogow38 stated that relatively few comprehensive sexuality education (CSE) programmes have historically emphasised gender and rights but that there is increasing evidence that an empowerment approach to CSE is particularly effective.
Comprehensive sex education that takes an empowerment approach uses curricula encompassing feminist theory — either explicitly or implicitly — which help students to understand how gender inequality is socially constructed and to reflect on and critique prevailing social norms (such as social expectations for boys to ‘score’ and the ‘double standard’). The aim is that, as students develop more egalitarian attitudes and relationships, they will adopt different behaviour and, among other positive outcomes, have better sexual health outcomes.

Haberland and Rogow reviewed sexual risk reduction programmes that had been evaluated using pregnancy and STI rates and they stated that programmes that addressed issues of gender and power were more likely to show significant positive effects on health outcomes than those that did not. Examples of successful gender-and-empowerment orientated programmes included HORIZONS, an HIV prevention intervention for young African-American women which reduced rates of chlamydial infection, and Stepping Stones, an HIV prevention programme which was associated with a 33% reduction in the incidence of Herpes simplex type 2 in a cluster-RCT conducted in South Africa. The Stepping Stones trial found that the intervention also significantly reduced the proportions of men reporting intimate partner violence, transactional sex and problem drinking at 12 months.

The publication It’s All One Curriculum: Guidelines and Activities for a Unified Approach to Sexuality, Gender, HIV, and Human Rights Education provides valuable information on sexuality education that emphasises gender equality and human rights, and critical-thinking teaching methods. It was developed by a working group comprised of three international NGOs (Population Council, IPPF, and International Women’s Health Coalition); one regional NGO (IPPF/Western Hemisphere Region); and three country-based NGOs (Girls Power Initiative/Nigeria, CREA/India, and Mexfam/Mexico).

The 2012 systematic reviews by Chin et al.

Chin et al. conducted systematic reviews for the US Guide to Community Preventive Services on two strategies for group-based behavioural interventions for adolescents to prevent or reduce the risk of adolescent pregnancy, HIV and STIs; one on comprehensive risk reduction interventions and one on abstinence education. (In the US until 2010, states could receive federal funding to implement only abstinence programmes that followed federal A-H guidelines. These guidelines stated that abstinence from sexual activity outside marriage is the expected standard for all school age children and that a mutually faithful monogamous relationship in context of marriage is the expected standard of human sexual activity.)

The reviews assessed the effectiveness of the two strategies by determining how much they reduced sexual risk behaviours, pregnancy, HIV and other STIs, and increased protective sexual behaviours. To be eligible for inclusion in the review studies had to be published in English during 1988–2007 and evaluate an intervention delivered in US schools, community settings or both. Interventions for teen parents or HIV-infected adolescents were excluded.

For each strategy the reviewers conducted meta-analyses on seven key outcomes: current sexual activity; number of sex partners; frequency of unprotected sexual activity; use of protection (condoms and/or hormonal contraception); pregnancy; and STIs.

The effectiveness of comprehensive risk-reduction interventions

Chin et al.’s review of comprehensive risk reduction interventions included 66 studies, 62 of which provided data for the analyses. Twelve were considered to have good quality of execution and 50 to have fair quality. Sixty-one percent were RCTs and the rest were controlled before-and-after studies. Interventions were almost evenly split between school and community settings and between targeted and untargeted approaches.

Percentages of recipients by school level were 35% middle school (10–14 years) and 65% high school (15–19 years). Intervention contact hours ranged from one to fifty-four, with a mean of 14.5 hours. Most interventions (80%) were delivered by an adult only, but 20% were delivered by an adult together with a peer. Most outcomes were self-reported although STIs were sometimes confirmed by laboratory testing.

All of the outcomes measured in the comprehensive risk reduction interventions showed effectiveness (Table 96). All the effects estimates, except for pregnancy rates, were statistically significant. (The risk ratio can be interpreted as the ratio of the risk of an outcome in the intervention group to the risk of the same outcome in the control group. A risk ratio of 0.75 indicates that those in the intervention group had 75% of the risk of those in the control group.)

The economic efficiency of comprehensive risk-reduction interventions
Chin et al.’s review identified ten comprehensive risk-reduction studies that included economic information. In six of the eight economic evaluations of individual interventions studies, costs per participant per year (in 2008 US dollars) ranged from $6645 to $10,02446 per person per year. The review authors stated that the wide variation was due to variability in programme content, number of participants and programme duration. The lowest cost was for a school-based programme involving curriculum-based education45 while the most expensive programme was a multi-faceted youth development intervention that included family life, sex and health education; career support; academic support; artistic expression; recreation; and physical and mental health referrals.46 Six studies reported on economic benefits from intervention: six estimated healthcare costs averted and four estimated productivity costs.

Table 2. Effectiveness of comprehensive risk-reduction interventions, as indicated by meta-analysis results

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number of studies</th>
<th>Number of study arms</th>
<th>Odds ratio (95% CI)</th>
<th>Estimated Risk Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexual activity</td>
<td>38</td>
<td>54</td>
<td>0.84 (0.75–0.95)</td>
<td>0.88</td>
</tr>
<tr>
<td>Frequency of sexual activity</td>
<td>13</td>
<td>14</td>
<td>0.81 (0.72–0.90)</td>
<td>—</td>
</tr>
<tr>
<td>Number of sex partners</td>
<td>23</td>
<td>27</td>
<td>0.83 (0.74–0.93)</td>
<td>0.86</td>
</tr>
<tr>
<td>Unprotected sexual activity</td>
<td>22</td>
<td>28</td>
<td>0.70 (0.60–0.82)</td>
<td>0.75</td>
</tr>
<tr>
<td>Protection4</td>
<td>38</td>
<td>50</td>
<td>1.39 (1.19–1.62)</td>
<td>1.13</td>
</tr>
<tr>
<td>Condoms4</td>
<td>33</td>
<td>44</td>
<td>1.45 (1.20–1.74)</td>
<td>1.12</td>
</tr>
<tr>
<td>Oral contraceptives5</td>
<td>9</td>
<td>10</td>
<td>1.29 (0.89–1.85)</td>
<td>1.22</td>
</tr>
<tr>
<td>Dual use5</td>
<td>4</td>
<td>4</td>
<td>1.21 (0.70–2.12)</td>
<td>1.17</td>
</tr>
<tr>
<td>Pregnancy</td>
<td>9</td>
<td>11</td>
<td>0.88 (0.60–1.30)</td>
<td>0.89</td>
</tr>
<tr>
<td>STI</td>
<td>6</td>
<td>8</td>
<td>0.65 (0.47–0.90)</td>
<td>0.69</td>
</tr>
<tr>
<td>HIV</td>
<td>0</td>
<td>0</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Chin et al. 201232 Notes: 1All self-reported, except for STI which were either laboratory-confirmed or self-reported; 2Couldn’t be calculated; 3Odds ratios > 1 for these outcomes indicate beneficial effects (i.e. that the intervention increased the outcome, as desired)

The review authors stated that, overall, most of the comprehensive risk-reduction studies that made a comprehensive assessment of the benefits of preventing pregnancy, STIs and HIV, and secondary benefits (such as educational attainment) found a positive economic value from investments in such interventions. They noted that there are other dimensions of positive behaviours affected by interventions (particularly youth development interventions) that are harder to quantify and value in monetary terms (such as reduced crime, better academic attainment and improved parenting skills).

The effectiveness of abstinence education

The review of abstinence education by Chin et al. included 23 studies, 21 of which were considered suitable for meta-analysis. Two of these had good quality of execution and nineteen had fair quality. Fewer than half were RCTs. Most outcomes were self-reported but STIs were sometimes confirmed by laboratory testing. Almost all participants were aged 10–14 years (only one study evaluated the intervention in older adolescents) and most were virgins at baseline. The interventions were mostly curriculum-based educational interventions focussed on preventing STIs/HIV and pregnancy which took place in school settings and were delivered by a trained adult.

The meta-analysis results indicated favourable effects on the primary outcomes of sexual activity and frequency of sexual activity but only the reduction in sexual activity was statistically significant. There were no effects found for the secondary effects of number of sex partners, unprotected sexual activity, and use of protection during sexual activity. The odds ratios for these outcomes were all close to one and not significant. There were marked differences between the RCTs and the non-RCTs. For sexual activity — the only outcome with a substantial number of data points from both types of studies — there was a significant difference in effect estimates: The RCTs had a non-significant odds ratio of 0.94, while the non-RCTs had a significant odds ratio of odds ratio 0.66. The RCTs had longer follow-up times (up to 6.5 years with a mean of 3.2 years) compared to the non-RCTs (a maximum follow-up of one year and a mean of 0.6 years). There was possible publication bias as the studies with small sample sizes (which would be more likely to produce significant results by chance) tended to have greater intervention effects than the larger studies. Overall, the findings from the review of abstinence education interventions were inconclusive.

The economic efficiency of abstinence education
The review authors noted that one expert had stated that, up until 2005, more than $1.5 billion had been spent on abstinence education interventions in the US. They stated that the only available estimate for the cost of individual programmes is the reported cost of curricula which ranged from $31 to $646 for 21 curricula47 (with an average of $220, presumably per teacher copy of the curriculum + materials such as videos and student resources, although this was not explicitly stated) and that the published information about abstinence programmes was insufficient for estimating either the economic benefit or cost-effectiveness of these programmes.

Potential harms of interventions

There is a concern that comprehensive risk-reduction interventions may encourage earlier initiation of sexual activity and greater sexual frequency of sexual activity. The findings of this review, however, indicated that comprehensive risk reduction interventions reduce both sexual activity and frequency of sexual activity in adolescents receiving such interventions. A similar concern is that abstinence education interventions make it more likely that teens will fail to use contraception if they do have sex. Most of the abstinence education studies that measured use of protection during sexual activity did not demonstrate any differences between intervention and comparison groups. Effects of abstinence interventions on consistent condom use could not be assessed as none of the abstinence education studies reported on this outcome.

Public health impact

Chin et al. stated that comprehensive risk-reduction interventions would be expected to not only to reduce sexual activity but also to increase behaviours that reduce the risks associated with sexual activity whereas abstinence education would be expected to only reduce sexual activity. They also stated that comprehensive risk reduction interventions would be expected to have a greater public health impact than abstinence education interventions even if both interventions had similar effects on sexual activity since, unlike abstinence education interventions, comprehensive risk-reduction interventions offer benefits both to adolescents who abstain from sexual activity and to those who are sexually active, and to both older and younger adolescents.

The Community Preventive Services Task Force recommendations

Based on the findings of the two systematic reviews, the US Community Preventive Services Task Force recommended group-based comprehensive risk-reduction delivered to adolescents to promote behaviours that prevent or reduce the risk of pregnancy, HIV, and other STIs.48

Parent interventions

Several recent systematic reviews have examined studies of interventions with parents and/or families which aimed to improve parent-child communication about sex, improve adolescent sexual health, or both.49-53 Table 97 provides a brief summary of these reviews. In general, interventions with parents did improve parents’ communication with adolescents about sexual matters, but there is limited evidence that they were effective in changing adolescents’ sexual behaviour. There is considerable variation between parent programmes and in the outcome measures used by evaluation studies so it is difficult to determine which kinds of parent interventions are most effective in improving parent-child communication.

Sexual and reproductive health services for young people

In addition to having a good understanding of sexual and reproductive health issues, young people need access to sexual and reproductive health services. These services include the provision of counselling and advice on sexuality, sexual abuse, contraception, abortion and sexually transmitted infections; prescription of contraceptives of various kinds; pregnancy testing; referrals for abortions; and testing and treatment for sexually transmitted infections. Such services can be provided by GPs, youth health services (including school-based clinics, youth one-stop shops, and student health services at tertiary education institutions), family planning clinics and sexual health clinics. This section looks at issues related to sexual and reproductive health services for young people (other than prenatal and obstetric care for expectant mothers). In particular, it considers what is known about what makes services effective in improving adolescent health outcomes (such as rates of STIs and unintended pregnancy); what adolescents themselves have said about what they value in services; the provision of emergency contraception; and the use of long-acting reversible contraceptives by adolescents.
Table 3. Findings from recent systematic reviews of parent interventions to improve parent-child communication about sex, improve adolescent sexual health, or both

<table>
<thead>
<tr>
<th>Author (date)</th>
<th>Number of studies included</th>
<th>Results for communication</th>
<th>Results for sexual behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gavin (2015).</td>
<td>16 (all from US)</td>
<td>12 of 16 studies showed an increase in parent-child communication about sexual and reproductive health</td>
<td>4 of 7 studies reported reduced sexual risk behaviour; 1 of 2 studies found a marginal impact on teen pregnancy</td>
</tr>
<tr>
<td>Santa Maria (2015)</td>
<td>28 (all from US, by intention). Not all focused only on parent-child communication</td>
<td>Increased parent-child communication (meta-analysis of 11 controlled trials); increased parental comfort with communication (meta-analysis of 9 trials)</td>
<td>Insufficient evidence</td>
</tr>
<tr>
<td>Wight (2013)</td>
<td>44 (25 RCTs), most from US (1 each from Mexico, S. Africa, Trinidad and Tobago, and Nicaragua). Parent intervention was often a component of a broader sexual health intervention</td>
<td>31 of 37 had a positive influence on parent-child interaction, one had a negative influence</td>
<td>11 of 21 had a positive influence on adolescent sexual behaviours; two had a negative influence</td>
</tr>
<tr>
<td>Akers (2011)</td>
<td>12 (all from US, by intention)</td>
<td>Parents (almost invariably mothers) reported improvements in multiple communication domains. Effect sizes couldn’t be calculated and studies’ results couldn’t be compared because the studies all used different measures to assess communication</td>
<td>Not assessed</td>
</tr>
<tr>
<td>Downing 2011</td>
<td>17 (all from US)</td>
<td>No relevant studies from other countries identified</td>
<td>Parent-based intervention had some positive effects on parent child communication but family-based interventions did not.</td>
</tr>
</tbody>
</table>

Sexual and reproductive health services in New Zealand

In New Zealand, there are a number of providers of sexual and reproductive health services. Many offer free services to young people. Sexual health clinics are normally free for New Zealand residents. They provide testing and treatment for STIs but do not usually provide contraception (other than condoms and the emergency contraceptive pill). Attending a family planning clinic is free to New Zealand residents aged under 22 years. Family planning clinics provide a wide range of sexual and reproductive health services including contraception, STI testing and treatment, cervical smears, abortion counselling and referrals, and help with sexual dysfunction and gynaecological problems. Many DHBs fund free sexual health services (including contraception) for young people who are enrolled with Primary Health Organisations (age limits vary and there may be a limit on the number of free visits per year). These services are often delivered in general practices, particularly in smaller towns. Youth One Stop Shops provide a range of free social and health services, including sexual and reproductive health services.

Most New Zealand high schools provide health services. Most commonly these are provided by visiting health professionals, but some schools have on-site health professionals. Because the government has specifically allocated funding for health services in low-decile schools, it is high decile schools and private and integrated schools that tend to have no health services beyond first aid provision. (The Ministry of Education assigns each school a decile rating: the lower a school’s decile, the higher the proportion of students that are from low socio-economic backgrounds.) There is wide variation between schools in the level of sexual health services provided by health professionals working in or visiting schools and this is generally related to boundaries set by principals and boards of trustees.

Barriers to service access

There are a number of barriers that can prevent a young person accessing services to meet their sexual and reproductive health needs or deter them from returning to a service. These barriers can exist at various levels: at the policy level (e.g. some counties have laws prohibiting the provision of contraception to under-age or unmarried adolescents); the operational level (e.g. services having inconvenient operating hours, being too far away or too expensive); and the personal level (e.g. not recognising the signs of a health problem; not knowing what services are available; being too scared or embarrassed to phone or visit a service).
A recent review by Bender and Fulbright (2013) presented a content analysis of quantitative and qualitative studies (published between 2000 and 2010) dealing with barriers to access and utilisation of sexual and reproductive services, as perceived by 10 to 25 year olds. It included 17 studies conducted in the Western world (12 from the UK, three from Canada and two from the US) and it aimed to answer the question: How do young people perceive the barriers to sexual and reproductive health services?

The review authors classified the barriers identified in the studies into four categories: service access (factors which might make it difficult for young people to go to services); service entry (factors related to a young person’s experience from the time they entered the clinic until they received attention from a health practitioner); quality of services; and personal factors. They regarded personal factors as factors which had personal relevance to young people on a cognitive, affective or relational level, and which were related to their own integrity. They considered this to be a central category, and they presented the following classification of barriers (Figure 1).

They reported that, although the 17 articles in their review identified different types of barriers to sexual and reproductive health clinics, they did not give any indication of the degree to which the barriers hindered young people accessing sexual and reproductive health clinics. Collectively, the articles reviewed indicated that it was the personal perceptions of young people (i.e. the personal factors) that were the most important. Privacy and confidentiality were extremely important: young people did not want anyone to find out they had visited a clinic.

Carroll et al. investigated both barriers and facilitators to young people’s use of school-based and school-linked sexual health services in a systematic review of studies that had explored the views and experiences of young people (aged 11 to 18 years). In total the review included 19 studies, 12 from the US and seven from the UK, none of which were included in Bender and Fulbright’s review.

The authors undertook a thematic analysis of the studies and they reported that the principal themes that emerged were (in no particular order):

- awareness and need (students need to know of the existence of services and the reasons they might need to visit one)
• confidentiality and disclosure (students don’t want anyone to find out they have visited a service, or to disclose their name, age and the reason for their visit to the receptionist if they can be overheard by others in the waiting room)
• staff attitudes (students value staff who make them feel comfortable and relaxed, and are friendly, supportive, helpful, welcoming, non-judgmental and caring)
• staff gender (students like to be able to choose the gender of the health practitioner they see); location (convenience is valued)
• visibility of service (students don’t want to be seen entering a sexual health service, so discrete signage and integrating sexual health services with other health services is helpful)
• convenient opening hours (e.g. lunchtimes and after school)
• a pleasant physical environment; cost of services (free is preferred)
• availability of information, advice and contraception

Baxter et al. reviewed 59 papers reporting on UK studies examining views of service providers and young people concerning delivery of contraceptive services. Important themes they identified were:
• perceptions of particular services (e.g. family planning is for older couples; clinics are for girls)
• accessibility of services (young people generally prefer convenient locations although some will travel to more distant clinics to reduce the chance of meeting someone they know)
• opening hours (Saturdays and after school preferred)
• appointment systems (young people like to drop in, but they also don’t like to wait long)
• embarrassment, anonymity and confidentiality (young people don’t want to be seen at a clinic or called out by name; the use of numbers instead of names was suggested; the possibility of being recognised is a greater problem in smaller centres)
• pleasant clinic environment
• respectful and non-judgemental staff who are easy to talk to
• links between services (e.g. between school-based and other services)
• staff training.

What makes a service youth-friendly?
It is important that health service providers make services relevant and attractive to adolescents. The World Health Organization has stated that adolescent-friendly health services need to be accessible, equitable, acceptable appropriate, comprehensive, effective and efficient.

A recent systematic review by Brittain et al. aimed to describe key characteristics of youth-friendly family-planning interventions and summarise the evidence regarding the effect of youth-friendly family planning services on reproductive health outcomes.

Thirteen studies discussed key characteristics of youth-friendly family-planning services: one from the perspectives of both providers and young people, nine from the perspectives of young people only, and four from the perspectives of providers only. The youth friendly characteristics identified were: (ordered according to the number of studies identifying the characteristic)
• Confidentiality: What is discussed between patient and provider will not be shared with anyone else without the patient’s explicit consent (13 studies)
• Accessibility: Convenient location; low cost or free; access to transport; outreach; opening hours; short waiting times; both by appointment and ‘drop in ’ visits available ; pleasant atmosphere at entrance; offering a range of contraceptive options (11 studies)
• Provider interaction: Sufficient time is allowed to build a rapport between provider and patient; providers engaging in one-to-one vs. group education; providers being respectful and non-judgmental (11 studies)
• Integration: Providing family planning services in setting such as youth clubs, or in settings also providing other health services such as mental health services or comprehensive health services (7 studies: 4 of young peoples’ and 3 of providers’ perspectives)
• Specialised staff training: Staff have received training on communicating with young people about reproductive health (5 studies; 4 of young peoples’ and 1 of providers’ perspectives)
• Accommodating young people’s preferred provider characteristics: for example being a particular gender, or type of practitioner, such as a doctor, nurse or social worker (4 studies of young people’s views)
• Involvement of parents and/or families (4 studies: 2 of young peoples’ and 2 of providers’ views)
• Peer involvement: the use of peer health providers, peer educators, or peer support groups within the clinic (3 studies: 2 of young peoples’ and 1 of providers’ views)
• Cultural competence: providers and clinics have the behaviours, attitudes and policies to enable effective service provision in cross-cultural situations (1 provider study)

**Do youth-friendly services produce better outcomes?**

Brittain et al. 65 also identified six studies that examined the effects of youth-friendly family planning services on reproductive health outcomes. Study sample sizes ranged from 163 to 1,590 and the age of study participants from 12 to 24 years. There were two prospective cohort studies and one each of the following study types: pre-post with one study group, analysis of repeated population surveys, cross-sectional, and non-randomised trial.

Three studies examined impacts on long term outcomes (i.e. teen or unintended pregnancy rates and abortion rates). Two of these found that youth-friendly family planning service components were associated with statistically significant reductions in teen pregnancies while the third66, an evaluation of a new contraceptive clinic for teens in Nottingham, UK for the years 1986 to 1992, found a statistically significant increase in pregnancy, birth and abortion rates.

Three studies examined impacts on medium-term outcomes and all found positive outcomes related to contraceptive use including increased odds of consistent use of birth control from first to last visit, increased odds of use of effective birth control, increased clinic utilisation (following an intervention at a Teen Clinic), and greater use of chosen contraceptive method at six and 12 month follow-up.

All three studies that examined short term impacts found significant effects, including increased positive ratings for aspects of the clinic experience, satisfaction with opening hours, and increased patient knowledge.

Overall, the review by Brittain et al.65 found that there was limited evidence that youth-friendly family planning service improve reproductive health outcomes for young people because the body of evidence lacked rigorous study designs and had high risk for bias. The authors were unable to draw definitive conclusions because each study examined different youth-friendly services interventions, and each intervention employed different strategies to increase young people’s access to services (e.g. hours to suit teenager’s schedules or drop-in appointments) or improve quality of care (e.g. specialised staff training). They did, however, note the following characteristics of interventions that were associated with reduced teen pregnancy rates and improved use of contraceptives: clinic-based services with peer providers, follow-up phone calls, and outreach efforts, and services that emphasised in-depth counselling, education tailored to an adolescent’s level of development, and provision of social support and reassurance. They also noted that another intervention that offered free services, tailored hours, peer group reproductive health discussion, and outreach in local schools was associated with increased use of services.

**Emergency contraception**

It is common for young people to have sex without using contraception.¹ When young women seeking abortion are asked why they did not use contraception, common reasons given are that they were not planning to have sex, they were ‘in the moment’, and they had been drinking.⁶⁷-⁶⁹ Emergency contraception is the use of drugs (the ‘morning after pill’) or devices (the copper IUD) to prevent pregnancy after intercourse where no contraceptive method has been used or there has been a mishap in contraceptive use (such as a condom breaking or forgetting to take oral contraceptive pills).⁷⁰,⁷¹

**The emergency contraceptive pill**

The most widely used emergency contraceptive pill (ECP) is 1.5 mg levonorgestrel (LNG), taken either as a single dose or in two 0.75 mg does roughly 12 hours apart.⁷⁰ (In New Zealand women are offered Postinor-1, a single-dose formulation which contains 1.5mg of levonorgestrel. ⁷２) There has never been a placebo-controlled trial of the efficacy of the ECP, but efficacy has been estimated by comparing the number of observed vs. expected pregnancies in women given the ECP. Two influential World Health Organization studies have indicated that LNG-ECP is highly effective. In the first study⁷³, 11 out of 976 (1.1%) women became pregnant,
when 76 (7.8%) would have been expected to, indicating an efficacy of 86%. In the second 74, 44 out of 2712 (1.6%) women became pregnant when 216 (8%) would have been expected to, indicating an efficacy of 80%.

(Efficacy is not the same as the percentage of women who do not get pregnant. The latter statistic is considerably greater than the efficacy because not all women would be expected to get pregnant following a single episode of sex, even if they used no contraception. In the two studies cited above the percentage of women who did not get pregnant was > 98%.)

The efficacy of LNG-ECP is reduced in women who have sex during the fertile window of their menstrual cycle (from five days before to one day after ovulation), and was found to be 60–68% in two other studies. 75

A 2012 Cochrane review76 found that the one and two dose LNG regimens were of similar effectiveness, and that women who took LNG within 72 hours of intercourse were significantly less likely to get pregnant than those who took it after 72 hours. Side effects from LNG-ECP are generally tolerable, and include nausea, vomiting, heavier than normal menstrual bleeding, fatigue, diarrhoea, dizziness and breast tenderness.77 Recently, there have been concerns that LNG-ECP is less effective in heavier women (those weighing more than 70 kg).75 This has led to recommendations that heavier women should be offered a copper intra-uterine device instead of the ECP. 75,78

Emergency contraceptive pills can be purchased over-the-counter from pharmacies in many countries70 including New Zealand (at a cost of $30 to $5079). In New Zealand, at family planning clinics80 and often at GPs (through funding from DHBs), the consultation and prescription is free for young people but there is normally a $5 charge to fill the prescription at the pharmacy.79 Some DHBs, including Nelson Marlborough81 and Waikato82 fund pharmacies to provide free emergency contraceptive pills, with or without a prescription.

Is advance provision of emergency contraceptive pills of benefit?

Emergency contraceptive pills are most effective if they are taken as soon as possible after unprotected sex.83 Providing women with a supply of emergency contraception to use as needed allows women rapid access to the medication when they need it. A Cochrane review 84 summarised the evidence evaluating advance provision of emergency contraceptive pills, published up until November 2009. None of the 11 individual RCTs included in the review found significant effects on pregnancy rates, including the two studies that were adequately powered to detect such a difference. Results from pooled analyses also showed no significant differences between pregnancy rates in the advance provision and control groups. There was no evidence that advance provision had a negative impact on sexual and reproductive health behaviours and outcomes.

Copper IUDs for emergency contraception

The copper IUD is the most effective method of emergency contraception and the only emergency contraceptive method to provide on-going protection against pregnancy.76,85 Cleland et al. reviewed 42 studies published in English or Chinese (up until August 2011) with a defined population of women who presented for emergency contraception and were provided with an IUD, and in which the number of pregnancies was ascertained and loss to follow-up was clearly defined. Almost all reported on copper IUDs. Most studies (31 or 74%) followed the standard protocol of inserting the IUD within five days of unprotected intercourse. The pregnancy rate (after one outlier study was excluded) was 0.09%, indicating that the copper IUD is by far the most reliable emergency contraceptive option.

There have been a number of recent studies exploring the awareness of and interest in IUDs among women seeking emergency contraception. These have identifies barriers to IUD use including cost, waiting time (patients cannot always get an IUD on the day they present for emergency contraception), low levels of awareness and understanding of IUDs among patients, and lack of provision by providers.86-89 Two US studies of adolescents and young women presenting to family planning clinics reported that, when counselled about IUDs for emergency contraception, 13%–15% of them would choose an IUD, and that more would do so if IUDs could be provided on the same day and at no cost.86,88

Long-acting reversible contraception

The effectiveness of condoms and oral contraceptive pills in preventing pregnancy depend on correct and consistent use. Typical failure rates for the contraceptives commonly used by teens, such as condoms and the oral contraceptive pill, are much higher than failure rates for perfect use.90 In contrast, the effectiveness of long acting reversible contraceptive (LARC) methods, which include copper intra-uterine devices, progestogen-only injectable contraceptives, progestogen-only intrauterine devices, and progestogen-only subdermal implants, does not depend on daily compliance.90

Adams J. Young People’s Sexual and Reproductive Health in The Health Status of Children and Young People in New Zealand 2015. www.otago.ac.nz/nzcyes/
Expert opinion is that LARC methods are generally under-utilised.90 The American College of Obstetricians and Gynecologists has stated that, because LARCs have top-tier effectiveness, high rates of satisfaction and continuation, and no need for daily adherence, LARC methods should be first-line recommendations for all women and adolescents.91 The UK’s National Institute for Health and Care Excellence has stated that all currently available LARC methods are more cost effective than the combined oral contraceptive pill even at one year of use.92

There is evidence, including evidence from a New Zealand study93 which explored attitudes to contraception, and particularly LARC, among young women seeking abortion, that, when they are provided with accurate information, and cost barriers are removed, young women view LARC methods favourably.94

The contraceptive CHOICE Project was a prospective cohort study of 10,000 women in the St. Louis region of the US who were aged 14–45 years, wished to avoid pregnancy for at least one year and were initiating a new form of reversible contraception.94 Women recruited into the study were provided with contraceptive counselling and offered the contraceptive method of their choice at no cost for three years. Of the first 2,500 women enrolled, 63% were aged < 26 years. Of the 2,500 women, 67% chose long acting methods: 56% chose an intrauterine method (47% a levonorgestrel IUD and 9% a copper IUD) and 11% a subdermal implant. Although the study found statistically significant associations between demographic and behavioural factors and acceptance of LARCs, these associations were small and considered unlikely to be clinically meaningful. The study authors suggested that this indicated that LARC methods are acceptable to and wanted by a wide range of women seeking contraception.

**Progestogen-only injectable contraceptives**

Progestogen-only injectable contraceptives are slow release preparations. Depot medroxyprogesterone acetate (DMPA, trade name Depo-Provera®), which is given every 12 weeks, is the only progestogen-only injectable available in New Zealand.95 It is very effective at preventing pregnancy. The estimated percentage of women experiencing an unintended pregnancy during the first year of use is 0.2%, while the percentage for typical use in the US has been estimated to be 6%.96 The main factor in less than perfect use is failure to get repeat injections on time.

It is common for women to have irregular or prolonged bleeding in their first three to six months on DMPA. Amenorrhoea is common with longer DMPA use.90,97 There have been concerns about the effects of DMPA on bone mineral density (BMD), especially in young women who have not yet attained their peak bone mass. Cross-sectional studies have indicated that BMD in DMPA users is usually lower than that of non-users, but within one standard deviation.98 Longitudinal studies have found that there is a greater decrease in BMD over time in DMPA users than non-users, but women gain BMD when they stop using DMPA.98 A recent Cochrane review identified two studies providing moderate quality evidence of increased fracture risk for longer current use of DMPA users, plus two lower quality studies, one of which found and increased fracture risk while the other did not.99 The review did not provide any data specifically on adolescents. The authors stated that adolescents are unlikely to have fractures related to skeletal fragility as these are rare in pre-menopausal women.

**Progestogen-only subdermal implants**

Contraceptive implants are inserted beneath the skin on the inside of the upper arm and slowly release progestogens into the circulation. There are two brands available in New Zealand: Jadelle®, which is fully subsidised and lasts for up to five years (2 rods, each containing 75mg levonorgestrel) and Implanon NXT® which costs around $270 and lasts for up to three years (1 radio-opaque rod containing 68 mg etonorgestrel).100,101

Implants are very effective at preventing pregnancy. Their forgettable nature is appealing to women.102 A 2007 Cochrane review reported on research comparing different implants in RCTs.103 Follow-up data from these studies indicated that there were three pregnancies in 2307 women years with Jadelle® and none in 2068 women years with Implanon®, equating to pregnancy rates of 0.13 and 0 per 100 women years respectively. The most common side effect of implants is changes in bleeding patterns, including infrequent, frequent and/or prolonged bleeding, as well as amenorrhoea.104 Bleeding disturbances, especially frequent and/or prolonged bleeding, are the most common reasons women discontinue implants prematurely.102,104 A Scottish study which followed up 324 women who had chosen Implanon® in a community family planning clinic found that, of the 68 women who discontinued Implanon® within one year, 62 (91%) did so because of unwanted side effects, the most common being frequent and/or unpredictable bleeding. (n=42, 62%).105
There are drugs which can be used to manage troublesome bleeding patterns\textsuperscript{106,107} but these may not be acceptable to all women. One Dutch study found that most women with troublesome bleeding refused to accept additional medications and asked for the removal of the implant.\textsuperscript{104}

**Intrauterine devices**

There are two types of intrauterine device (IUD) available in New Zealand: the copper IUD, which contains copper, and the levonorgestrel intrauterine system (LNG-IUS, brand names Mirena\textsuperscript{8} and Jaydess\textsuperscript{8}), which is a hormone-releasing IUD that slowly releases progestogen into the uterine cavity. Jaydess\textsuperscript{6} (known as Skylla\textsuperscript{8} in the US) is a newer LNG-IUS, which is slightly smaller than Mirena\textsuperscript{8}, lasts for three years, and is promoted as being especially suitable for young women who have not had children. There are also small-sized frameless copper IUDs which may be especially suitable for nulliparous women with a small uterine cavity, but these are not available in New Zealand.\textsuperscript{108} Only the copper IUD is fully subsidised: young people need to pay around $300 for Mirena\textsuperscript{8} or Jaydess\textsuperscript{8}, unless they meet Pharmac’s strict criteria for heavy menstrual bleeding.\textsuperscript{109} (Family Planning charges $340 for Mirena\textsuperscript{8} and $275 for Jaydess\textsuperscript{8}.)\textsuperscript{79} Intrauterine devices are very effective at preventing pregnancy. Failure rates during the first year of use have been estimated to be 0.6% to 0.8% for copper IUDs and 0.2% for Mirena.\textsuperscript{90}

Copper IUDs may cause increased menstrual flow and painful menstruation whereas the LNG-IUS typically produces irregular bleeding or spotting in the first months of use followed by oligomenorrhoea or amenorrhoea after longer use.\textsuperscript{110} Unacceptable vaginal bleeding or pain is the most common reason for women requesting IUD removal.\textsuperscript{110} Barriers to increased use of IUDs by adolescents include lack of awareness, cost, and health provider reluctance to recommend IUDs to women who have not had children and who may have multiple partners (because of outdated worries about STI-induced pelvic inflammatory disease and subsequent infertility).\textsuperscript{111,112} The American College of Obstetricians and Gynecologists has stated that, although few studies have focussed exclusively on adolescents, current evidence suggests that the relative risk of pelvic inflammatory disease is increased only in the first 20 days after IUD insertion and then returns to baseline, while the absolute risk remains small, and that prompt treatment of chlamydia identified at the time of IUD insertion will make developing pelvic inflammatory disease unlikely.\textsuperscript{112}

Another concern is that insertion of an IUD is more difficult and/or painful in a woman who has not had children because the cervix is more tightly closed. Bayer et al.\textsuperscript{113} reported on a retrospective cohort study which compared the insertion and post-insertion experiences of 220 nulliparous and 87 parous teenagers (30 of whom received their IUD post abortion). The mean age of study subjects was 18 years, range 15 to 19 years). The vast majority of study subjects (296 out of 307, 96%) had a successful IUD insertion on the first attempt; all of the 11 unsuccessful insertions were in nulliparous teens. Seven of the 11 had successful insertions on the second attempt and there were four failed insertions. Most of the study subjects having interval IUD insertion (i.e. not post abortion) received only ibuprofen or paracetamol and topical lidocaine gel or spray to the cervix for relief of insertion pain (269/277, 97%). (The 2015 Cochrane review on interventions for IUD insertion found that Lidocaine 2% gel, misoprostol, and most NSAIDs did not help reduce pain but that some lidocaine formulations, tramadol, and naproxen had some effect on reducing IUD insertion-related pain in specific groups.\textsuperscript{114})

A prospective study of 109 nulliparous women, aged 18–30 years, who had an IUD placed at a student health clinic at Cornell University (88 LNG-IUS users and 21 Copper T 380A IUD users) and were followed up at one, six, 12 and 18 months after insertion reported high overall satisfaction.\textsuperscript{115} At follow-up survey (after mean use of 13.4 months) 83% of women were ‘happy’ or ‘very happy’ with their IUD, with no differences in satisfaction between users of the two types of IUD. A majority of women (75%) reported that the insertion went ‘very well’ even though 78% rated insertion pain as moderate to severe. At 12 months, the continuation rate was 89%. Reasons for discontinuation were expulsion (3%), side effects (6%), lack of anticipated benefit (1%) and pregnancy (1%). Compared to users of the LNG-IUS, users of the Copper T 380A were more likely to have heavy menses (74% vs 2%, \(p<0.0001\)) or moderate to severe cramping (68% vs 20%, \(p=0.0002\)). During the study period, there were no uterine perforations and no diagnoses of pelvic inflammatory disease. The rate of failed insertions was 6.2%.

**Conclusions**

In New Zealand, the median age at which women have their first baby is around 28 years\textsuperscript{116} yet the median age at which young people first have sex is around 17 years.\textsuperscript{18} It is therefore clear that, in our society, most people wish to have sex long before they wish to be a parent and that they need to be able to control their fertility
through contraception and, as a last resort, through abortion (if that is what they want). Having several sexual partners over time is the norm\textsuperscript{11,117} and having sex with people who have had previous partners puts a person at risk of contracting a sexually transmitted infection. There is a clear link between alcohol abuse and promiscuity and unprotected sex.\textsuperscript{13,118}

All over the developed world, governments are concerned about teenage pregnancy rates. There is considerable variation in teenage birth rates between developed countries and New Zealand’s rate is high by OECD standards.\textsuperscript{16} Teenage birth rates are falling in New Zealand and in other developed countries.\textsuperscript{16} This suggests that broader global trends, such as greater educational opportunities for young women along with improved contraceptive technology (and access to it), are responsible for the decline rather than any particular national public policies.\textsuperscript{119}

Young people need comprehensive sexuality education at school to equip them with the skills and understandings to take care of their sexual health. Research indicates that the effective sexuality education addresses the risk and protective factors that are most easily changed by teen pregnancy/STI prevention programmes: sexual knowledge and values, perception of peer norms, motivation and self-efficacy. There is no evidence that providing young people with comprehensive sexuality education hastens their sexual debut or increases their sexual activity.

In addition to having a good understanding of sexual and reproductive health issues, young people need access to sexual and reproductive health services. It is important to minimise barriers that deter young people from accessing services. The greatest barriers are probably embarrassment and fear that confidentiality will not be maintained. Young people generally don’t want it known that they have visited a sexual health service. Other barriers include inconvenient service locations or opening hours, transportation difficulties, and cost.

Research has identified a number of characteristics that make services youth-friendly: confidentiality, accessibility, respectful and non-judgmental staff, integration of sexual and reproductive services with other health services, specialised staff training, accommodating young people’s preferred provider characteristics (such as wishing to see a provider of a particular gender), involvement of parents of families (where this is desired), peer involvement (for example having young staff or peer support groups), and cultural competence.

Highly effective contraceptive methods are available but awareness and utilisation of these methods, particularly long-acting reversible methods, is not as high as it could be. Since it is common for young people to have unprotected sex, it is important that all young people have access to emergency contraception. Some DHBs fund pharmacies to provide the emergency contraceptive pill free without a prescription. Although there is no high quality evidence that providing people with an advance supply of the emergency contraceptive pill reduces unintended pregnancies, common sense would suggest that this approach could be of benefit, particularly to teenagers in remote and rural areas. The copper IUD is the most effective form of emergency contraception, and it is especially recommended for heavier women among whom the emergency contraceptive pill is less effective.

Long active reversible contraceptives (LARCs), including implants, the copper IUD and the levonorgestrel intrauterine system (Mirena\textsuperscript{8} and Jaydess\textsuperscript{8}) have very low failure rates and do not require daily compliance, characteristics that make them ideal for women determined to avoid pregnancy. There is a lack of awareness among health professionals and young people that intrauterine devices are suitable for women who have not had children and who may have multiple partners. Given the choice of having either a copper IUD or a levonorgestrel intrauterine system, a majority of women would likely choose a levonorgestrel intrauterine system because it reduces or eliminates menstrual bleeding whereas the copper IUD tends to increase it. In New Zealand this choice is denied to women who cannot afford to pay the high cost of levonorgestrel intrauterine system, since Pharmac funds only the copper IUD.

Providing young people with comprehensive sexuality education and free access to sexual health services will not be enough to eliminate sexually transmitted infections and unintended pregnancies in young people. Alcohol abuse is a major factor leading to unprotected and risky sexual behaviours so changing New Zealand’s drinking culture is an important public health goal. When disadvantaged young women are empowered to see a future for themselves that includes completing their education and having a career that will allow them greater economic independence and greater ability to provide for any children they may eventually have, then they will be less likely to see early motherhood as their only path into adulthood, and less likely to be ambivalent about the possibility of pregnancy when they have sex.
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