NHS

Health Development Agency

Reducing the rate of teenage conceptions

A review of the international evidence on preventing and reducing teenage conceptions:

the United States, Canada, Australia and New Zealand

Sarah Cheesbrough, Roger Ingham and Doreen Massey

Acknowledgements

The authors would like to thank the following people for their assistance with this report.

Professor Peter Bearman	Department of Sociology, Columbia University, USA
Dr Vivien Daley	Department of Public Health and General Practice, Christchurch School of Medicine, New Zealand
Dr Peter Davies	Department of Community Health, Auckland University, New Zealand
Dr Nigel Dickson	Department of Preventive and Social Medicine, University of Otago, New Zealand
Associate Professor Gary Dowsett, *Dr Lynn Harrison* and *Dr Paul Van de Ven*	Australian Research Centre in Sex, Health and Society, La Trobe University, Melbourne, Australia
Associate Professor David Fergusson	Christchurch School of Medicine, New Zealand
Professor Frank Furstenberg	Department of Sociology, University of Pennsylvania, USA
Dr Anne Grunseit and *Dr Juliet Richters*	National Centre for HIV Social Research, Macquarie University, Australia
Dr Kim Johnstone and *Professor Ian Pool*	Population Studies Centre, University of Waikato, New Zealand
Ros Kane	Health Promotion Research Unit, London School of Hygiene and Tropical Medicine, UK
Dr Alan King	Social Program Evaluation Unit, Queens University, Kingston, Ontario, Canada
Associate Professor Susan Kippax	Department of Psychology, Macquarie University, Australia
Sharon McMahon	Sexual and Reproductive Health Unit, Health Canada, Canada
Tom Moultrie	Centre for Population Studies, London School of Hygiene and Tropical Medicine, UK
Julie Pentick	Planned Parenthood Federation of Canada, Canada
Professor Peter Saunders	Social Policy Research Centre, University of New South Wales, Australia
Dr Stefania Siedlecky	Department of Demography, Macquarie University, Australia
Professor Richard Udry	Carolina Population Center, University of North Carolina at Chapel Hill, USA
Professor Barbara Wolfe	Institute for Research into Poverty, University of Wisconsin, Madison, USA

About the authors

This report was prepared by the Centre for Sexual Health Research, University of Southampton, for the Health Education Authority, as part of the Cabinet Office Social Exclusion Unit review of policies for preventing teenage conceptions. It was reprinted with amendments by the Health Development Agency (HDA) in 2002. The authors are Sarah Cheesbrough (Department of Social Statistics, University of Southampton), Roger Ingham (Department of Psychology, University of Southampton), and Doreen Massey (Independent Health Skills Consultant).

HDA Research Manager: Joanna Goodrich.

Health Development Agency
Holborn Gate
330 High Holborn
London WC1V 7BA

Telephone: +44 (0)20 7430 0850
Facsimile: +44 (0)20 7061 3390
www.hda-online.org.uk

ISBN 1-84279-078-1

Contents

Figures and tables

Figures

Tables

Executive summary

This report examines the variation in teenage conception and birth rates across the United States, Canada, Australia and New Zealand. The US continues to have the highest rate of teenage conceptions and births of the four countries (despite a decline since 1991) with a birth rate of 54.4 per 1000 15–19-year-olds in 1996. All the countries show a great deal of variation by region and race or indigenous origin. In the US, birth rates to black teenagers have been around double those of white non-Hispanic origin; however, this gap has been closing and there is much variety among black and white teenagers across different states. Australian teenage pregnancy rates are the lowest of the four countries with a birth rate of 20.5 per 1000 15–19-year-olds in 1995. However, rates are higher among indigenous groups as well as in more rural areas. Canadian teenage birth rates lie between these two countries at 25.1 births per 1000 in 1995; again there is variation between the regions of the country, potentially reflecting the isolation and social disadvantage of some areas. New Zealand has quite a high rate of pregnancy at 34.0 per 1000 in 1995, which is partly attributable to the higher birth rates among indigenous Maori and Pacific Islander teenagers. Teenagers in all four countries are more likely to terminate a pregnancy by abortion than those in older age groups. In the US around 35% of pregnancies among 15–19-year-olds are terminated compared to 45% in Canada. Again, there is a great deal of regional variation within countries. Teenagers aged 14 years or younger who become pregnant are most likely to have a termination.

The median age of first intercourse appears to be around age 17 in all four countries. Overall, teenagers who become sexually active are more likely to use condoms or other contraception than teenagers in the 1980s. However, women who experience first intercourse at a younger age or with an older partner are more likely to report that the sex was unwanted and are less likely to use contraception. Indeed, evidence from the US and Canada indicates that the partners of those teenage women who do become pregnant are likely to be over 20 years of age.

Inequitable income distribution is positively linked to higher rates of teenage conceptions and those with the lowest aspirations for the future are more likely to become teenage mothers. The family and neighbourhood can have a strong effect on a teenager's chances of becoming pregnant – through educational support, communication about sex and its media images, and transmission of attitudes towards gender equality. In the US, teenagers with strong religious beliefs may delay first intercourse but some have also been found to be more likely to have unprotected sex when they do become sexually active. Furthermore, in some communities where a large number of young women have taken a 'pledge' to remain a virgin until marriage, sexual activity among the remaining women has been found to rise, possibly as they find themselves under more pressure to engage in sex. Early sexual activity is often inter-related with a range of problem behaviours such as drinking or drug-taking, and prevention strategies must take this into account. Legal frameworks for age of consent or marriage are not related to conception rates.

Sex and contraceptive education has not been found to increase sexual activity at an early age and improves the chances of eventual condom or other contraceptive use. Abstinence only campaigns have not been found to either delay first intercourse or reduce levels of sexual activity. HIV/AIDS education programmes are very effective in increasing condom use, possibly as these projects have been relatively well funded. Teenagers respond to outreach programmes in schools and communities that reduce the barriers to information about sex and contraceptive availability. Above all else, raising the aspirations of girls from a very young age has a direct effect on their chances of becoming a teenage mother; those who perceive that they have more to lose by becoming a young mother are less likely to become pregnant. Even a pre-school 'head start' programme for disadvantaged children has been linked to the lower incidence of conception among that cohort when they became teenagers. With proper training and support peer educators can provide valuable role models for younger children, as can using respected sport or pop stars in media campaigns.

This report recommends that policy initiatives should focus on tackling the root causes of social dislocation and low aspirations that lead to higher levels of teenage pregnancy by targeting educational opportunities and aspirations from pre-primary age onwards. For teenagers, programmes that improve young people's knowledge and access to contraceptive services do not in themselves increase levels of sexual activity and will improve effective contraception use.

Foreword

Teenage pregnancy can be associated with adverse social and health outcomes for the young parents and their children.

The Social Exclusion Unit has been asked by the Prime Minister:

> *to work with other departments, building on the work already undertaken by the Department of Health, to develop an integrated strategy to cut rates of teenage parenthood, particularly underage parenthood, towards the European average, and propose better solutions to combat the risk of social exclusion for vulnerable teenagers and their children.*

Young people, their parents, teachers, professionals working in health and local authorities, and members of national and local organisations will need to work together to set and implement an agenda for change. However, effective and appropriate action must be informed by sound research and evaluation.

What, then, are the current priorities for research? It is important to understand the variation and variability in conception rates in young people by geographical area and by social and cultural backgrounds. How does the experience of teenage pregnancy in the UK compare to that of other countries?

The Health Education Authority (HEA) has commissioned a number of reviews on teenage conceptions. One of the reviews analyses data from other European countries, and this particular one examines four English-speaking countries – the United States, Canada, Australia and New Zealand – reporting on the particular circumstances of sexually active teenagers in the different countries, reviewing intervention programmes, and drawing conclusions on findings that are relevant to the UK situation.

This work has been supported by the Department of Health.The HEA is delighted to disseminate the findings to encourage further debate and discussion about both practice and policy in this most challenging area.

Professor Pamela Gillies
Research Director
Health Education Authority, 1999

1 Background and research methods

This review was commissioned by the Health Education Authority (HEA) as part of a programme of research into teenage conceptions across different countries that feeds into the Social Exclusion Unit's review of teenage parenthood. This publication covers the United States, Canada, Australia and New Zealand.

Aims

The principal aims of the review were:

- to collate data on the variation in teenage conception and birth rates, and the factors with which they are associated, across the countries;
- to report on the particular circumstances of those who engage in sexual activity under the age of 16;
- to review the range of interventions and programmes designed to reduce teenage conceptions and the evidence of their effectiveness in comparison to the influence of broader economic and educational prospects for adolescents;
- to draw conclusions on findings that are relevant to the UK situation.

Methods

This project has been completed as a rapid response to the request for policy information made in November 1998. The research questions have been addressed by searches of literature databases (see Appendix C), peer-reviewed journals and a large number of governmental and inter-governmental statistical reports. Further information has also been gathered from academics and policy advisors who have responded to approaches for information. Finally, Internet searches have produced a vast amount of statistical, political and legal information. Evidence is rarely available for all four countries on every issue and, although there are many local clinical and case studies, this review has tended to rely on larger scale studies that can be considered as nationally representative. The literature is also dominated by research in the US where teenage conceptions have been a policy priority and a well funded research issue for decades. For example, a search in the literature database Popline for articles published between 1983 and 1998 produced 2046 relevant articles published in the US compared to 31 in Canada, 26 in Australia and two in New Zealand.

Overview

This report begins with a review of the changing rates of teenage conceptions and births across the US, Canada, Australia and New Zealand. After this comes the process of peeling away the layers of factors that lie behind these rates. First, the levels of sexual activity and contraception use in each country that form the immediate determinants of these rates are examined. Chapter 4 then goes on to examine the broad range of social, economic and behavioural factors that are associated with these behaviours. The next chapter reviews key findings from the vast range of policy interventions and programmes, particularly in the US, that have been implemented to try to combat teenage pregnancy. The report concludes with key policy observations that are of relevance to the UK.

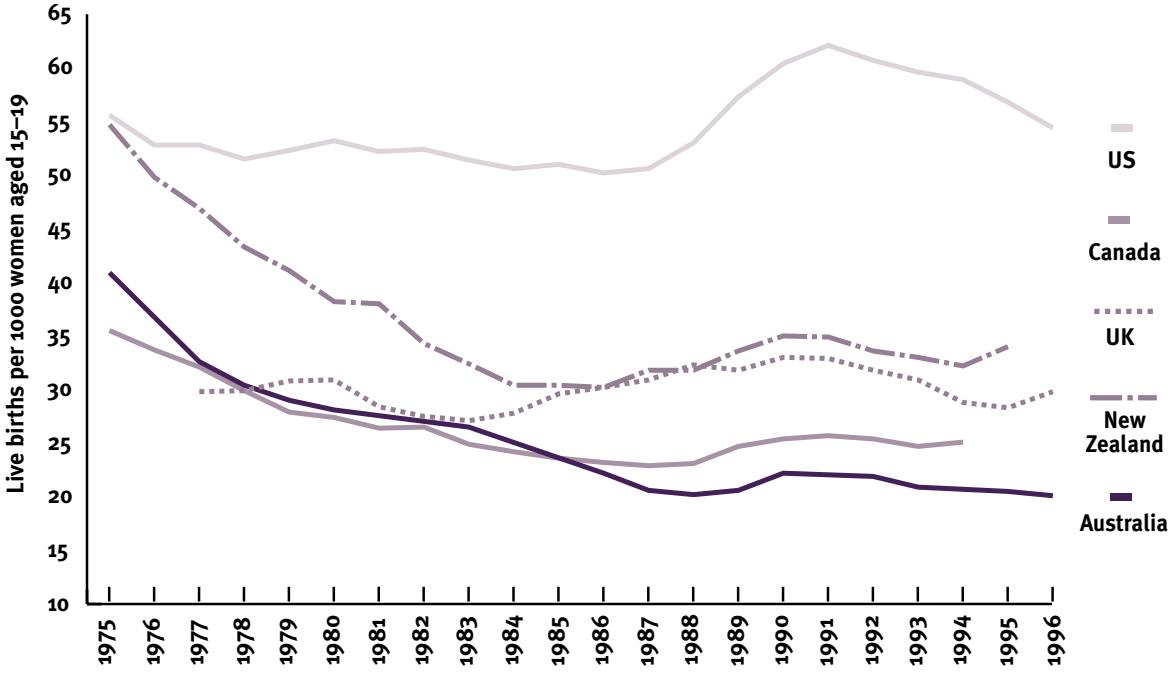
2 Rates of pregnancy, abortion and births

This section describes the variation and trends in teenage pregnancy across each country over the past 20 years. Where information is available, differences according to geographical location, ethnic group or cultural, social and economic background are highlighted. Most of the chapter draws on governmental data for births to women aged 15 or over and, unless otherwise stated, rates are presented as the number of births per 1000 women aged 15–19 in that country or group. Births to women aged 14 or younger are rare in all four countries – even in the US they represented only 3 per cent of all teenage pregnancies in 1996 (Alan Guttmacher Institute 1998b) – and the circumstances of these women are discussed separately.

United States

It is well known that the US has the highest rate of both conceptions and births to teenage women in the developed world. The live birth rate to teenage mothers is approximately double that of the UK and Canada and nine times that of the Netherlands (Alan Guttmacher Institute 1998a). After a gradual decline in teenage birth rates from the mid-1970s through to the 1980s, there followed a sharp 24 per cent increase between 1986 and 1991, from 50.2 to 62.1 per 1000. Since then, much attention has been focused on the extent of, and causes behind, the more recent decline in births to teenagers. By 1996, births to 15–19-year-olds had fallen by 12 per cent since 1991 from 62.1 to 54.4 per 1000 (Figure 1) with births to 15–17-year-olds falling slightly faster than for the group as a whole, reaching 33.8 per 1000 in 1996 (Alan Guttmacher Institute 1998b).

Figure 1 Live births per 1000 women aged 15–19, by country, 1975–96



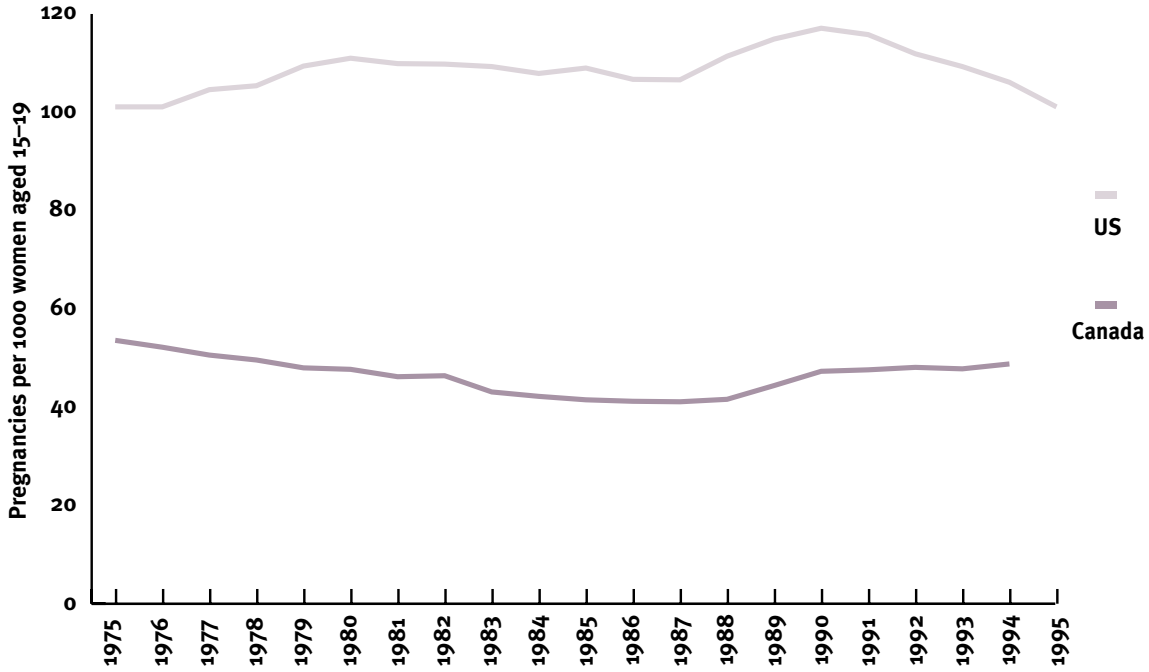
Source: US: Alan Guttmacher Institute (1998b).
Canada: Wadhera & Millar (1996) Table 14B, Statistics Canada (1998) Table 3.9.
Australia: United Nations Department of International Economic and Social Affairs Statistical Office (1999) Table 11; Siedlecky (1996) Table 1.
New Zealand: Statistics New Zealand (1997a) Table 2.8.
UK: United Nations Department of International Economic and Social Affairs Statistical Office (1999) Table 11.

Note: For technical details, see Appendix A, Table A1.

A fall in the birth rate could follow from either fewer conceptions or an increased use of abortion among teenagers. It appears that the rate of teenage conceptions has fallen slightly more than the birth rate, dropping by 14 per cent between 1991 and 1995 from 115.8 to 101.1 per 1000 15–19-year-olds, the lowest rate since the early 1970s (Donovan 1998) (Figure 2). The percentage of all teenage pregnancies that are terminated by abortion has also fallen from around 40 per cent of pregnancies which are not spontaneously miscarried* in 1990 to around 30 per cent in 1995 (Henshaw 1997; Alan Guttmacher Institute 1998b) (Figure 3).

*Data on miscarriages cannot be reliably measured given that many of these occurrences will never come to the attention of medical professionals. The Alan Guttmacher Institute has estimated that, in the US, around 13–14% of teenage conceptions are spontaneously miscarried (Alan Guttmacher Institute 1998b).

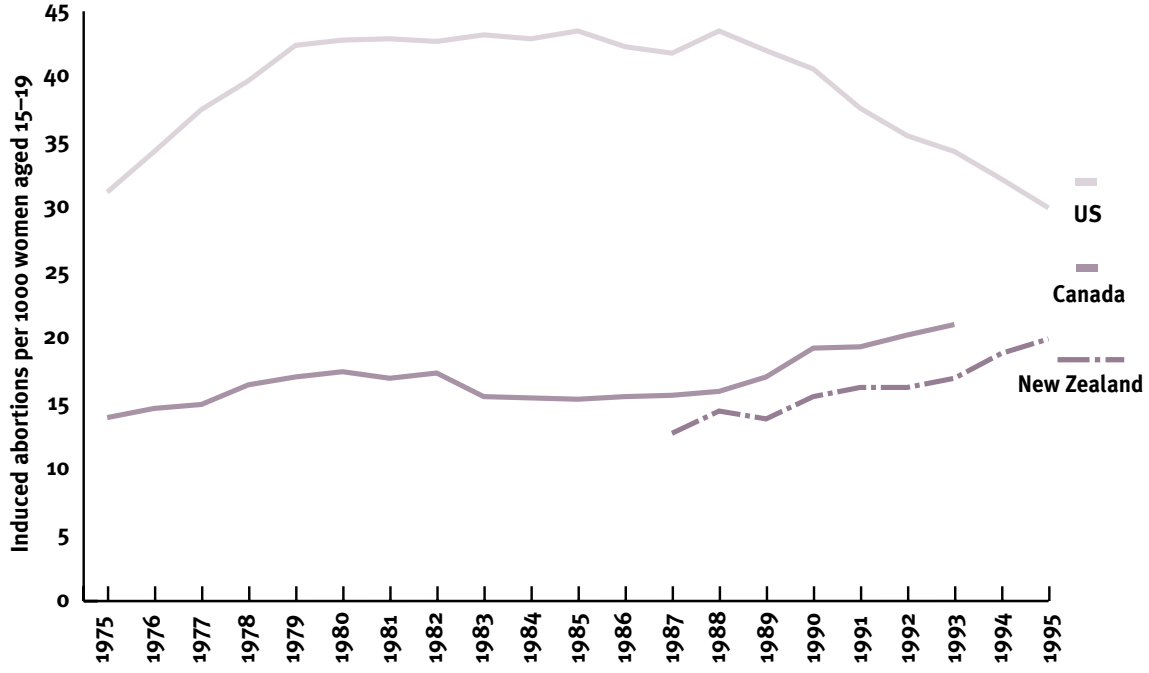
Figure 2 Total pregnancy rates per 1000 women aged 15–19, US and Canada, 1975–95



Source: US: Alan Guttmacher Institute (1998b) Table 2.
Canada: Wadhera & Millar (1996) Table 14B.

Note: For technical details, see Appendix A, Table A2.

Figure 3 Induced abortions per 1000 women aged 15–19, by country, 1975–95



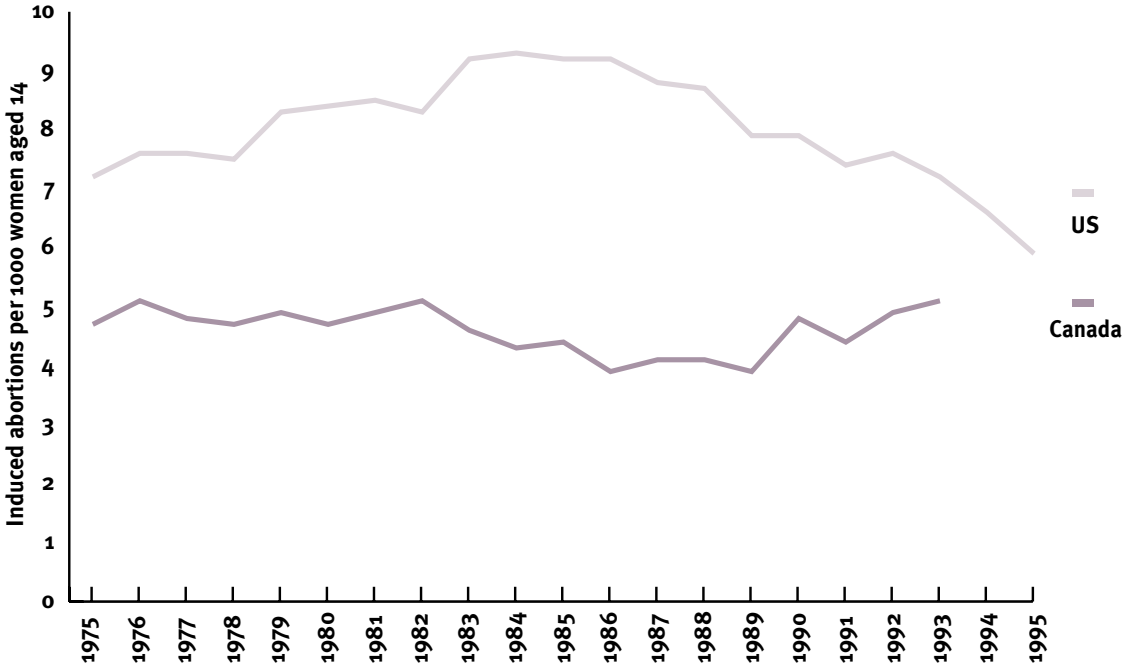
Source: US: Alan Guttmacher Institute (1998b) Table 2.
Canada: Wadhera & Millar (1996) Table 14B.
New Zealand: Statistics New Zealand (1997a) Table 7.3.

Note: For technical details, see Appendix A, Table A3.

Young teenagers

Each year around 11,500 babies are born in the US to mothers aged 14 or younger. The birth rate for teenagers aged 10–14 is between five and six times higher than those of Canada and New Zealand (for technical details, see Appendix A, Tables A4 and A5). As most births in this category occur to women aged 14, the rate in 1996 can be expressed as 6.0 births per 1000 14-year-olds (Alan Guttmacher Institute 1998b). Alternatively, if expressed as a rate based on all women aged 10–14, there were 1.2 births per 1000 (Ventura et al. 1998). Young teenagers have also become less likely to terminate a pregnancy by abortion in recent years. In 1985 there were 9.2 abortions per 1000 women aged 14 or less, representing nearly two thirds of pregnancies that were not miscarried. By 1995, under half of these young pregnancies ended in abortion (Figure 4; for technical details see Appendix A, Tables A4 and A6), a rate which is now lower than the estimated 65 per cent of UK pregnancies to girls aged 14 or younger which end in abortion (Brook Advisory Centres 1997).

Figure 4 Induced abortions per 1000 women aged 14, US and Canada, 1975–95



Source: US: Alan Guttmacher Institute (1998b) Table 2.
Canada: Wadhera & Millar (1996) Table 14B.

Note: For technical details, see Appendix A, Table A6.

The teenagers' partners

The highest teenage birth rate in the US of 96.3 per 1000 was recorded in 1957 but the majority of these occurred within marriage. As marriage rates have declined since the 1970s, the proportion of births to single mothers has increased dramatically. In 1996, 84 per cent of mothers aged 15–17 were single, as were 71 per cent of 18- and 19-year-olds (Ventura et al. 1998).

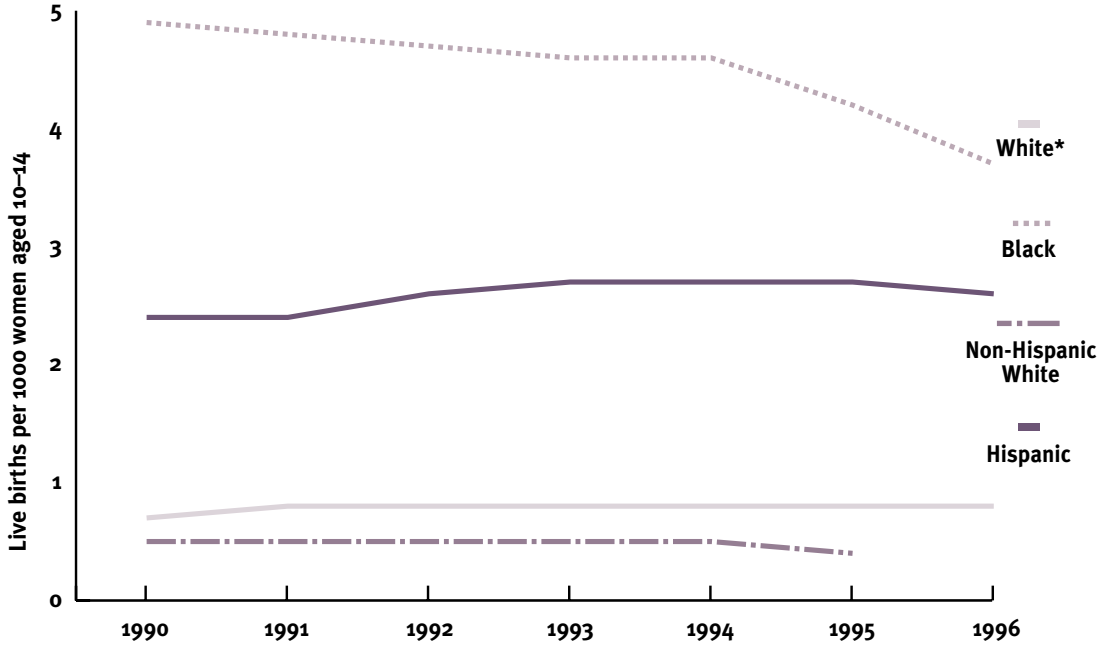
Much less is known about the circumstances of the fathers of babies born to teenage women outside marriage. A substantial minority of the men either are never informed of the pregnancy or resist accepting paternity (Furstenberg et al. 1987). Teenage mothers are less likely than older women to register the father's details on a birth certificate, and policy research itself has, until recently, been less focused on the circumstances of the partners of teenage mothers. Landry and Forrest (1995) combined 1988 birth registration data with information from the National Maternal and Infant Health Survey (conducted in 1989–91) to provide more comprehensive estimates of the age of US fathers. They found that only 35 per cent of the fathers of babies born to women under 20 were teenagers themselves. Of the younger mothers, aged 15–17, 50 per cent had partners who were aged over 20.

Variations by ethnic group and state

Presenting national data for teenage pregnancy in the US is potentially misleading, given the high degree of variation in both conceptions and abortion rates between different ethnic groups and between those living in different parts of the US. Historically, black African-American teenagers were at greatest risk of young pregnancy with the highest rate of births to 10–14-year-olds among this group (Leland et al. 1995) (Figure 5). For 15–19-year-olds in 1990, conception rates were as high as 224.3 per 1000. Despite the fact that around 40 per cent of these pregnancies were aborted, this group still had the highest live birth rate among teenagers.

Americans of white European origin have had a pregnancy and birth rate consistently under half of that for blacks. Hispanic teenagers are more likely to become pregnant than non-Hispanic whites as a whole but less likely to opt for abortion, with only 28 per cent of pregnancies being terminated (Table 1). Currently, there are no available large scale data on the relationship between ethnicity and teenage conceptions for the UK. Health records have only recently started to record ethnic background, and these data are unavailable at present.

Figure 5 Live births per 1000 women aged 10–14, by race in the US, 1990–96



*White *includes* Hispanic teenagers.

Source: Ventura *et al.* (1998) Table 2.

Note: For technical details, see Appendix A, Table A7.

More recently in the US, the behaviour among different ethnic groups has changed. Between 1991 and 1996, births to black teenagers fell by 21 per cent from 111.5 to 91.4 per 1000 while those to Hispanic teenagers remained steady at 101.8 per 1000. Among teenagers of white European origin there was a slight decline of 9 per cent over the same period to from 52.8 to 48.1 per 1000. The changes in behaviour that have triggered this decline among black and white teenagers, but not among Hispanics, will be discussed in detail later (see pages 13–16).

Across different states there is a wide variety of birth rates, ranging from Vermont with a rate of 28.6 per 1000 15–19-year-olds in 1995 to 80.5 per 1000 in Mississippi. Although state variations tend to reflect the ethnic composition of the teenage population, this is not always the case. While Minnesota and Wisconsin have two of the highest birth rates for black teenagers, rates are notably low among whites. Similarly, high white/Hispanic birth rates in New Mexico and Texas contrast with the relatively low rates among black teenagers resident in those states.

These variations within ethnic groups across states reveal the diversity of social and economic experience that can affect the likelihood of a teenage birth beyond those of race and region (Table 2).

In the past five years, teenage birth rates have fallen in every state of the US (although in five states this trend is not statistically significant). Dramatic reductions have been achieved both in states with high rates of teenage pregnancy and in those with low rates. Table 3 shows the changes in rates since 1991; while Hawaii and the Virgin Islands have moved closer to the national average, Vermont – a state with historically lower rates – has also achieved a 27 per cent reduction from 39.2 to 28.6 per 1000 in 1995.

Table 1 Pregnancies, live births and induced abortion rates per 1000 women aged 15–19, by race, US, selected years

	Pregnancy rate**				Live births			
	White*	Black	Non-Hispanic White	Hispanic	White*	Black	Non-Hispanic White	Hispanic
1990	98.3	224.3		163.4	50.1	112.8	42.5	100.3
1991	97.0	223.7		172.5	52.8	115.5	43.4	106.7
1992	93.0	218.7		176.0	51.8	112.4	41.7	107.1
1993					51.1	108.6	40.7	106.8
1994					51.1	104.5	40.4	107.7
1995					50.1	96.1	39.3	106.7
1996					48.1	91.4	–	101.8

	Induced abortions				Abortion percentages†			
	White*	Black	Non-Hispanic White	Hispanic	White*	Black	Non-Hispanic White	Hispanic
1990	33.9	80.5		39.1	40.1%	41.6%		28.0%
1991	30.5	77.4		40.4	36.6%	40.1%		27.5%
1992	28.1	76.2		43.2	35.2%	40.4%		28.7%

*White *includes* Hispanic teenagers.

**Pregnancy rate includes estimated number of pregnancies ending in miscarriage or stillbirths.

†Abortion percentages = percentage of pregnancies (excluding miscarriages) that end in abortion.

Table *excludes* the small number of other non-whites.

Source: Henshaw (1997) Tables 1 and 2; Ventura *et al.* (1998) Table 2.

Use of abortion

Not all teenage pregnancies are unintended, and many teenagers can adjust quickly to wanting an unintended baby (Furstenberg et al. 1987). Henshaw (1998) estimates that 82 per cent of pregnancies to women under 15 in 1994 were unintended, compared to 83 per cent among 15–17-year-olds and 75 per cent among 18–19-year-olds. Of these, the proportion of unintended pregnancies that end in abortion has fallen from 53 per cent in 1987 to 45 per cent in 1994, a decline of 24 per cent. There is speculation that, as those who are more concerned with avoiding pregnancy use contraception more effectively, the remaining pregnancies are becoming more concentrated among those who are less averse to early childbearing. The same educational, cultural or parental barriers that may have made them less likely to use contraception may also make them less likely to use abortion.

The likelihood of a pregnant teenager having an abortion varies enormously according to state following differences in social, religious and legal practices that will be examined in Chapter 4. As well as high pregnancy rates, California and Hawaii had the highest abortion rates of 64 and 67 per 1000 respectively in 1992. However, the likelihood of a young woman who becomes pregnant having an abortion was highest in New York State where in 1991, although the conception rate was as high as Mississippi at 120 per 1000, the birth rate was closer to the national average because 57 per cent of teenage pregnancies were terminated. Teenagers in the Southern states generally are less likely to abort with the lowest rates to be found in Utah at 16 per cent, along with Idaho, which can be attributed in these states to the concentrations of Mormons, who are opposed to abortion (Henshaw 1998).

Table 2 Live births per 1000 women aged 15–19, by state and race, US, 1995

	All	White		Black	Hispanic
		Total	Non-Hispanic		
US	**56.8**	**50.1**	**39.3**	**96.0**	**105.5**
Alabama	70.3	55.9	55.5	99.4	89.4
Alaska	50.3	36.5	34.7	*	*
Arizona	75.3	75.6	47.4	77.5	132.1
Arkansas	73.5	62.2	61.3	112.2	98.8
California	68.2	73.2	36.3	85.2	111.6
Colorado	51.3	50.1	34.4	77.1	114.9
Connecticut	39.4	33.3	20.6	83.8	117.3
Delaware	57.1	43.2	38.1	102.9	*
District of Columbia	105.5	25.8	9.4	154.8	89.6
Florida	61.6	51.0	45.8	100.6	69.1
Georgia	71.0	55.7	52.6	101.4	123.4
Hawaii	48.1	24.1	22.4	48.7	90.0
Idaho	49.0	48.9	43.7	*	107.4
Illinois	60.0	45.8	33.0	126.2	114.6
Indiana	57.5	52.2	51.0	106.1	85.8
Iowa	38.6	36.5	34.8	116.4	111.9
Kansas	52.3	47.4	43.6	115.5	100.9
Kentucky	62.6	59.1	58.9	102.2	*
Louisiana	69.9	48.4	48.8	103.6	35.1
Maine	33.7	33.2	33.0	*	*
Maryland	47.6	33.0	31.1	81.4	58.6
Massachusetts	34.3	30.5	22.8	77.8	112.9
Michigan	49.2	38.6	36.4	100.7	91.6
Minnesota	32.4	26.5	24.8	121.0	111.5
Mississippi	80.5	56.3	56.4	108.1	*
Missouri	55.5	47.3	46.8	108.7	70.1
Montana	41.9	35.4	34.1	*	*
Nebraska	37.6	33.7	30.1	100.4	102.5
Nevada	73.4	72.2	55.2	101.7	134.5
New Hampshire	30.6	30.6	30.2	*	*
New Jersey	38.0	28.6	16.5	85.7	83.9
New Mexico	74.4	73.6	43.0	68.3	98.5
New York	43.9	39.1	24.7	66.4	84.6
North Carolina	64.0	51.7	48.6	92.6	155.2
North Dakota	33.5	28.1	27.3	*	*
Ohio	53.4	45.5	44.5	107.2	87.2
Oklahoma	64.0	57.4	55.1	99.2	93.2
Oregon	50.5	50.0	43.5	88.4	130.6
Pennsylvania	41.7	32.9	29.1	109.3	130.7
Rhode Island	42.9	37.4	29.4	92.6	115.2
South Carolina	65.2	51.9	51.3	86.2	78.1
South Dakota	40.5	30.8	30.3	*	*
Tennessee	68.0	57.3	56.8	109.5	90.5
Texas	75.8	75.2	47.0	91.4	112.2
Utah	42.3	41.4	37.3	*	109.0
Vermont	28.6	28.8	29.1	*	*
Virginia	48.5	38.9	37.1	83.1	70.5
Washington	47.5	45.8	39.1	76.2	119.7
West Virginia	52.6	51.7	51.8	82.3	*
Wisconsin	37.8	28.6	25.9	132.7	108.6
Wyoming	47.3	45.4	41.2	*	95.9
Puerto Rico	74.3	–	–	–	–
Virgin Islands	63.0	–	–	–	–
Guam	108.4	–	–	–	–

Source: Ventura *et al.* (1998) Table 4.
* Unreliable figure: based on fewer than 20 births or fewer than 1000 women in specified group.

Table 3 Live births per 1000 women aged 15–19, by state, US, 1991–95

	1991	1995	Percent change (%)
US	62.1	56.8	–8.5
Alabama	73.9	70.3	–4.9
Alaska	65.4	50.3	–23.1
Arizona	80.7	75.3	–6.7
Arkansas	79.8	73.5	–7.9
California	74.7	68.2	–8.7
Colorado	58.2	51.3	–11.9
Connecticut*	40.4	39.4	–2.5
Delaware*	61.1	57.1	–6.5
District of Columbia	114.4	105.5	–7.8
Florida	68.8	61.6	–10.5
Georgia	76.3	71.0	–6.9
Hawaii	58.7	48.1	–18.1
Idaho	53.9	49.0	–9.1
Illinois	64.8	60.0	–7.4
Indiana	60.5	57.5	–5.0
Iowa	42.6	38.6	–9.4
Kansas	55.4	52.3	–5.6
Kentucky	68.9	62.6	–9.1
Louisiana	76.1	69.9	–8.1
Maine	43.5	33.7	–22.5
Maryland	54.3	47.6	–12.3
Massachusetts	37.8	34.3	–9.3
Michigan	59.0	49.2	–16.6
Minnesota	37.3	32.4	–13.1
Mississippi	85.6	80.5	–6.0
Missouri	64.5	55.5	–14.0
Montana	46.7	41.9	–10.3
Nebraska	42.4	37.6	–11.3
Nevada*	75.3	73.4	–2.5
New Hampshire	33.3	30.6	–8.1
New Jersey	41.6	38.0	–8.7
New Mexico	79.8	74.4	–6.8
New York	46.0	43.9	–4.6
North Carolina	70.5	64.0	–9.2
North Dakota*	35.6	33.5	–5.9
Ohio	60.5	53.4	–11.7
Oklahoma	72.1	64.0	–11.2
Oregon	54.9	50.5	–8.0
Pennsylvania	46.9	41.7	–11.1
Rhode Island*	45.4	42.9	–5.5
South Carolina	72.9	65.2	–10.6
South Dakota	47.5	40.5	–14.7
Tennessee	75.2	68.0	–9.6
Texas	78.9	75.8	–3.9
Utah	48.2	42.3	–12.2
Vermont	39.2	28.6	–27.0
Virginia	53.5	48.5	–9.3
Washington	53.7	47.5	–11.5
West Virginia	57.8	52.6	–9.0
Wisconsin	43.7	37.8	–13.5
Wyoming	54.2	47.3	–12.7
Puerto Rico*	72.4	74.3	2.6
Virgin Islands	77.9	63.0	–19.1
Guam	95.7	108.4	13.3

Source: Ventura *et al.* (1998) Table 3.
*Percentage change not significant at the p≤0.05 level.

Canada

The teenage birth rate among Canadians was close to that of Australia and the UK in the 1980s at around 25–27 per 1000 15–19-year-olds. Since then, Canada and Australia have followed a more similar pattern and, after a fall since the early 1980s, birth rates have climbed steadily to 25.1 per 1000 (see Figure 1). As in the US, 81 per cent of births to teenagers were to single women compared to 25 per cent in 1974. In contrast to the US, since the early 1980s, Canadian women aged 15–19 have become increasingly likely to terminate a pregnancy by abortion. In 1994, women under 20 accounted for 20 per cent of abortions compared to 6 per cent of live births. In 1984, approximately 40 per cent of teenage pregnancies that were not miscarried ended in abortion, but by 1993 this proportion had risen to 46 per cent, somewhat higher than the UK (Figure 3; for technical details see Appendix A, Tables A1 and A3). Among those aged 15–17, the rate in 1994 approached 50 per cent (Wadhera & Millar 1997).

Births to younger teenagers are extremely rare and have averaged around 1.4 per 1000 14-year-olds compared to a rate of around 6.0 per 1000 14-year-olds in the US (see Appendix A, Table A4). However, young Canadian teenagers are much more likely to terminate a pregnancy by abortion than those in the US. In 1994, over three quarters of pregnancies among 10–14-year-olds were terminated by abortions, again a higher proportion than in the UK (Statistics Canada 1997; Wadhera & Millar 1996, 1997).

The greatest variation in Canada is by geographical area, contrasting the experience of teenagers in the central and western provinces to those in the east coast areas. The North West Territories had the highest birth rate of 104.5 per 1000 compared to 17.4 per 1000 in Quebec in 1994 (Table 4) (Wadhera & Millar 1997). Again, policy makers are concerned with the multiple factors contributing to this variation, reflecting geographical distribution of socio-economic advantage as well as inconsistent access to youth education and contraceptive advice programmes across the different provinces.

Table 4 Live births per 1000 women aged 15–19, by province or territory, Canada, selected years

	1974	1994
Newfoundland	76.6	25.8
Prince Edward Island	51.0	29.1
Nova Scotia	54.7	30.2
New Brunswick	54.6	32.7
Quebec	16.2	17.4
Ontario	37.2	22.4
Manitoba	51.6	43.0
Saskatchewan	52.8	46.3
Alberta	45.0	33.0
British Columbia	38.8	22.2
Yukon	88.0	44.0
North West Territories	114.6	104.5

Source: Wadhera & Millar (1997) Table 3.

As in the US, Canadian teenage mothers have been found to be likely to have an older partner. Using data from birth registrations between 1992 and 1994, Millar and Wadhera (1997) found that 54 per cent of births to mothers aged 15–17 involved a partner who was aged 20 or over. Overall, one quarter of partners were found to be six or more years older than the teenage mother.

Australia

Australia is the only one of the four countries that has shown a consistent decline in teenage pregnancies from the early 1970s through to 1982, after which rates have remained steadily low (see Figure 1). From a birth rate that was comparable to Canada and the UK in the 1970s and early 1980s, births to women aged 15–19 have now fallen to 20.1 per 1000 in 1996. In common with the other three countries, 88 per cent of these births are to single women (Australian Bureau of Statistics 1997). National statistics on abortion in Australia are not available, and estimates

vary between rates lower than those of the USA, Canada and New Zealand, up to 50 per cent of conceptions being terminated in more affluent areas (Siedlecky 1996).

However, the concentration of nearly 60 per cent of the Australian population in the two more affluent states of New South Wales and Victoria obscures some of the variation across the country by location and ethnic group. The birth rate to teenage indigenous aboriginal women is traditionally very high with around 27 per cent of all births occurring to women under 20 compared to 6 per cent among non-indigenous women. (Siedlecky 1996).* In the Northern Territories the teenage birth rate is the highest in Australia at 78.6 per 1000 in 1996 (Table 5), but among indigenous women it is double this rate (Siedlecky 1996). However, since the indigenous population comprises only 2 per cent of the total Australian population the national trends are not substantially affected (Australian Bureau of Statistics 1998). In all, the levelling off of the teenage birth rate in the 1980s has been attributed to the combined effect of a continuing decline in births to more affluent teenagers and a level or increasing rate among a smaller group who are more disadvantaged (Siedlecky 1985). Births to very young teenagers in Australia are again very low and most of these are to indigenous women, who are 32 times more likely to have a baby before the age of 15 than are non-indigenous women (Siedlecky 1996).

Table 5 Live births per 1000 women aged 15–19, by state, Australia, selected years

	1991	1994	1996
Australia	**22.1**	**20.7**	**20.1**
New South Wales	22.4	20.6	19.9
Victoria	16.0	14.2	12.8
Queensland	26.1	25.6	26.0
South Australia	21.3	16.1	18.3
Western Australia	24.3	24.9	22.8
Tasmania	29.3	27.2	26.8
Northern Territories	73.9	84.0	78.6
Australian Capital Territory	14.2	14.0	14.4

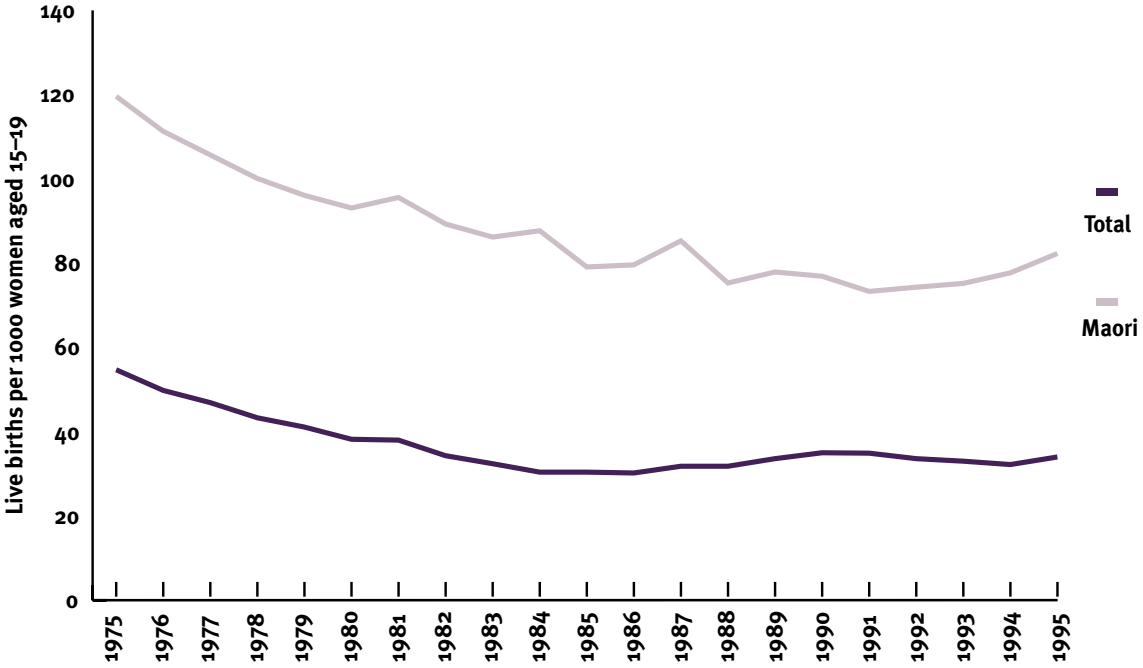
Source: Siedlecky (1996); Australian Institute of Health and Welfare (1998) Table S3.

New Zealand

At a national level, New Zealand has a relatively high rate of teenage pregnancy for a developed country, although there was a dramatic fall from a rate which, in the 1970s, was comparable to the US. After falling to their lowest point of 30.2 per 1000 in 1986, live births to teenagers have gradually increased to 34.0 per 1000 in 1995 – higher than Australia and Canada and following a pattern similar to, but slightly higher than, the UK (see Figure 1). Part of the explanation for this trend lies in the higher fertility rates of the indigenous Maori and Pacific Islanders. The birth rate to Maori teenagers has, in recent years, been consistently between 2 and 2.5 times higher than the rate for the population as a whole and has been rising from 75.3 per 1000 in 1988 to 82.3 in 1995 (Figure 6). Maori and Pacific Islanders are also disproportionately likely to be in a low income group and have low abortion rates among those who do become pregnant (Statistics New Zealand 1997a; Dickson and Kokaua 1997 cited in Daley 1998). Although a minority group, over 15 per cent of the New Zealand population identified themselves as Maori in the 1996 Census, and fertility among this group as well as Pacific Islanders therefore does affect national trends (Statistics New Zealand 1998).

*Estimate based on South Australia, Northern Territories, and Australian Capital Territory.

Figure 6 Live births per 1000 women aged 15–19, by ethnic group, New Zealand, 1975–95



Source: Statistics New Zealand (1997a) Table 2.8.

Note: For technical details, see Appendix A, Table A8.

Summary

- Despite the decline in rates since 1991, the US continues to have the highest rates of teenage conceptions and births among the countries discussed in this review.
- The conception rate in the US has fallen slightly faster than the live birth rate, indicating that the fall in teenage births is not the result of increased use of abortion.
- All the countries show a great deal of variation by geographical location and ethnicity. However, this variation is highly correlated with the socio-economic position of the areas or ethnic groups in question, as demonstrated by the differences by race across the states in the US.
- Evidence from the US and Canada indicates that the fathers of babies born to teenage mothers are more likely to be over 20 than to be teenagers themselves.
- Teenagers in Canada who become pregnant appear to be more likely to use abortion than are those in the US or Australia.
- Pregnancies among girls aged 14 or younger are extremely rare in all four countries but they are more likely to be terminated by abortion.

3 Changes in sexual activity and contraceptive use

Variations in teenage conceptions and, in particular, the recent decline in the US have been attributed to both differences in age of first intercourse and levels of effective contraceptive use among those who are sexually active. The causes of these changes in behaviour are a complex mix of teenage responses to family and environmental influences, and sex and life skills education, as well as awareness of the risks of HIV/AIDS infection combined with greater condom availability. These influences are discussed in later chapters but, first, the extent of the variation in sexual activity and contraceptive use among teenagers across the countries in recent years is described.

Age at first intercourse and rates of sexual activity

Over the past 20 years, sexual experience among secondary school age teenagers had been increasing, but recently in the US there is evidence of a halt to this trend. Between 1991 and 1997, rates of experience of intercourse among high school students aged approximately 14–17 fell from 54 to 48 per cent (Centers for Disease Control and Prevention 1998). The most dramatic decline was among males whose reported experience of intercourse fell from 57 to 49 per cent. In contrast, there was no significant fall in reported rates among women (see Table 6(a)). Rates among black and white students fell while those among Hispanic students remained constant. Overall, in 1997, by Grade 12 (around age 17), 61 per cent of teenagers had had sexual intercourse (see Table 6(b)); non-Hispanics still having the highest rates of experience with intercourse and non-Hispanic whites the lowest (Table 6(c)). The UK National Survey of Sexual Attitudes and Lifestyles also reported that age at first intercourse varies with ethnicity: compared to white respondents, black men have lower median ages as well as higher proportions having first intercourse under the age of 16 years, and Asian respondents report later starts to their sexual activities (Johnson et al. 1994).

In Australia, estimates are broadly similar to those for non-Hispanic white US teenagers. Dunne et al. (1993a) estimated from survey data (covering all states except New South Wales) that 51.2 per cent of 17- and 18-year-olds had ever had intercourse. Available data for Canada from the 1980s showed that by Grade 11 (around age 16), 49 per cent of boys and 46 per cent of girls were found to have had intercourse (King et al. 1988). In New Zealand, among respondents to the Dunedin study of a cohort born in 1972–3, 69.7 per cent of males and 76.3 per cent of females had experienced intercourse before their eighteenth birthday (Dickson et al. 1998). These data are difficult to compare to the UK as they often rely on school grade rather than age-based studies. Recent data for the UK indicates that 17 is the most common age of first intercourse for teenagers (Brook Advisory Centres 1997).

Willingness of teenage females to have intercourse

Although very few women describe their first intercourse as involuntary, in the US a quarter of women questioned in the 1992 National Health and Social Life Survey reported that, although they were not forced to have sex at the time of first intercourse, it was not wanted (Laumann, 1996). In the 1995 National Survey of Family Growth, 91 per cent of women aged between 15 and 24 considered their first sexual intercourse to be voluntary but, again, there was a high degree of 'unwantedness'. Similar results were found in New Zealand among the Dunedin cohort (born in 1972–3), with 7 per cent of women reporting first intercourse as forced. Young black US women were more likely than white women to report unwanted sex, and women in both countries with much older partners at first intercourse were more likely to report unwanted sex than those with partners of a similar age (US: Abma et al. 1998; New Zealand: Dickson et al. 1998).

Both the US and New Zealand studies found the probability that a woman has been coerced into sex is, not surprisingly, higher among women who experienced first intercourse at 14 or younger (US: Abma et al. 1998; New Zealand: Dickson et al. 1998). In the US, a woman's probability of reporting involuntary sex increased from around 5 per cent among those reporting first intercourse between 16- and 18-years-old to 24 per cent among those who had intercourse at age 13 or younger. Even those who reported that sex was voluntary at this age were more likely to report it as 'extremely unwanted'.

Table 6(a) Trends in sexual behaviour among US high school students, Grades 9–12 (approximately aged 14–17), 1991–97 (%), by sex

Sex		Ever had sexual intercourse	Four or more partners during lifetime	Currently sexually active*	Condom use during last sexual intercourse†
Male	1991	57.4	23.4	36.8	54.5
	1993	55.6	22.3	37.5	59.2
	1995	54.0	20.9	35.5	60.5
	1997	48.8	17.6	33.4	62.5
Female	1991	50.8	13.8	38.2	38.0
	1993	50.2	15.0	37.5	46.0
	1995	52.1	14.4	40.4	48.6
	1997	47.7	14.1	36.5	50.8

Table 6(b) Trends in sexual behaviour among US high school students, Grades 9–12 (approximately aged 14–17), 1991–97 (%), by Grade

Grade		Ever had sexual intercourse	Four or more partners during lifetime	Currently sexually active*	Condom use during last sexual intercourse†
9	1991	39.0	12.5	22.4	53.3
	1993	37.7	10.9	24.8	61.6
	1995	36.9	12.9	23.6	62.9
	1997	38.0	12.2	24.2	58.8
10	1991	48.2	15.1	33.2	46.3
	1993	46.1	15.9	30.1	54.7
	1995	48.0	15.6	33.7	59.7
	1997	42.5	13.8	29.2	58.9
11	1991	62.4	22.1	43.3	48.7
	1993	57.5	19.9	40.0	55.3
	1995	58.6	19.0	42.4	52.3
	1997	49.7	16.7	37.8	60.1
12	1991	66.7	25.0	50.6	41.4
	1993	68.3	27.0	53.0	46.5
	1995	66.4	22.9	49.7	49.5
	1997	60.9	20.6	46.0	52.4

Table 6(c) Trends in sexual behaviour among US high school students, Grades 9–12 (approximately aged 14–17), 1991–97 (%), by race or ethnicity

		Ever had sexual intercourse	Four or more partners during lifetime	Currently sexually active*	Condom use during last sexual intercourse†
Non-Hispanic White	1991	50.0	14.7	33.9	46.5
	1993	48.4	14.3	34.0	52.3
	1995	48.9	14.2	34.8	52.5
	1997	43.6	11.6	32.0	55.8
Non-Hispanic Black	1991	81.4	43.1	59.3	48.0
	1993	79.7	42.7	59.1	56.5
	1995	73.4	35.6	54.2	66.1
	1997	72.6	38.5	53.6	64.0
Hispanic	1991	53.1	16.8	37.0	37.4
	1993	56.0	18.6	39.4	46.1
	1995	57.6	17.6	39.3	44.4
	1997	52.2	15.5	35.4	48.3
Total	1991	54.1	18.7	37.4	46.2
	1993	53.0	18.7	37.5	52.8
	1995	53.1	17.8	37.9	54.4
	1997	48.4	16.0	34.8	56.8

*Sexual intercourse during the three months preceding the survey. †Among currently sexually active students.
Source: Centers for Disease Control and Prevention (1998) Table 1.

Contraceptive use

In the US, there has been a dramatic increase in the use of contraception at first intercourse. According to the National Survey of Family Growth, contraceptive use at first intercourse rose from 48 per cent in the early 1980s to 78 per cent in 1995, and these teenagers are now more likely than ever to use condoms. In 1995, 66 per cent of female teenagers reported using a condom at first intercourse compared to 23 per cent in 1982 (Donovan 1998), although this rate does tend to tail off after first intercourse as women switch to other methods. Although the likelihood of using any contraception tends to fall after first intercourse (US: Alan Guttmacher Institute 1998a; Australia: Shaw 1992), sexually active teenagers are still more likely to be using contraception than they were in the 1980s. By 1997, results from the US Youth Risk Behavior Survey indicate that 57 per cent of sexually active high school students were currently using condoms and that black teenagers were more likely to use a condom than white teenagers (64 per cent compared to 56 per cent). While condom use has shown a corresponding increase among Hispanic teenagers (48 per cent) it still remains lower than in the other groups. Apart from condom use, part of the decline in teenage pregnancy has been attributed to the growing use of injectable (Depo Provera™) or implant (Norplant™) contraception. In particular, black teenagers who are considered to be at-risk have been targeted and 24 per cent of those using contraception are receiving either of these long-term methods compared to 10 per cent in the contracepting teenage population as a whole (Donovan 1998; Alan Guttmacher Institute 1998a). These differences do raise issues of the level of informed consent among teenagers targeted for these types of contraception.

In Canada, a survey in 1992 of more than 15,000 students in Grades 7–12 (approximately aged 12–17) in British Columbia found one quarter of sexually active teenagers not using contraception (Peters & Murphy 1993). In Australia, there has been some debate based on more localised studies as to whether teenagers living in urban areas are less likely to use condoms than rural teenagers (Hillier et al. 1990; Dunne et al. 1993b), although, more recently, a study of high school students found no significant urban/rural differences in condom use (Lindsay et al. 1997). Finally, in New Zealand, sexually active teenagers in the Christchurch cohort study report that condoms were used in 59 per cent of all reported sexual acts, but men were more likely than women to report condom use (Fergusson et al. 1994). As teenagers get older, condom use tends to decline, often in favour of the contraceptive pill; among 18-year-olds in the Dunedin cohort study 38 per cent of women and 48 per cent of men reported 'usually' or 'always' using a condom (Dickson et al. 1993). In the UK, among those now aged between 16 and 24, 50 per cent of women and 47 per cent of men report having used a condom at their first ever intercourse. There has been a steady increase in reported condom use at first intercourse over the past decades, with a particularly marked increase between the mid-1980s and 1991. Furthermore, the younger the age at first intercourse, the lower the probability of the use of contraceptives of any kind (Johnson et al. 1994).

The chance of a woman using contraception at first intercourse has been found to increase as the extent to which the sex is voluntary and wanted increases (US: Abma et al. 1998; Australia: Lindsay et al. 1997; New Zealand: Dickson et al. 1998). Younger women or women with partners much older than themselves, as well as being more likely to report unwanted intercourse, were more likely to have unprotected sex. However, in the New Zealand study, women who considered themselves to be established in a stable relationship were found to be less likely to use contraception at first intercourse and, among those that did, less likely to use a condom in preference to another method.

As relationships continue, older teenagers have been found to use some form of contraception more often and more effectively than younger ones (US: Abma et al. 1998; Australia: Cubis et al. 1985). The incidence of contraceptive failure during the first year of sexual activity is still estimated to be as high as one quarter among those using contraception (Moore et al. 1995a), although the reasons for this occurrence can only be inferred. Apart from the age of the teenager, her mother's level of education has been found to be associated with the use of contraception at first intercourse by a woman, as long as the teenager herself wanted to have sex (Abma et al. 1998). Condom use is lowest among teenagers with the highest associated risk behaviours such as drug-taking and prostitution (Brewster et al. 1993). It has also been found in the US and New Zealand to be lower among those who have the highest number of sexual partners (US: Binson et al. 1993; New Zealand: Dickson et al. 1993), but this has not been found to be the case in Australia (Donald et al. 1994). Furthermore, data from the 1987 US National Survey of Family

Growth indicated that only about half of those teenagers who experienced intercourse aged 17 or younger had discussed birth control with their partner prior to the event. Among all teenagers, 92 per cent of couples who discussed contraception used it, compared to 36 per cent among those who had not discussed its use (Moore & Peterson 1989, cited in Moore et al. 1995a).

Effective contraceptive use has been found to rise with the income level of the teenager's family, although the gap between the experiences of rich and poor has been narrowing in the US in recent years: 78 per cent of sexually active teenage females in families with incomes below the federal poverty line report usual contraceptive use compared to 83 per cent among those in families with incomes at 200 per cent of the poverty line or higher (Alan Guttmacher Institute 1995). As a result, 15–19-year-olds in families with incomes below that 200 per cent level in the US form 73 per cent of those who become pregnant but only 38 per cent of the population in that age group. The probability of seeking an abortion has not converged to such a degree across the income groups. Strong differences remain in the likelihood of having an abortion with rates among teenagers in families with incomes over 200 per cent of the poverty line as high as 70 per cent (Alan Guttmacher Institute 1995).

In the US, access to contraception varies according to the state's policy on age of consent and contraceptive services, particularly through the Medicare programme. It has been found that premarital pregnancy is more common in states with restrictive laws regarding the licensing, advertising and selling of contraception, even after controlling for family background measures (Lundberg & Plotnick 1995).

Summary

- Reported rates of sexual intercourse among teenage males in the US have begun to fall in recent years, although this is not the case for females.
- Those women who experience first intercourse at a young age or with a considerably older partner are more likely to report that the sex was unwanted or even involuntary.
- A dramatic increase in the use of condoms at first intercourse has been observed in the US and Australia.
- Although rates of consistent ongoing contraceptive use are lower than those at first intercourse, these rates are still higher than they were in the 1980s.
- Some of the decline in teenage pregnancy in the US can be attributed to the controversial targeting of injectable or implant contraception for teenagers considered to be at-risk.
- The chance of using contraception increases with both the age of the teenager and the degree to which the sex is wanted.
- The differences in contraception use between rich and poor have been found to be closing in the US, but teenagers from higher income families are still more likely to use abortion once pregnant.

4 Factors affecting teenage conception and births

Early sexual activity increases teenagers' exposure to a greater number of partners and frequency of intercourse at which they are at risk of conceiving. Factors associated with the onset of sexual activity are not necessarily the same as those associated with effective contraception use. In turn, different factors may affect the decision whether or not to use abortion. This chapter synthesises some of the findings, where there is some level of agreement across this vast area of research, that are of relevance to identifying groups of teenagers that may be at risk of early pregnancy. Major reviews of research that differentiate between these stages are well established in the US, and this chapter draws particularly on the report published by Moore et al. in 1995(a).

Explaining variation across countries

Income inequality

Wilkinson (1992) has shown life expectancy at national level to be related to the levels of inequality between rich and poor rather than to the absolute levels of disadvantage in a country. Similarly, Jones et al. (1985) found in a review of 19 countries in the early 1980s that more equitable distribution of income (measured by the proportion of national income received by the poorest 20 per cent of the population) was negatively related to the cumulative birth rate for women under 18. Of these countries, Canada, the US and New Zealand had the least equitable distribution, all higher than England and Wales and Australia. Table 7 brings this finding more up to date by presenting the Gini indexes and distribution of gross household income by quintile group for the four countries alongside comparable data for the UK. Figure 7 shows graphically the distribution of income in each country using the latest available data.

The Gini indexes give a summary measure of the level of inequality in a country but do not show where the income is distributed among the population. All the figures in Table 7 should also be interpreted with caution, as they come from a variety of sources that may not be strictly comparable. Since 1980, the Gini index for the US appears to have risen to 40.1 in 1994, indicating a relatively high degree of inequality. Comparable data for New Zealand were only found up to 1990, but up to this point the Gini index had risen to a similar level of 40.2. In Canada in the late 1980s, the Gini index fell to the lowest level for all four countries of 27.4 in 1989, indicating a reduction in inequality. Although it has risen since then, it was still low at 31.5 in 1994. The index has fluctuated in Australia from 33.7 in 1989 to 39.3 in 1993/4. The work of Jones et al. was concerned with the proportion of national income received by the poorest 20 per cent of the population. Bringing this up to date, between 1981 and 1993/4, the proportion of national income received by the bottom quintile increased in Canada and Australia with both groups receiving over 7 per cent, while it fell slightly in the US and New Zealand to 4.8 and 5.5 per cent respectively. Over the same period, those in the top quintile increased their share of national wealth in the US and New Zealand while there were decreases in Canada and Australia. Although it is inadvisable to draw inferences from only four countries, there was a pattern of growing inequality in the US and New Zealand in the 1980s where rates of teenage pregnancy rose until 1990/1. Over the same decade, in Canada and Australia, there was a stabilisation or reduction in inequality at the same time that rates of teenage pregnancy were falling and then levelling.

Table 7 Gini index and percentage of national income received by gross household income, decile or quintile group, selected years

	US			Canada		
	1980	1989	**1994**	1981	1989	**1994**
Gini coefficient	35.2	38.2	**40.1**	31.8	27.4	**31.5**
Lowest 10%	–	–	**1.5**	–	–	**2.8**
Lowest 20%	5.2	4.6	**4.8**	6.5	7.8	**7.5**
Second 20%	11.5	10.6	**10.5**	15.0	18.7	**12.9**
Third 20%	17.5	16.5	**16.0**	16.5	14.0	**17.2**
Fourth 20%	24.3	23.7	**23.5**	24.1	24.8	**23.0**
Highest 20%	41.5	44.6	**45.2**	37.9	34.7	**39.3**
Highest 10%	–	–	**28.5**	–	–	**23.8**

	Australia			New Zealand			UK
	1981	1989	1993/4	1980	1990	1993/4	1986
Gini	39.9	33.7	39.3	34.8	40.2	–	32.6
Lowest 10%	–	2.5	–	–	–	1.9	2.4
Lowest 20%	4.6	7.0	7.1	6.0	4.6	5.5	7.1
Second 20%	9.8	12.2	13.5	11.8	10.5	10.3	12.8
Third 20%	16.6	16.6	18.0	17.4	16.3	16.1	17.2
Fourth 20%	24.8	23.3	24.1	24.3	23.8	24.2	23.1
Highest 20%	44.2	40.9	37.3	40.6	44.8	43.9	39.8
Highest 10%	–	24.8	–	–	–	27.1	24.7

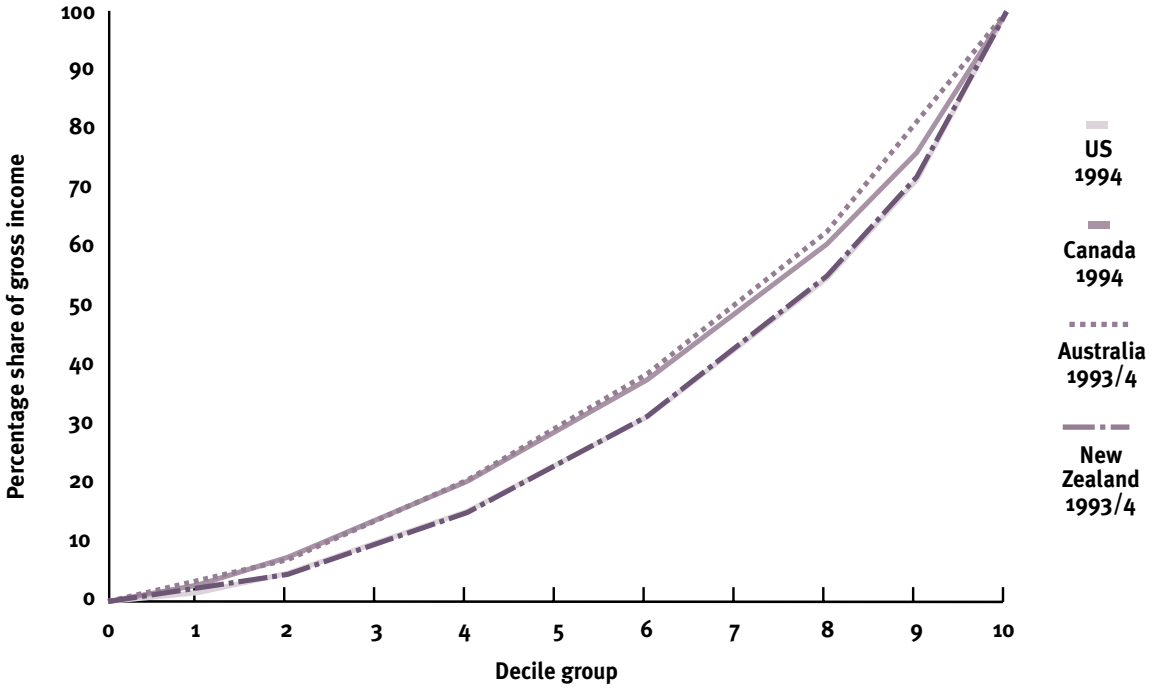
Note: Gross household income defined as earnings and direct benefits before allowing for taxes, mandatory contributions and indirect benefits.

The Gini index measures the extent to which the distribution of income deviates from perfect equality. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. A Gini index of 0 would represent perfect equality and 100 perfect inequality.

Source: **Figures in bold: Latest available years considered reliable in World Bank Development Report (1998) Table 2.8.**

USA 1980, 1989; Canada 1981, 1989; Australia 1981; New Zealand 1980, 1990: Deininger & Squire (1996) (Only data considered acceptable by the review criteria.)
USA 1994; Canada 1994; Australia 1989; UK 1986: World Bank (1998) Table 2.8.
Australia 1993/4: Quintile distribution: Australian Bureau of Statistics (1996) Table A.
Gini: Australian Bureau of Statistics (1997b) Table SI.9 using the same dataset as above Gini coefficient: Australian Bureau of Statistics (1997b) Table SI.9.
New Zealand 1993/4: Quintile distribution: Statistics New Zealand (1995) Table 4.2 Gini not given.

Figure 7 Income distribution, by country, 1993–94



Source: USA 1994; Canada 1994: World Bank (1998) Table 2.8.
Australia 1993/94: Australian Bureau of Statistics (1996) Table A.
New Zealand 1993/94: Statistics New Zealand (1995) Table 4.2.

All these countries have relatively high levels of Gross Domestic Product (GDP) compared to other countries. Among this group, in 1996, New Zealand had the lowest per capita GDP of US$18,219 compared to US$27,420 in the US. Overall economic activity rates for men and women are quite similar across the countries (Table 8).

Table 8 Gross Domestic Product (GDP) and adult* economic activity rate (%), 1996

	US†	Canada‡	Australia‡	New Zealand§	UK¶
Per capita GDP (US$) 1996	27 420	19 515	22 235	18 219	19 847
Male economic activity rate	74.9	72.4	74.0	74.4	71.9
Female economic activity rate	59.3	57.6	53.8	56.2	53.5

*Adults = aged 15 and over.
†US: de jure population, adults aged 16+.
‡Australia: excluding armed forces. Canada: excluding nationals working abroad and their families.
§New Zealand: de jure population, civilians only, aged 15–69 years.
¶UK: adults aged 16+.
Source: Statistics Division of the United Nations Secretariat (1998).

Education and labour force opportunities

Differences in teenage pregnancy rates could also be a reflection of the different educational and occupational prospects for teenagers in each country. Evidence from within-country studies, to be discussed later (see page 24), indicates that those who expect to go on to college are less likely to become teenage parents. Tables 9–14 present a range of employment and educational indicators showing what teenagers and young adults can expect to be doing in each country. Across all the countries, the likelihood of joining the labour market as a teenager has declined since the late 1970s. This is partly a reflection of increased enrolment in tertiary education either as an investment for the future or as reaction to unfavourable labour market conditions. Among the older age group aged 20–24, the participation rate of men has generally fallen by between 3 and 7 per cent while that of women has remained more stable or, in the case of Australia and New Zealand, has increased (Table 9). US male teenagers are likely to be more than, or as economically active as their counterparts, but this is not usually the case for females.

Table 9 Labour force participation rate* by age group and sex, selected years

		US		Canada		Australia		New Zealand	
		16–19	20–24	15–19	20–24	15–19	20–24	15–19	20–24
Men	1979	61.5	86.4	57.3	86.5	61.4	90.2	–	–
	1983	56.2	84.8	53.2	84.5	58.2	89.6	–	–
	1989	57.9	85.3	60.6	84.9	59.5	89.2	58.6	88.7
	1994	54.1	83.1	50.5	79.5	53.3	86.5	53.8	85.0
Women	1979	54.2	69.0	51.1	72.3	55.0	69.2	–	–
	1983	50.8	69.9	50.5	74.9	57.0	70.8	–	–
	1989	53.9	72.4	56.7	77.6	57.1	77.5	54.5	69.3
	1994	51.3	71.0	48.1	72.2	54.4	76.0	51.5	72.2

*Participation rate: total labour force as percentage of population.
Source: OECD (1996) Table 4.1.

Table 10 shows the percentage of young people in employment up to 1994 in all the countries. There are relatively high rates of registered unemployment (Table 11) among youth in Canada and Australia, compared to slightly lower rates for both age groups and sexes in the US (and New Zealand's rates are generally slightly higher than the US). Within the groups across the countries, differences in unemployment rates tend to be only in the range of 3–4 per cent, with the exception of unemployment among men aged 20–24 which ranges in 1997 from 8.9 per cent in the US to 15.0 per cent in Canada (see Table 11).

Table 10 Employment/population ratios* by age group and sex, selected years

		US		Canada		Australia		New Zealand	
		16–19	20–24	15–19	20–24	15–19	20–24	15–19	20–24
Men	1979	51.7	78.9	48.0	77.0	52.5	82.6	–	–
	1983	43.1	71.3	40.4	66.7	44.9	74.1	–	–
	1989	48.7	77.8	51.8	75.7	51.9	82.1	49.3	77.1
	1994	43.8	74.6	40.0	65.9	43.1	73.2	43.3	73.8
Women	1979	45.3	62.4	43.1	64.9	43.8	63.6	–	–
	1983	40.0	60.9	40.3	63.7	44.4	62.7	–	–
	1989	46.4	66.4	50.2	70.6	48.8	71.4	45.9	62.7
	1994	43.0	64.5	40.0	63.0	42.7	66.8	41.7	64.1

*Employment/population ratio: those in employment as percentage of the population in the age group.
Source: OECD (1996) Table 4.2.

Table 11 Youth unemployment rate* by country, age group and sex, selected years

		US		Canada		Australia		New Zealand	
		16–19	20–24	15–19	20–24	15–19	20–24	15–19	20–24
Men	1979	15.9	8.7	16.3	10.9	14.6	8.4	–	–
	1983	23.3	15.9	24.1	21.1	22.9	17.3	–	–
	1989	15.9	8.8	14.4	10.9	12.9	8.0	15.9	13.1
	1994	19.0	10.2	20.9	17.1	19.2	15.4	19.4	13.2
	1997†	16.9	8.9	19.8	15.0	20.3	12.4	16.3	11.0
Women	1979	16.4	9.6	15.8	10.3	20.4	8.0	–	–
	1983	21.3	12.9	20.0	15.0	22.2	11.5	–	–
	1989	14.0	8.3	11.5	9.0	14.6	7.9	15.8	9.5
	1994	16.2	9.2	16.8	12.8	21.5	12.1	18.9	11.2
	1997††	15.0	8.1	17.0	12.1	18.6	11.2	15.8	10.7

*Unemployment rate as percentage of labour force unemployed.
†Canada 1995, ††Australia 1996.
Source: Up to 1994 OECD (1996) Table 4.3.
Latest available year: Statistics Canada (1997) Table 7.5; Statistics New Zealand (1997b) Table 5.3; US Department of Labor (1998) Table 9; Australian Bureau of Statistics (1997a) Table 4.4.

Within education, the US has the highest legal age for completion of compulsory schooling at 17. However, in practice, Australia retains by far the highest proportion of students to that age with 94 per cent enrolment compared to 79 per cent in the US and Canada and 77 per cent in New Zealand (Table 12). Looking at the issue from the position of the mean number of years' schooling rather than the age at which schooling is completed, Canada has the highest number of expected years' schooling for both men (17.2 years) and women (17.8 years). US males have the lowest number of expected years (15.4) and US and Australian females are similarly low at 16.2 and 16.1 years respectively (Table 13). Therefore, although the starting age of primary education may affect the mean number of years' schooling for each country, it is interesting that Australia retains a greater percentage of teenagers to completion of secondary education around the ages of 17 and 18.

Table 12 Net enrolment in all levels of education for ages 15–21 in public and private institutions

	Ending age of compulsory schooling	Typical ending age of upper secondary education	Net enrolment*						
			15	16	17	18	19	20	21
US	17	17	98	90	79	56	42	35	35
Canada	16	17	98	94	79	62	53	57	38
Australia	15	19	98	96	94	66	53	47	34
New Zealand	16	17	97	100	77	57	48	45	51

*Net enrolment = (the number of people attending education/the population for that age) x 100.
Source: OECD (1997) Table C3.1.

Table 13 Educational indicators by sex

	US		Canada		Australia		New Zealand	
	Males	Females	Males	Females	Males	Females	Males	Females
Expected number of years' formal schooling (1995)	15.4	16.2	17.2	17.8	16.3	16.1	16	16.7
Net secondary school enrolment ratio* (1992)	89	90	90	90	79	82	87	89

*The net enrolment ratio presents the proportion of those within the eligible age for secondary school who are enrolled. It excludes those who are enrolled but are older than the eligible age.

Source: Expected number of years: UNESCO (1998); net enrolment ratio: UNESCO (1995) Table 6.

After age 18, rates of educational participation then tail off in all four countries with the transition to work or tertiary education. By age 20, Canada has the highest enrolment rate in education at 57 per cent compared to the US with the lowest rate of 35 per cent (Table 12). As far as the type of tertiary education that teenagers go on to is concerned, the percentage of 18–21-year-olds attending university is quite similar across the countries ranging from 21.1 per cent in Australia to 23.4 per cent in Canada. Canada also has a higher proportion of this age group engaged in other forms of tertiary education (14.5 per cent), while the rate is very low in New Zealand at 5.9 per cent (Table 14) (OECD 1997).

Table 14 Net enrolment* in public and private tertiary education for persons aged 18–21 by type of tertiary education, 1995

	US	Canada	Australia	New Zealand
Non-university tertiary education (%)	12.8	14.5	8.7	5.9
Percentage of female students	52.3	48.3	49.7	54.5
University level education (%)	21.9	23.4	21.1	22.7
Percentage of female students	55.0	56.9	55.4	54.6
Total enrolment rate (%)	34.7	37.9	29.8	28.6

*Net enrolment = (the number of people attending education/the population for that age) x 100.
Source: OECD (1997) Tables C5.2b and C5.3.

Socio-economic disadvantage

Recent research in the US has considered to what extent teenagers with low educational and occupational achievement and aspirations will self-select themselves into teenage pregnancy as an adaptive strategy to their future circumstances. This presents a different approach from that of considering poverty and social disadvantage as a consequence of early motherhood. Those who perceive that they have little to lose by becoming a young mother may be more willing to engage in risk behaviours and become teenage mothers. Therefore, without broad interventions to improve the career aspirations and tackle the social disadvantage of these young women, reducing teenage pregnancy alone would not necessarily improve the life chances of such women (Stevens-Simon & Lowy 1995).

The role of welfare

Internationally, Jones et al. (1985) found that the level of public assistance for teenage mothers was not linked to the national teenage pregnancy rate. In particular, the high rate of conceptions in the US can be contrasted with the comparatively low rate of assistance available. Looking at internal variation in the US, Moore et al. (1995b) found that teenagers in states with more generous benefit levels were not more likely to initiate sex at a younger age than those in states with harsher regimes; neither was there an association between benefit levels and rates of teenage conception. Lundberg and Plotnick (1990) estimated that if Aid for Families with Dependent Children (AFDC) rates were also combined with food stamp levels, the probability of a non-marital birth for under-20-year-old whites was found to be associated with the total package but

this was not the case for black teenagers. Welfare was found to only have a small effect on pregnancy and pregnancy resolution but a far greater effect on the probability that the teenager will marry before or soon after the birth. From more recent cohorts of the National Longitudinal Survey of Youth (Lundberg & Plotnick 1995) it appears that, among white women, welfare levels have a positive significant effect on the decision to have a child once pregnant but not on the rate of conceptions themselves.

Haveman et al. (1997) controlled for a vast array of background factors in their analysis of the Panel Survey of Income Dynamics, ranging from race, family structure, education, religiosity and mother's age at first birth to family poverty levels. Following the fates of those aged one to six in 1968, they found no direct association between levels of welfare benefit and the probability of early non-marital births. Factors that were significantly associated with a teenager's probability of having a non-marital birth included low future income expectations, high local rates of unemployment and low state expenditure on family planning services.

The general labour market opportunities appear to override any specific welfare policy initiatives. South and Lloyd (1992) found that higher female wages predicted lower fertility across all ages and higher male wages were associated with a lower incidence of non-marital fertility. Similarly, Duncan and Hoffman (1990) evaluated the impact of both welfare benefits and economic opportunities for black females aged 14–19 using the 1985 Panel Survey of Income Dynamics. After controlling for the socio-economic characteristics of the teenager's family, they found only small and non-significant effects of state AFDC benefits levels on the woman's likelihood of an early non-marital birth compared to a large and statistically significant effect of the estimated economic opportunities that would be available to the teenager by the age of 26.

Society

Age of consent and marriage

Details of the age of heterosexual consent are given in Appendix B. In the US, individual states set the level which currently ranges from 12 to 18. The age of consent does not appear to follow any clear systematic relation to the teenage pregnancy rate. Looking at states with 18 as the age of consent, California and Wisconsin have high rates of births to teenagers, but this is not the case for Massachusetts where the birth rate is 34.3 per 1000. Similarly, in states where the age of consent is 14, birth rates vary from 33.7 per 1000 in Maine to 71.0 per 1000 in Georgia.

In Canada all sexual activity is lawful at 18 but, between 14 and 17, heterosexual intercourse may also be legal under certain circumstances depending on whether there is any relationship of authority between the partners (see Appendix B). In Australia, rates are also set within each state either at 16 or 17. The high rates of births to teenagers in the Northern Territories and low rate in South Australia do not seem to bear any relation to the legal framework. Finally, in New Zealand the age of consent for women is 16 but legally there is no age set for boys.

The age at which young people are likely to marry has risen in all four countries by about four to five years since 1970. Table 15 shows the mean or median age at first marriage in recent years. For women all the reported ages are now over 25, and for men all are now over 26. For the US, Forrest (1993) has estimated that women now have seven and men ten years of exposure to risk of premarital conception between first intercourse and marriage and, as detailed earlier, over 80 per cent of births in all four countries to teenagers are to single women although some of these are likely to be cohabiting.

Table 15 Mean or median age at first marriage, 1995

	US*†	Canada‡	Australia†	New Zealand‡
Men	26.8	27.8	27.3	28.9
Women	25.0	25.9	25.3	26.9

*Data for 1997.
†US and Australia: median age.
‡Canada and New Zealand: mean age.
Source: Lugaila (1998); Statistics Canada (1996); Statistics New Zealand (1997a); Australian Bureau of Statistics (1997a).

Education

Studies have found that both the educational achievement of a teenager's parents as well as the teenager's own aspirations are highly significant in predicting the likelihood of a teenage pregnancy. Teenagers who have low levels of educational achievement and low aspirations for the future are more likely to become sexually active at a young age (US: DuRant et al. 1990; Canada: Languille et al. 1994; Australia: Cubis et al. 1985). In New Zealand, the Dunedin cohort study found that those who left school early with fewer qualifications were more likely to be sexually active and have multiple partners (Dickson et al. 1993). In the US, data from the 1992 National Health Interview Survey Youth Risk Behavior Supplement (Moore et al. 1995a) indicated that males with at least one parent with a degree were least likely to be sexually active before age 15, with a rate of 19 per cent compared to 38 per cent among teenagers whose parents did not complete high school. There were similar discrepancies among females with rates of 10 per cent and 26 per cent respectively. Both in attitudes and outcomes, those women who possessed college aspirations at the beginning of high school have been found to be less willing to countenance the possibility of, or to then become, teenage mothers (Abrahamse et al. 1988). In the UK, although not directly related to aspirations, there is clear evidence that among the youngest cohort in the National Survey of Sexual Attitudes and Lifestyles, median age at first intercourse is related to educational achievement, with those achieving degree and A-level qualifications having higher median ages than others (Johnson et al., 1994).

AIDS awareness

In the US, teenagers' awareness of the risk of AIDS through media and school education has been linked to the increased use of condoms among certain groups. Since the early 1980s, the places where condoms are available have widened dramatically making them more accessible to teenagers in shops and schools or colleges. By the end of the decade approximately 20 per cent of condom sales were through supermarkets alone (Cooksey et al. 1996). Over time, analysis of cohorts of teenagers included in the National Survey of Family Growth from 1978–88 found that the youngest 'entry' cohort of teenagers were the most likely to use condoms (Cooksey et al. 1996).

Religion

The role that religion plays in teenagers' lives has been found to have different effects according to their race and church. Involvement with church organisations and networks has been linked to delayed first intercourse among some groups (Mott et al. 1996). However, the same factors that lead to delayed intercourse have been found to lead to unprotected sex at a later age. Cooksey et al. (1996) found that black fundamentalist Protestants were most likely to remain virgins among black teenagers but least likely to use any method of contraception if they were sexually active. Similarly, white fundamentalist Protestants and Catholics showed similar tendencies to delay first intercourse but to be more likely to have unprotected sex when they became sexually active.

In certain states in the US, a growing number of teenagers have taken a public pledge to remain a virgin until marriage. Data from the National Longitudinal Study of Teenage Health indicate that 16 per cent of female respondents and 10 per cent of males had taken this pledge (Resnick et al. 1997). Although this did reduce the probability of these teenagers having sex, there is evidence that a high percentage of pledges among white females can lead to a higher than expected level of sexual activity among those women that have not taken the pledge in the same community (Bearman & Brueckner 1998). If female pledges are not matched by a similar level of pledges among males, the pressure on the remaining women to engage in sex may be even greater.

In turn, it should be borne in mind that religious activity and structure is not necessarily the cause of lower rates of sexual activity. Thornton and Camburn (1989) highlighted the effect that sexual experience has on reducing participation in religious activities, leaving only those who have abstained as participants.

Attitudes and stereotypes

Foshee and Baumann (1992) tracked 1067 12–14-year-olds through adolescence in the US. They found that females with the most traditional attitudes to gender roles began having sex earlier than those with more egalitarian views, especially if they believed in stereotypes about the

importance of female attractiveness to men. Men with more traditional attitudes have also been found to have more sex partners and to be less likely to use a condom, reflecting their particular ideas about masculinity. In contrast, those with equal attitudes to gender relations were most likely to report condom use (Pleck et al. 1993).

The media

There are contradictory findings regarding the direction of the relationship between teenage viewing of sexually explicit material and engaging in sexual activity themselves. Peterson et al. (1991) concluded that it was not the nature of the teenagers' TV viewing per se that was important, but that those teenagers who viewed explicit programmes in isolation for long periods were more at risk of early intercourse than those who watched along with parents.

Family structure and communication

Family disruption during childhood has been associated with both early sexual activity and risk of conception. Wu and Martinson (1993) have argued that it is the number of disruptions that is significant rather than family structure alone. However, in other studies, living with two parents has been found to predict later onset of sexual activity (Cooksey et al. 1996). In the US, white females who have grown up in care or been fostered away from their parents have been found to be at highest risk not only of early sexual activity but also of forced intercourse (Moore et al. 1995a), and generally similar findings have been reported from Australian studies (Harrison & Dempsey 1997). Using data from the 1987/8 National Survey of Family Growth, Miller et al. (1997) concluded that, for males, family disruption between the ages of 6 and 11 was a predictor of early sexual activity while, for females, time spent in a lone parent family was more significant. They consider the interlocking factors of the daughter's socialisation in a mother-headed household, the lack of supervision if the mother worked long hours and the exposure to the mother's own dating and sexual activity.

From the US National Longitudinal Study of Teenage Health, delayed first intercourse was found to be connected with high levels of family 'connectedness' through communication and shared activities as well as parental disapproval of teenage sex and contraception (Resnick et al. 1997). Similarly, a study of Hispanic teenagers found that better communication, although not linked to delayed first intercourse, appeared to improve contraceptive knowledge and practice (Adolph et al. 1995).

The issue of communication in the family needs further exploration: in another US study (Miller et al. 1998) there were large discrepancies in mothers' and teenagers' reporting of whether or not they had discussed a sex-related topic. Mothers were consistently more likely to report having discussed issues such as AIDS/HIV infection, sexual behaviour and contraceptive use than their offspring. The study drew conclusions regarding support for teaching mothers, in particular, not only what to communicate to their children but how.

In general, the strongest associations tend to be found between the mother's circumstances and behaviour and the outcomes for the daughter. Mother's age at first intercourse has been found to still predict the age for a daughter even after controlling for other social and economic factors (Mott et al. 1996). As mother's education increases, the probability of the daughter having a premarital birth decreases. However, the only significant predictor of young sexual activity was whether the child's mother had spent long hours working outside the home (Mott et al. 1996). Indeed, it has been estimated in the US that, if all mothers of teenagers had completed high school, there would be a 46 per cent reduction in premarital teenage births (An et al.1993). Similarly, again for the US, Lundberg and Plotnik (1995) have estimated that, for each year added to the education levels of mothers, premarital pregnancy would be reduced by 9 per cent among teenagers. It could be argued that more highly educated mothers may be better equipped to communicate with their daughters as well as raising more articulate children in their own right. Generally, females who do not feel supported by parents have been found to seek intimacy in early relationships and may be more dependent on peers' attitudes to sexual behaviour (Feldman & Brown 1993).

Within sibling relationships in the family, it has been found among black and white teenagers in the US that younger siblings tend to mature socially at an earlier age than their older brothers or sisters (Rodgers et al. 1992), possibly as a result of different parental treatment and copying older siblings. Among white teenagers, Haurin and Motts (1990) reported a correlation between

the age of first intercourse among siblings even after controlling for family attributes. Associating with peers who reinforce anti-social behaviour is commonly found to have an effect on early sexual activity (Costa et al. 1995). Those who already feel unsupported by their family may be more vulnerable to the influence of such groups (Feldman & Brown 1993). In all, East (1993) found that it was a combination of having a sexually active older sister and negative influences from a peer group that made a girl more prone to early sexual activity.

Abuse

It has been estimated that the incidence of childhood physical or sexual abuse is about twice as high among pregnant teenagers than in the general population in the US (Michael et al. 1994). However, the confounding factor of socio-economic disadvantage among the families of abused teenagers makes any causal inferences inconclusive (Smith 1996; Widom & Kuhns 1996). Either way, if over half of pregnant teenagers have experienced sexual victimisation or have used sex as a survival strategy, then this implies limitations to the potential impact of life skills education that emphasises negotiation in the context of a relationship. It also has implications for policies to support teenage parents who may themselves be at risk of becoming abusers (Moore et al. 1995a). In Australia, some studies have argued that the effects of childhood abuse on young men should not be ignored. They report that the experience of social and youth workers is that, in many cases, such young men show extreme levels of homophobia and misogyny – factors which may be associated with increased abusive aspects in their own relationships, and hence higher probabilities of risky outcomes (Harrison & Dempsey 1997; Hillier et al. 1997).

Biology

One aspect of the literature on teenage sexual activity considers the biosocial interactions between teenagers' environments and their genetic or hormonal influences on sexual activity. A mother's age of puberty has been found to be similar to that of her children (Udry et al. 1986), but whether in turn early puberty increases early sexual activity is not certain. Miller et al. (1994, cited in Moore et al. 1995a) found that the timing of menarche influences females' age of first intercourse, while Mott et al.(1996) have found no association. The UK Survey of Sexual Attitudes and Lifestyles does report a significant relationship between age at menarche and onset of sexual activity, but the authors point out that the reduction in average age at menarche over past decades is not sufficient to account for the decline in age at first intercourse (Johnson et al. 1994). Cooksey et al. (1996) did find that late age at menarche was associated with higher age of first intercourse and increased probability of contraceptive use among white teenagers in the National Survey of Family Growth; they attribute this finding to the information that a girl may gather from her peer group if she matures late.

Neighbourhoods

Although American evidence often points to the family itself as having some of the clearest effects on a teenager's chances of engaging in risk behaviours, the opportunities and constraints on doing so may be shaped by the community in which the teenager lives. In the US, the percentage of women who are employed full-time is significantly higher in predominantly black than in predominantly white neighbourhoods (Brewster et al. 1993), with the consequence of potentially lower supervision of teenagers.

Risk behaviours and early sexual activity

A fairly high estimate of young sexual activity has been produced from the US National Longitudinal Survey of Youth. Among that sample, 9 per cent of teenagers reported being sexually active before the age of 13, and 18 per cent by 14. Those reporting early sexual activity were more likely to have displayed disruptive behaviour as younger children, to have been in trouble at school, to have been exposed to negative peer pressures and to have experimented with cigarettes and alcohol. In particular, there is a clear association between alcohol and drug use and the transition to early first intercourse; this intercourse is more likely to be unintended and the teenagers are less likely to use condoms (Flanigan & Hitch 1986; Roberston & Plant 1988; Zabin et al. 1986). In the UK National Survey of Sexual Attitudes and Lifestyles, evidence was reported (across the whole age range) of an association between risky health behaviours and early sexual activity; heavy smokers and heavy drinkers were more likely to report having started their sexual activities at younger ages (Johnson et al. 1994).

This combination of factors may go some way to understanding the finding of a strong association between early initiation of intercourse and a higher cumulative number of partners by early adulthood. Moore et al.'s (1995a) analysis of the 1992 National Health Interview Survey Youth Risk Behavior Supplement confirmed that, of those sexually active 20-year-olds, 74 per cent of males who experienced intercourse aged 14 or younger had had six or more lifetime partners, compared to 10 per cent of those who did not initiate sex until the age of 17 or older. Among females the rates were 57 per cent and 10 per cent respectively. Overall, it appears that the risk behaviour orientation of those who engage in early sexual activity also makes them more likely to have many sexual partners (Durbin et al. 1993).

Similarly, in New Zealand, analysis of the Dunedin cohort of nearly 1000 people born in 1972/3 found associations between personality at age 18 and the probability of engaging in multiple risk behaviours, including unprotected sex, at 21 (Caspi et al. 1997). There were also links between being observed as an 'undercontrolled' 3-year-old and these adult risk behaviours. Among the women in the study, those displaying a conduct disorder at 15 were four times as likely to become pregnant before the age of 21 than the sample as a whole (Bardone et al. 1996).

The sequence and causal relationships in what has been termed 'problem behaviour syndrome' (Costa et al. 1995) are difficult to unravel, but there are clear associations between social and economic disadvantage, early problem behaviour, lack of supervision as a teenager and rates of teenage conception.

Summary

- Inequitable income distribution has been found to be related to higher rates of teenage pregnancy in the US and New Zealand in particular, and in Canada in the 1980s.
- Across the four countries, it is notable that Australian teenagers are the most likely of the four countries to continue their secondary education up to ages 17 and 18.
- Within the countries, the educational and occupational aspirations of teenagers affect their likelihood of becoming teenage mothers. While programmes to provide contraception or sex education cannot improve the social circumstances and educational achievement of teenagers, concentrating on aspirations for the future from a young age can reduce pregnancy by giving the teenagers more to lose by becoming parents.
- Legal frameworks for the age of consent and marriage are not correlated with the rates of teenage conceptions.
- The family background is central to the teenager's likelihood of sexual activity and conception. Higher educational and occupational achievement among parents, as well as good communication and more egalitarian attitudes to gender relations, reduce the risk of sexual activity and pregnancy, while parents working long hours, family conflict or disruption and childhood abuse increase it. Biological links between mother's and daughter's onset of sexual activity are contested.
- Outside the family, neighbourhoods with low levels of supervision available for teenagers are associated with high local rates of teenage conceptions.
- Watching explicit TV programmes has not been found to be associated with early sexual activity, with the exception of teenagers who spend long periods viewing such programmes on their own.
- Religious participation may delay the onset of sexual activity, but among some religious groups these teenagers are also less likely to use contraception.
- Programmes to encourage abstinence by women in particular taking a 'pledge' to remain a virgin until marriage may lead to more pressure being put on those who have not taken the pledge to engage in sex.
- Early sexual activity is often connected with a range of other problem behaviours such as alcohol consumption and drug-taking, although causal relationships can be difficult to clarify.

5 The role of sex education and other intervention programmes

Evaluating interventions

The literature evaluating education and intervention programmes is almost entirely dominated by US studies due to the sheer number of projects in operation across the country. However, only a small proportion of these programmes have been designed and evaluated to meet a standard from which generalisations can be made. In a review of interventions in the UK and US, Oakley et al (1994) eliminated 53 out of 65 outcome evaluations because they did not meet the strict criteria of having a control group who did not experience the intervention, collecting pre- and post-intervention data, reporting on all relevant outcomes, conducting long-term follow-ups and avoiding high attrition.

This chapter mainly draws on peer-reviewed meta-analyses and literature reviews that have already imposed strict criteria on the reports included in order to draw more reliable conclusions. A summary of the approaches of the reviews cited here is given in Appendix D. Most recently, Kirby (1997) has published a comprehensive review of programmes in the US and the section headings below follow the structure of his report. In addition, new approaches are constantly emerging all the time and this chapter highlights some of the current and future plans of prominent campaign groups in the US.

Education programmes

Abstinence

Following Congress legislation passed in 1996, over half a billion dollars was allocated to abstinence education in the US over the following five years using both public and private funds (National Campaign to Prevent Teen Pregnancy (NCPTP) 1998a). The NCPTP is conducting an evaluation exercise of the outcomes of this campaign in response to concerns regarding the lack of rigorous evaluation of previous projects. Kirby (1997), reviewing six published studies available on abstinence, found none that showed consistent and significant programme effects on either delaying the age of first intercourse or reducing sexual activity. Similarly, earlier programmes evaluated by Christopher and Roosa (1990) found the evidence on the effectiveness of abstinence campaigns to be inconclusive.

Sex education and STD/HIV prevention information

Every review included in this study concluded that there was overwhelming evidence that sex education did not increase sexual activity at an early age (US: Kirby 1995; Kirby 1997; Moore et al. 1995c; Australia: Siedlecky 1987) Some studies have even found associations with delayed onset and reduced activity (Grunseit et al. 1997). There is consensus that, among those who are sexually active, condom and contraceptive use is found to increase following sex education programmes. Moore et al. (1995c) conclude that theory-based approaches, such as the application of Social Learning Theory or Utility Maximisation Process, are the most effective approaches for building skills in both negotiation about abstinence and the use of contraception.

In Kirby's review (1997) it is noted that HIV/AIDS awareness projects seem to have the greatest effect, but is not clear whether adolescents are more receptive to this message or whether the particular projects are better funded, staffed and evaluated. Witte (1997) has concluded that the use of a 'fear appeal' approach with HIV/AIDS education can be part of its effectiveness. This method gives the message of the 'threat' of infection but must then be combined with positive and practical information that the 'threat' is avoidable through condom use.

Kirby (1997) lists nine important characteristics that education programmes should strive to achieve. He finds that successful programmes:

- focus clearly on reducing one or more sexual behaviours that lead to unintended pregnancy or HIV/STD infection;
- incorporate behavioural goals, teaching methods, and materials that are appropriate to the age, sexual experience, and culture of the students;

- are based upon theoretical approaches that have been demonstrated to be effective in influencing other health-related risky behaviours;
- last long enough to allow participants to complete important activities;
- provide basic, accurate information about the risks of unprotected intercourse and methods of avoiding unprotected intercourse;
- employ a variety of teaching methods designed to involve the participants and have them personalise the information;
- include activities that address social pressures related to sex;
- provide models of and practice in communication, negotiation and refusal skills;
- select teachers or peers who believe in the programme and then provide them with training, which often includes practice sessions (Kirby 1997; NCPTP 1998b).

Educating parents

Assignments given to adolescents to take home and discuss with their parents tend to have short-term effects, but these are not seen to be long-lasting. The impact of programmes designed to improve the communication between parents and children is particularly difficult to measure independently of the broader socio-economic characteristics of the family.

Access to contraception

All reviews have found that teenagers are more likely to attend family planning services when barriers are reduced and outreach programmes introduced. In the US, over 100 schools have introduced on-site health centres that may issue contraception and give advice. A further 300 schools have made condoms available through school nurses, staff or vending machines. Evaluations of these projects have not found any significant effect on the levels of sexual activity and contraception use in the schools' populations. There is possibly a substitution effect that those seeking contraception would have visited a community-based clinic if the school clinic were not available (Kirby 1997). These clinics will also not reach those teenagers who are not attending school or older males who tend to father the children of adolescent women.

Multicomponent prevention programmes

Tackling the problem from every angle in a concerted community and schools effort seems to have one of the largest immediate effects. A town in South Carolina launched a campaign through schools, the media and family planning clinics to integrate continuing sex education at all grades of high school and to issue condoms for males and take female adolescents to visit a family planning clinic. After the programme, the pregnancy rate among 14–17-year-olds declined significantly for several years but started to rise again when a new cohort entered adolescence without the same degree of information and education (Kirby 1997).

In general, no review found that making condoms available as part of a multidimensional campaign either hastened or increased sexual activity. The major difficulty of evaluating these large intensive projects is trying to isolate which components may have had the greatest effect.

Youth development – education and life options

There is a growing trend across all the countries to try to tackle the education and life options of adolescents to equip young women in particular with the aspirations and communication skills to negotiate about sexual intercourse and contraception. Kirby (1997) cites a large programme of life skills education conducted on a weekly basis in a middle and high school, which covered a curriculum of discussion on values, decision-making skills, communication, human growth and development, parenting, family relationships, life options and community resources. The discussions were also combined with voluntary work in the school or community. The rate of teenage conceptions fell in the year of the programme for a number of possible reasons: the adolescents developed ongoing supportive relationships with the leaders of the programme; the

voluntary work gave them both more future orientation towards the post-school world of work and less opportunity to become involved in risk behaviours.

Going back to an even earlier stage, the 'Perry Pre-School' programme, designed to provide 'head start' style early educational support for disadvantaged pre-school children, was found to have a significant effect on the chances of adolescent pregnancy over a decade later (Moore et al. 1995c). Although not an aim of the scheme, intervention at a young age to improve the life chances of certain children is consistently more effective than hoping that:

> *the disadvantaged adolescent can be cajoled into delaying sex or using contraceptives [when] their current lives and bleak futures provide them with little reason to postpone parenthood.*
> Moore *et al.* (1995c, p.112)

Young women have been the prime focus of these self-esteem and skill-building campaigns; nationally, for example, the US Department of Health and Human Services sponsors the 'Girl Power!' campaign. Established in 1996, the campaign consists of public education to 'encourage and empower' 9 –14-year-old girls to make the most of their futures. The campaign aims to build on the natural confidence of 8- and 9-year-old girls and to sustain positive attitudes about their health, body image and futures throughout adolescence. The media messages include sports star role models and other high-achieving young women (US Department of Health and Human Services 1998). Sport in particular has been argued to be an important channel through which to both build self-esteem and provide positive activities outside school. Analysis of the National Youth Risk Behavior Survey of over 11,000 students, as well as further data from a New York study of nearly 700 families, found that female athletes were significantly more likely to delay first intercourse than non-athletes and were less sexually active at later stages (Women's Sports Foundation 1998). Clearly, other social and economic factors that are associated with having the resources and parental support to engage in extra-curricular sports may be involved.

Peers

Peers provide a crucial influence on each other. Some innovative projects have used older teenagers to educate younger ones about relationships and the risks of pregnancy. Peer educators themselves have been found to take their own responsibility to avoid pregnancy very seriously in addition to communicating well with the young adolescents (Moore et al. 1995c). Those who have become teenage parents have also been involved in videos and classroom discussions to show the reality of life as a young mother or father (Witte 1997).

As part of the US 'Teen Pregnancy Prevention Month' in May 1999, the NCPTP conducted peer-led focus groups to research teenagers' own views on why conceptions are high in their communities. Some groups were with girls only, some with boys only, and others with mixed groups. The NCPTP will also set up a mixed teen leadership panel that will be involved in the ongoing work of the project (NCPTP 1998c).

In all, the reviews included in this report focus on the need to tackle the root causes of low aspirations among certain teenagers, whether it is poverty, educational failure, family conflict and disruption or exclusion from labour market opportunities. More effective projects seem to combine self-esteem and communication skill-building exercises to help delay first sex with clear information and access to contraception for those who choose to have sex.

Summary

- Evaluations of the effectiveness of education and intervention programmes often suffer from the lack of a control group as well as the absence of pre- and post-intervention data for the recipients.
- Abstinence programmes alone have not been found to cause a delay in the age of first intercourse or to reduce levels of sexual activity among teenagers.
- Sex education does not increase sexual activity at an early age and has been found to increase the use of condom and contraceptive use among those who are sexually active.

- HIV/AIDS prevention programmes have been very effective in increasing condom use, although this is possibly a reflection of the resources supporting these projects.

- Family planning outreach projects improve teenagers' access to contraception services. A growing number of schools in the US provide family planning clinics, although these may not reach at-risk teenagers who are not attending schools or older males who are more likely to be the partners of teenage mothers.

- Intensive community-based education and contraceptive services have significantly affected the rate of teenage conceptions but programmes must be maintained to have a continued benefit.

- Raising the aspirations and social skills of pre- and early teen children has a later effect on the rate of conceptions among that cohort.

- The benefits of pre-school programmes designed to bolster the learning skills and confidence of disadvantaged young children have been found to reduce the chance of those children becoming teenage parents over a decade later.

- Peer education can be effective in providing role models who have avoided pregnancy as well as exposure to the real life experience of those who have become teenage parents.

- Tackling low aspirations and building self-esteem while providing clear contraception information and provision for those who are sexually active is most effective in reducing conceptions to teenagers.

6 Conclusions and policy observations relevant to the UK

The reasons for teenage conceptions are complex. International comparisons reveal great variation in rates of pregnancies to young women under 20, as do comparisons of geographical areas within individual countries. It is difficult to assess the impact of interventions attempting to decrease teenage conception rates as rigorous evaluation measures have not been applied in many cases. Such interventions may not be applicable across cultural boundaries, and societal norms will clearly vary between countries. Therefore, analysis of the apparent reasons for teenage conception rates needs to be carried out within countries and within different communities in the countries in order to set hypotheses on which to base action. Such analysis should include the perceptions of teenagers themselves. Some small localised studies relating teenage conceptions to socio-economic and ethnic background exist in the UK, but more evidence would be required to produce firm data.

Key factors influencing teenage conceptions

The review of international evidence on preventing and reducing teenage conceptions in the US, Canada, Australia and New Zealand suggests that there are key influences on levels of teenage conceptions. The most striking are the socio-economic background of parents and teenagers and the educational aspirations of teenagers. These are considered below, together with other important factors.

Socio-economic status

A number of factors appear to relate to levels of teenage conceptions: inequitable income distribution has been positively related to higher rates of teenage pregnancy; high local rates of unemployment have been associated with non-marital births; higher female wages have been found to predict lower fertility across all ages.

Educational aspirations

It has been found that young women who perceive that they have little to lose by becoming a young mother are more likely to engage in risk behaviours; those young people who expect to go on to higher education are less likely to become teenage parents (this may also indicate that a pregnancy may be more likely to be aborted if the young woman wishes to continue her education). Education levels of parents also appear to affect the likelihood of a teenager becoming pregnant. One study in the US suggests that if all mothers of teenagers had completed high school, then there would be a 46 per cent reduction in teenage births.

Parents and community

There is some evidence that family disruption in early childhood, poor communication and support within families, a mother who was sexually active at a young age, lack of supervision of children and abuse may indicate greater likelihood of a teenager becoming pregnant. Peer and community influences may positively or negatively affect the likelihood of teenagers becoming pregnant.

Access to contraceptive services and sexual activity

There appears to have been a dramatic increase in the use of contraception at first intercourse. This can be at least partly attributed to the impact of HIV/AIDS prevention programmes which have increased condom availability and use, often through improved school and other outreach projects. Older teenagers are more likely to use some type of contraception at first intercourse than those who engage in sex at a young age. The chance of a woman using contraception at first intercourse has been found to increase according to whether sex was voluntary.

As relationships develop, condom use decreases as women choose to use other methods. Although rates of contraceptive use are not as high as at first intercourse and contraceptive failure is particularly high in the first year of sexual activity, the rates of contraceptive use among teenagers who are regularly sexually active today are still higher than those of their predecessors in the 1980s.

Education

Lack of evaluation hampers assessment of what is effective. Sex education has not been found to increase sexual activity and may lead to a deferral of first intercourse and increased use of contraception. Multicomponent sex education programmes (that is, those incorporating life skills teaching, discussions of attitudes, values and relationships, and parenting) have been found to be effective in reducing conception rates. A pre-school programme in the US based on enhancing learning skills was found to have had an impact in reducing teenage pregnancy rates up to ten years later. Peer education, if carried out by trained and informed young people, may be effective, but further assessment of the effectiveness of this approach is needed. Similarly, role model approaches – for example, using popular sportsmen and women and pop stars – may also be useful.

Gender relationships

Where gender relationships are equal and there is discussion about relationships and sexuality between couples, unintended conception is less likely to occur.

Legal and welfare framework

Interestingly, laws about sexual behaviour (such as the age of consent), religion and levels of welfare assistance appear to have little impact on teenagers' sexual activity and teenage conception rates. Information about media influence is inconclusive.

Recommendations for action in the UK based on the information gained

- More information is needed with regard to levels of teenage conception in different socio-economic and ethnic groups in order to target interventions.
- Initiatives for increasing educational opportunity and life aspirations, particularly for females, should be explored.
- Education on self-esteem and relationship development should begin from an early age in school and other contexts.
- Education for parenthood should be included in school curricula for all pupils.
- Equality of gender roles should be encouraged in settings such as education, health care and the workplace; male involvement in decisions about contraception should be encouraged via information, education and the media, bearing in mind that the partners of teenage mothers have often left school.
- The evidence on the effectiveness of school-based family planning clinics is equivocal.
- Integrated sexual health programmes, combining improved access to contraceptive services for young people, increased advertising in a variety of contexts such as clinics and general practice, and sex education in schools linked to these services, are most effective. However, the campaigns must be maintained on a permanent basis to have a continuing effect.
- Positive, accurate and non-stereotypical media images should be encouraged, using a variety of approaches such as role models and messages in programmes and magazines which are popular with teenagers.
- Evaluation of programmes designed to influence teenage sexual behaviour should take place in order to assess comparative impacts.

References

Abma, J., Driscoll, A., & Moore, K. (1998) 'Young women's degree of control over first intercourse: an exploratory analysis', *Family Planning Perspectives* 30(1): 12–18.

Abrahamse, A.F., Morrison, P.A. & Waite, L.J. (1988) 'Teenagers willing to consider single parenthood: who is at greatest risk?', *Family Planning Perspectives*, 20(1): 13–18.

Adolph, C., Ramos, D.E., Linton, K.L. & Grimes, D.A. (1995) 'Pregnancy among Hispanic teenagers: is good parental communication a deterrent?', *Contraception* 51(5): 303–6.

Age of Consent Campaign (1998) *Legal age of consent*. http://www.ageofconsent.com

Alan Guttmacher Institute
(1995) *Issues in brief: teenage pregnancy and the welfare reform debate*. http://www.agi-usa.org/pubs/ib5.html

1998a) *Facts in brief: teen sex and pregnancy*. http://www.agi-usa.org/pubs/fb-teen_sex.html

(1998b) *Special report: US teenage pregnancy statistics, 1998*. http://www.agiusa.org/teen_preg/special_report.html

An, C.B., Haveman, R. & Wolfe, B. (1993) 'Teen out-of-wedlock births and welfare receipt: the role of childhood events and economic circumstances', *The Review of Economics and Statistics* LXXV (2): 195–209.

Australian Bureau of Statistics
(1996) *The effect of government benefits and taxes on household income*. Australian Bureau of Statistics, Canberra.

(1997a) *Australian social trends 1997*. Australian Bureau of Statistics, Canberra.

(1997b) 'Government redistribution of income in Australia', in *Yearbook Australia 1997*. Australian Bureau of Statistics, Canberra.

(1998) *Experimental estimates of the Aboriginal and Torres Strait Island population, 30 June 1991–30 June 1996*. Australian Bureau of Statistics, Canberra. http://www.statistics.gov.au

Australian Institute of Health and Welfare (1998) *Australia's health 1998*. http://www.aihw.gov.au/publications/h_online/ah98/index.html

Bardone, A.M., Moffit, T.E., Caspi, A., Dickson, N. & Silva, P.A. (1996) 'Adult mental health and social outcomes of adolescent girls with depression and conduct disorder', *Development and Psychopathology* 8: 811–29.

Bearman, P.S. & Brueckner, H. (1998) The structure of commitment: social context and the transition to first intercourse among American adolescents. *Paper presented to the International Academy of Sex Research, Twenty Fourth Annual Meeting, Sirmione, Italy, June 1998*.

Binson, D., Dolcini, M.M., Pollack, L.M. & Catania, J.A. (1993) 'Multiple sexual partners among young adults in high risk cities', *Family Planning Perspectives* 25: 268.

Brewster, K.L., Billy, J.O.G. & Grady, W.R. (1993) 'Social context and adolescent behavior: the impact of community on the transition to sexual activity', *Social Forces* 71: 713–40.

Brook Advisory Centres (1997) *Teenage conceptions: statistics and trends*. Factsheet 2. Brook Advisory Centres, London.

Caspi, A., Harrington, H., Moffit, T.E., Begg, D., Dickson, N., Langley, J. & Silva, P.A. (1997) 'Personality differences predict health risk behaviors in young adulthood: evidence from a longitudinal study', *Journal of Personality and Social Psychology* 73(5): 1052–63.

Centers for Disease Control and Prevention (1998) 'Trends in sexual risk behaviors among high school students – United States, 1991–1997', *Morbidity and Mortality Weekly Report* 47(36): 749–51.

Christopher, F.S. & Roosa, M.W. (1990) 'An evaluation of an adolescent pregnancy prevention program: Is "just say no" enough?', *Family Relations* 39(1): 68–72.

Cooksey, E.C., Rindfuss, R.R. & Guilkey, D.K. (1996) 'The initiation of adolescent sexual and contraceptive behaviour during changing times', *Journal of Health and Social Behaviour* 37: 59–74.

Costa, F., Jessor, R., Donovan, J.E. & Fortenberry, J.D. (1995) 'Early initiation of sexual intercourse: the influence of psychosocial unconventionality', *Journal of Research on Adolescence* 5: 91–121.

Cubis, J., Lewin, T. & Raphael, B. (1985) 'Correlates of pregnancy and sexual experience in Australian adolescents', *Journal of Psychosomatic Obstetrics and Gynaecology* 4: 237–54.

Daley, V. (1998) 'Priorities, ethical and methodological issues in adolescent sexual health research.' Masters in Public Health dissertation, University of Otago, New Zealand.

Deininger, K. & Squire, L. (1996) *Measuring income inequality: a new database*. World Bank, New York. http://www.worldbank.org/html/prdmg/grthweb/dddeisqu.htm

Dickson, N. & Kokaua, J. (1997) 'Pregnancy rates among young people in the Southern Region'. Produced for the Health Intelligence Group, Southern Regional, Health cited in Daley (1998).

Dickson, N., Paul, C. & Herbison, P. (1993) 'Adolescents, sexual behaviour and implications for an epidemic of HIV/AIDS among the young', *Genitourinary Medicine* 69(2): 133–40.

Dickson, N., Paul, C., Herbison, P. & Silva, P. (1998) 'First sexual intercourse: age, coercion, and later regrets reported by a birth cohort', *British Medical Journal* 316: 29–33.

Donald, M., Lucke, J., Dunne, M., O'Toole, B. & Raphael, B. (1994) 'Determinants of condom use by Australian secondary school students,' *Journal of Adolescent Health* 15: 503–10.

Donovan, P. (1998) 'Falling teen pregnancy, birthrates: what's behind the declines?' *The Guttmacher Report on Public Policy*, 1(5): 6–9. http://www.agi-usa.org/pubs/journals/gr010506.html

Duncan, G. & Hoffman, S. (1990) 'Welfare benefits, economic opportunities and out-of-wedlock births among black teenage girls', *Demography* 27: 519–36.

Dunne, M., Donald, M., Lucke, J., Nilsson, R., Ballard, R. & Raphael, B. (1993a) National HIV/AIDS evaluation 1992: *HIV risk and sexual behaviour in Australian secondary schools: final report*, Department of Health, Housing and Community Services, Canberra, Australia.

Dunne, M., Donald, M., Lucke, J. & Raphael, B. (1993b), 'The sexual behaviour of young people in rural Australia', in Malko, K. (ed.) *A fair go for rural health – forward together: second national rural health conference*. Department of Health, Housing and Community Services, Canberra, Australia.

DuRant, R.H., Pendergrats, R. & Seymore, C. (1990) 'Sexual behaviour among Hispanic female adolescents in the United States', *Paediatrics*, 85(6): 1051–8.

Durbin, M., DiClemente, R.J., Siegel, D., Krasnovsky, F., Lazarus, N. & Camacho, T. (1993) 'Factors associated with multiple sex partners among junior high school students', *Journal of Adolescent Health* 14: 202–7.

East, P.L. (1993) 'Do adolescent pregnancy and childbearing affect younger siblings?', *Family Planning Perspectives* 28(4): 148–53.

Feldman, S. & Brown, N. (1993) 'Family influences on adolescent male sexuality: the mediational role of self-restraint', *Social Development* 2(1): 15–35.

Fergusson, D.M., Lynskey, M.T. & Horwood, L.J. (1994) 'AIDS knowledge and condom use in a birth cohort of 16-year-olds', *New Zealand Medical Journal* 107: 480–83.

Flanigan, B.J. & Hitch, M.A. (1986) 'Alcohol use, sexual intercourse and contraception: an exploratory study', *Journal of Alcohol and Drug Education* 31(3): 6–40.

Forrest, J.D. (1993) 'Timing of reproductive life stages', *Obstetrics and Gynaecology* 82(19) 105–11.

Foshee, V. & Baumann, K. (1992) 'Gender stereotyping and adolescent sexual behavior: a test of temporal order', *Journal of Applied Social Psychology* 22: 1561–79.

Franklin, C., Grant, D., Corcoran, J., O'Dell Miller, P. & Bultman, L. (1997) 'Effectiveness of prevention programs for adolescent pregnancy: a meta-analysis', *Journal of Marriage and the Family* 59: 551–67.

Frost, J.F. & Forrest, J.D. (1995) 'Understanding the impact of effective teenage pregnancy prevention programs', *Family Planning Perspectives* 27(5): 188–95.

Furstenberg, F. Jr., Brookes-Gunn, J. & Philip Morgan, S. (1987) *Adolescent mothers in later life*, Cambridge University Press, Cambridge.

Grunseit, A., Kippax, S., Aggleton, P., Baldo, M., Slutkin, G. (1997) 'Sexuality education and young people's sexual behavior: a review of studies', *Journal of Adolescent Research* 12(4): 421–53.

Harrison, L. & Dempsey, D. (1997) *Keeping sexual health on the agenda: challenges for service provision to young homeless people in Australia. Report from the Sexuality, Homelessness and Young People Project (Part Two)*. Centre for the Study of Sexually Transmissible Diseases, La Trobe University, Melbourne, Australia.

Haurin, R.J. & Mott, F.L. (1990) 'Adolescent sexual activity in the family context: the impact of older siblings', *Demography* 27: 537–57.

Haveman, R., Wolfe, B., Wilson, K. & Peterson, E. (1997) 'Do teens make rational choices? The case of teen non-marital childbearing', *Institute for Research into Poverty, Discussion Paper No: 1137–97*. University of Wisconsin-Madison, USA.

Henshaw, S.K.
(1997) 'Teenage abortion and pregnancy statistics by state, 1992', *Family Planning Perspectives* 29(3): 115–22.

(1998) 'Unintended pregnancy in the United States', *Family Planning Perspectives* 30(1): 24–29.

Hillier, L., Hickey, J., Plumer, D., & Haste, B. (1990) *Sexual health issues for young people living in rural New South Wales, Report I*. La Trobe University, Centre for the Study of Sexually Transmissible Diseases, Melbourne, Australia.

Hillier, L., Matthews, L. & Dempsey, D. (1997) *A low profile in a hierarchy of needs: a profile of the sexual health of young homeless people in Australia. Report from the Sexuality, Homelessness and Young People Project (Part One)*. Centre for the Study of Sexually Transmissible Diseases, La Trobe University, Melbourne, Australia.

Johnson, A., Wadsworth, J., Wellings, K. & Field, J. (1994) *Sexual attitudes and lifestyles*. Blackwell Scientific Publications, Oxford.

Jones, E.F., Forrest, J.D., Goldman, N., Henshaw, S.K., Lincoln, R., Rossof, J.I., Westoff, C.F. & Wulf, D.W. (1985) 'Teenage pregnancy in developed countries: determinants and policy implications', *Family Planning Perspectives* 17(2): 53–63.

King, A.J.C., Beazley, R., Warren, W.K. *et al.* (1988) *Canada youth and AIDS study*. Health Canada, Federal Centre for AIDS, Ottowa, Canada.

Kirby, D. (1995) *A review of educational programs designed to reduce sexual risk-taking behaviors among school-aged youth in the United States*. US Congress of Technology Assessment and the National Technical Information Service, Washington DC, USA.

Kirby, D. (1997) *No easy answers: research findings on programs to reduce teen pregnancy (summary)*. The National Campaign to Prevent Teen Pregnancy, Washington DC, USA. http://teenpregnancy.org/fmnoeasy.html

Landry, D.J. & Forrest, J.D. (1995) 'How old are US fathers?', *Family Planning Perspectives* 27(4): 159–61, 165.

Languille, D.B., Beazley, R., Shoveller, J. & Johnston, G. (1994) 'Prevalence of high risk sexual behaviour in adolescents attending school in a county in Nova Scotia', *Canadian Journal of Public Health* 85(4): 227–30.

Laumann, E.O. (1996) 'Early sexual experiences: How voluntary? How violent?', in Smith, M.D. *et al.* (eds) *Sexuality and American Social Policy*, Seminar Series No. 5, Henry J Kaiser Family Foundation, Menlo Park, California, USA.

Leland, N.L., Petersen, D.J., Braddock, M. & Alexander, G.R. (1995) 'Variations in pregnancy outcomes by race among 10–14-year-old mothers in the United States', *Public Health Reports* 110(1): 53–8.

Lindsay, J., Smith, A. & Rosenthal, D. (1997) *Secondary students HIV/AIDS and sexual health*, La Trobe University, Centre for the Study of Sexually Transmitted Diseases, Melbourne, Australia.

Lugaila, T.A. (1998) 'Marital status and living arrangements: March 1997 (update)', *Current Population Reports Population Characteristics* P20–506.

Lundberg, S. & Plotnick, R.D.
(1990) 'Effects of state welfare, abortion and family planning policies on premarital childbearing among white adolescents', *Family Planning Perspectives* 22(6): 246–51, 275.

(1995) 'Adolescent premarital childbearing: do economic incentives matter?', *Journal of Labor Economics* 13(2): 177–200.

Michael, R.T., Gagnon, J.H., Laumann, E.O. & Kolat, G. (1994) *Sex in America*. Little Brown & Co, Boston, USA.

Millar, W.J. & Wadhera, S. (1997) 'A perspective on Canadian teenage births, 1992 to 1994: older men and younger women?', *Canadian Journal of Public Health* 88(5): 333–45.

Miller, K.A., Clarke, L.F., Wendell, M.P.H., Levin, M.L., Gary-Ray, P., Veils, C.N. & Webber, M.P. (1997) 'Adolescent heterosexual experience: a new typology', *Journal of Adolescent Health* 20: 179–86.

Miller, K.S., Kotchick, B.A., Dorsey, S., Forehand, R. & Ham, A.Y. (1998) 'Family communication about sex: what are parents saying and are their adolescents listening?', *Family Planning Perspectives* 30(5): 218–22.

Moore, K.A., Miller, B.C., Glei, D. & Morrison, D.R. (1995a) *Adolescent sex, contraception, and childbearing: a review of recent research*. Child Trends Inc., Washington DC, USA.

Moore, K.A., Morrison, D.R. & Glei, D.A. (1995b) *Welfare and adolescent sex: the effects of family history, benefit levels and community context*. Child Trends Inc., Washington DC, USA.

Moore, K.A., Sugland, B.W., Blumenthal, C., Glei, D. & Snyder, N. (1995c) *Adolescent pregnancy prevention programs: interventions and evaluations*. Child Trends Inc., Washington DC, USA.

Mott, F.L., Fondell, M.M., Hu, P.N., Kowaleski-Jones, L. & Menaghan, E.G. (1996) 'The determinants of first sex by age 14 in a high-risk adolescent population', *Family Planning Perspectives* 28(1): 13–18.

National Campaign to Prevent Teen Pregnancy
(1998a) 'Evaluating abstinence', *Campaign Update*. http://teenpregnancy.org/updates/fall98/abstinence.html

(1998b) *Education programs*. http://teenpregnancy.org/sumedu.html

(1998c)'Focusing on teen leadership in 1999', *Campaign Update*.
http://teenpregnancy.org/updates/fall98/leadership.htm

Oakley, A., Fullerton, D., Holland, J., Arnold, S., France-Dawson, M., Kelley, P., McGrellis, S. & Roberston, P. (1994) *Reviews of effectiveness Number 2: sexual health interventions for young people*. Social Science Research Unit, Institute of Education, London.

Organisation for Economic Co-operation and Development (OECD) (1996) *Employment outlook, July 1996*. OECD, Paris, France.

Organisation for Economic Co-operation and Development (OECD): Centre for Educational Research and Innovation (1997) *Education at a glance: OECD Indicators*. OECD, Paris, France.

Peters, L. & Murphy, A. (1993) *Adolescent health survey: province of British Columbia*. The McCreary Centre Society, Burnaby, British Columbia, Canada.

Peterson, J.L., Moore, K.A. & Furstenberg, F.F. (1991) 'Television viewing and early initiation of sexual intercourse: is there a link?', *Journal of Homosexuality* 21: 93–118.

Pierre, N. & Cox, J. (1997) 'Teenage pregnancy prevention programs', *Current Opinion in Paediatrics* 9: 310–16.

Pleck, J.H., Sonestein, F.L. & Ku, L. (1993) 'Masculinity ideology: its impact on adolescent heterosexual relationships', *Journal of Social Issues* 49(3): 11–30.

Resnick, M.D., Bearman, P.S., Blum, R.W., Bauman, K.E., Harris, K.M., Jones, J. *et al.* (1997) 'Protecting adolescents from harm: findings from the National Longitudinal Study on Adolescent Health', *Journal of the American Medical Association* 278: 823–32.

Robertson, J.A. & Plant, M.A. (1988) 'Alcohol, sex and risks of HIV infection', *Drug and Alcohol Dependence* 22(1–2): 75–8.

Rodgers, J.L., Rowe, D.C. & Harris, D.F. (1992) 'Sibling differences in adolescent sexual behaviour: inferring process models from family composition patterns', *Journal of Marriage and the Family* 54: 142–52.

Shaw, P. (1992) *Teenagers and STDs: understanding the barriers to safe behaviour*. Proceedings of the Australasian Society, Sydney, Australia.

Siedlecky, S.
(1985) 'Trends in teenage births – dispelling some myths', *New Doctor* 38: 14–19.

(1987) 'Sexuality education and the needs of young people', *Healthright* 6(4).

(1996) 'What is happening with teenage pregnancies?', *Actuarial Studies and Demography, Research Paper Series 3*. Macquarie University, Australia.

Smith, C.A. (1996) 'The link between childhood maltreatment and teenage pregnancy', *Social Work Research* 20(3): 131–41.

South, S.J. & Lloyd, K.M. (1992) 'Marriage markets and non-marital fertility in the United States', *Demography* 29(2): 247–64.

Statistics Canada
(1996) *Annual demographic statistics 1996*. Statistics Canada, Ottawa, Canada.

(1997) *Historical labour force statistics 1997*. Statistics Canada, Ottawa, Canada.

(1998) *Annual demographic statistics 1998*. Statistics Canada, Ottawa, Canada.

Statistics Division of the United Nations Secretariat (1998) *Indicators on income and economic activity.* http://www.un.org/depts/unsd/social/inc-eco.htm

Statistics New Zealand
(1995) *Income statistics 1994*. Statistics New Zealand, Wellington, New Zealand.

(1997a) *Demographic trends 1996*. Statistics New Zealand, Wellington, New Zealand.

(1997b) *Labour market statistics tables 1997*. Statistics New Zealand, Wellington, New Zealand.

(1998) *Population*. Statistics New Zealand, Wellington, New Zealand
http://www.stats.govt.nz/statsweb.nsf

Stevens-Simon, C. & Lowy, R. (1995) 'Teenage childbearing: an adaptive strategy for the socio-economically disadvantaged or a strategy for adapting to socio-economic disadvantage?', *Archives of Paediatric Adolescent Medicine* 149: 912–15.

Thornton, A. & Camburn, D. (1989) 'Religious participation and adolescent sexual behavior and attitudes', *Journal of Marriage and the Family* 51: 641–53.

Udry, J.R., Talbert, L.M., Morris, N.M. (1986) 'Biosocial foundations of adolescent female sexuality', *Demography* 23(2): 217.

United Nations Department of Economic and Social Development
(1992) *Abortion policies: a global review*. Vol. I. United Nations, New York, USA.

(1994) *Abortion policies: a global review*. Vol. II. United Nations, New York, USA.

(1995) *Abortion policies: a global review*. Vol. III. United Nations, New York, USA.

United Nations Department of International Economic and Social Affairs Statistical Office (1999) *Demographic Yearbook 1997*. United Nations, New York.

United Nations Educational, Scientific and Cultural Organization (UNESCO) (1995) *World education report 1995*. UNESCO Publishing, Oxford.

1998) *World education report 1998*. UNESCO Publishing, Oxford.

United States Department of Health and Human Services (1998) 'Girl Power!' Press Releases. http://www.health.org/gpower/media/forpress/gppsas.htm

United States Department of Labor (1998) *Monthly labor review, June 1998*. Government Printing Office, Washington DC, USA.

Ventura, S.J., Curtin, S.C. & Matthews, T.J. (1998) *Teenage births in the United States: national and state trends 1990–1996*. National Vital Statistics System, National Center for Health Statistics, Hyattsville, Maryland, USA.

Wadhera, S. & Millar, W.J. (1996) *Reproductive health: pregnancies and rates, Canada, 1974–1993*. Statistics Canada, Ottowa, Canada.

Wadhera, S. & Millar, W.J. (1997) 'Teenage pregnancies 1974 to 1994', *Health Reports* Winter 1997, 9(3): 9–17.

Widom, C.S. & Kuhns, J.B. (1996) 'Childhood victimization and subsequent risk for promiscuity, prostitution and teenage pregnancy: a prospective study', *American Journal of Public Health* 86(11): 1607–12.

Wilkinson, R.G. (1992) 'Income distribution and life expectancy', *British Medical Journal* 304(18): 165–8.

Witte, K. (1997) 'Preventing teen pregnancy through persuasive communications: realities, myths and the hard-fact truths', *Journal of Community Health* 22(2):137–54.

Women's Sports Foundation (1998) *The Women's Sports Foundation report: sport and teen pregnancy: Summary.* http://www.lifetimetv.com/wosport/stage/RESLIB/html/pregexecsum.html

World Bank (1998) *Development Indicators.* World Bank, New York, USA.

Wu, L.L. & Martinson, B.B. (1993) 'Family structure and the risk of a premarital birth', *American Sociological Review* 58: 210–32.

Zabin, L.S., Hardy, J.B., Smith, E.A. & Hirsch, M.B. (1986) 'Substance use and its relation to sexual activity among inner-city adolescents', *Journal of Adolescent Health Care* 7(5): 320–31.

Appendix A – Technical data tables

Table A1 Live births per 1000 women aged 15–19, by country, 1975–96

	US	Canada	Australia	New Zealand	UK
1975	55.6	35.5	40.9	54.7	–
1976	52.8	33.7	–	49.8	–
1977	52.8	32.1	32.6	46.9	29.8
1978	51.5	29.9	30.4	43.3	29.9
1979	52.3	27.9	29.0	41.1	30.8
1980	53.2	27.4	28.1	38.2	30.9
1981	52.2	26.4	–	38.0	28.4
1982	52.4	26.5	–	34.3	27.5
1983	51.4	24.9	26.5	32.4	27.1
1984	50.6	24.2	–	30.4	27.8
1985	51.0	23.6	–	30.4	29.6
1986	50.2	23.2	22.2	30.2	30.2
1987	50.6	22.9	20.6	31.8	30.9
1988	53.0	23.1	20.2	31.8	32.3
1989	57.3	24.7	20.6	33.6	31.8
1990	60.4	25.4	22.2	35.0	33.0
1991	62.1	25.7	–	34.9	32.9
1992	60.7	25.4	21.9	33.6	31.8
1993	59.6	24.7	20.9	33.0	30.9
1994	58.9	25.1	20.7	32.2	28.8
1995	56.8	–	20.5	34.0	28.3
1996	54.4	–	20.1	–	29.7

Source: US: Alan Guttmacher Institute (1998c).
Canada: Wadhera & Millar (1996) Table 14B, Statistics Canada (1998) Table 3.9.
Australia: United Nations Department of International Economic and Social Affairs Statistical Office (1999) Table 11; Siedlecky (1996) Table 1.
New Zealand: Statistics New Zealand (1997a) Table 2.8.
UK: United Nations Department of International Economic and Social Affairs Statistical Office (1999) Table 11.

Table A2 Total pregnancy rate per 1000 women aged 15–19, US and Canada, 1975–95

	US	Canada
1975	101.1	53.6
1976	101.1	52.2
1977	104.6	50.6
1978	105.4	49.6
1979	109.4	48.0
1980	111.0	47.7
1981	109.9	46.2
1982	109.8	46.4
1983	109.3	43.1
1984	107.9	42.2
1985	109.0	41.5
1986	106.7	41.2
1987	106.6	41.1
1988	111.4	41.6
1989	114.9	44.4
1990	117.1	47.3
1991	115.8	47.6
1992	111.9	48.1
1993	109.3	47.8
1994	106.1	48.8
1995	101.1	–

Source: US: Alan Guttmacher Institute (1998b) Table 2.
Canada: Wadhera & Millar (1996) Table 14B.

Table A3 Induced abortions per 1000 women aged 15–19, by country, 1975–95

	US	Canada	New Zealand
1975	31.2	14.0	–
1976	34.3	14.7	–
1977	37.5	15.0	–
1978	39.7	16.5	–
1979	42.4	17.1	–
1980	42.8	17.5	–
1981	42.9	17.0	–
1982	42.7	17.4	–
1983	43.2	15.6	–
1984	42.9	15.5	–
1985	43.5	15.4	–
1986	42.3	15.6	–
1987	41.8	15.7	12.8
1988	43.5	16.0	14.5
1989	42.0	17.1	13.9
1990	40.6	19.3	15.6
1991	37.6	19.4	16.3
1992	35.5	20.3	16.3
1993	34.3	21.1	17.0
1994	32.2	–	18.9
1995	30.0	–	20.0

Source: US: Alan Guttmacher Institute (1998b) Table 2.
Canada: Wadhera & Millar (1996) Table 14B.
New Zealand: Statistics New Zealand (1997a) Table 7.3.

Table A4 Live births per 1000 women aged 14, US and Canada, 1975–96

	US	Canada
1975	6.0	1.7
1976	6.0	1.7
1977	5.7	1.5
1978	5.6	1.5
1979	5.3	1.4
1980	5.5	1.4
1981	5.4	1.5
1982	5.6	1.6
1983	5.5	1.3
1984	5.5	1.4
1985	5.5	1.3
1986	6.0	1.2
1987	6.4	1.4
1988	6.7	1.4
1989	7.1	1.2
1990	7.3	1.3
1991	7.2	1.4
1992	7.3	1.4
1993	7.2	1.4
1994	7.1	–
1995	6.7	–
1996	6.0	–

Source: US: Alan Guttmacher Institute (1998b).
Canada: Wadhera & Millar (1996) Table 14B.

Table A5 Live births per 1000 women aged 10–14, US and New Zealand, 1990–96

	US	New Zealand
1990	1.4	0.3
1991	1.4	0.2
1992	1.4	0.2
1993	1.4	0.2
1994	1.4	0.3
1995	1.3	0.3
1996	1.2	–

Source: US: Ventura *et al.* (1998) Table 2.
New Zealand: Statistics New Zealand (1997a) Table 2.8.

Table A6 Induced abortions per 1000 women aged 14, US and Canada, 1975–95

	US	Canada
1975	7.2	4.7
1976	7.6	5.1
1977	7.6	4.8
1978	7.5	4.7
1979	8.3	4.9
1980	8.4	4.7
1981	8.5	4.9
1982	8.3	5.1
1983	9.2	4.6
1984	9.3	4.3
1985	9.2	4.4
1986	9.2	3.9
1987	8.8	4.1
1988	8.7	4.1
1989	7.9	3.9
1990	7.9	4.8
1991	7.4	4.4
1992	7.6	4.9
1993	7.2	5.1
1994	6.6	–
1995	5.9	–

Source: US: Alan Guttmacher Institute (1998b) Table 2.
Canada: Statistics Canada (1997) Table 14B.

Table A7 Live births per 1000 women aged 10–14, by race in the US, 1990–96

	White*	Black	Non-Hispanic White	Hispanic
1990	0.7	4.9	0.5	2.4
1991	0.8	4.8	0.5	2.4
1992	0.8	4.7	0.5	2.6
1993	0.8	4.6	0.5	2.7
1994	0.8	4.6	0.5	2.7
1995	0.8	4.2	0.4	2.7
1996	0.8	3.7	–	2.6

*White *includes* Hispanic teenagers.
Source: Ventura *et al.* (1998) Table 2.

Table A8 Live births per 1000 women aged 15–19, New Zealand, 1975–95

	Total	Maori
1975	54.7	119.6
1976	49.8	111.3
1977	46.9	105.7
1978	43.3	100.1
1979	41.1	96.1
1980	38.2	93.1
1981	38.0	95.6
1982	34.3	89.3
1983	32.4	86.2
1984	30.4	87.7
1985	30.4	79.1
1986	30.2	79.6
1987	31.8	85.3
1988	31.8	75.3
1989	33.6	77.9
1990	35.0	76.9
1991	34.9	73.3
1992	33.6	74.3
1993	33.0	75.2
1994	32.2	77.7
1995	34.0	82.3

Source: Statistics New Zealand (1997a) Table 2.8.

Appendix B – Legal restrictions on sexual activity and abortion

Legal restrictions on sexual activity and abortion – US

Age of consent

Age 16 with the exception of:

Delaware (12); New Mexico (13); Georgia, Iowa, Maine, Pennsylvania, Utah (14); Kentucky (14 or 16 if partner over 21); Vermont (15); Louisiana, New York, Texas (17); Arizona, California, Florida, Idaho, Massachusetts, Mississippi, North Dakota, Oklahoma, Oregon, Tennessee, Washington, Wisconsin, Wyoming (18)

Abortion

Varies by state.

Federal law grants a woman the constitutional right to an abortion but states may impose restrictions. 1973 Supreme Court decisions *Roe v Wade* and *Doe v Bolton* legalised abortion nationwide. Current abortion law is governed by *Planned Parenthood of Southeastern Pennsylvania* v *Casey* which reaffirmed the constitutional right and ruled that a state may act to regulate abortion if it does not 'unduly burden' the woman's right to choose. In 35 states parental consent or a judge's order is required for a minor to obtain an abortion. There are 'informed' consent laws in 30 states, requiring that women be given anti-abortion information to discourage them. Four states prohibit the use of public facilities for abortion services; 30 states and the District of Columbia do not provide Medicaid funding unless a woman's life is in danger. There are problems of access for rural and low income women.

Source: Age of Consent Campaign (1998); United Nations (1995).

Legal restrictions on sexual activity and abortion – Canada

Age of consent

Age 18. Between 14 and 17 on condition that: a) no relationship of trust, authority, or dependency exists; b) there is no payment or offer of payment for sex; c) there is no anal sex unless the partners are legally married.

Abortion

National policy.

1969 Abortion Act, permits abortion if pregnancy 'would be likely to endanger the woman's life or health'. Repealed by the Canadian Supreme Court in 1988 as infringement of life, liberty and security. 1989 bill broadening the definition of health rejected by Senate. Interpretation remains with provincial courts. Hospital (and, in some provinces, clinic) fees are paid by the province.

Source: Age of Consent Campaign (1998); United Nations (1992).

Legal restrictions on sexual activity and abortion – Australia

Age of consent

Age 16, with the exception of South Australia and Tasmania (17).

Abortion

Varies by state.

Capital Territory and New South Wales allow abortion for social or economic stress causes.

South Australia allows a broad interpretation of mental health grounds, with authorisation from two doctors up to 28 weeks.

Northern Territory permits abortion on broad health grounds, with authorisation from two doctors up to 14 weeks (or 23 in medical emergencies).

In Tasmania and Western Australia abortion is not permitted on grounds of the woman's physical or mental health.

In Queensland the law only permits abortion to preserve life of the pregnant woman; British court overruling from 1938 accepted to include physical and mental health.

Parental consent required if under 14 in New South Wales or 16 in the Northern Territories.

Source: Age of Consent Campaign (1998); United Nations (1992).

Legal restrictions on sexual activity and abortion – New Zealand

Age of consent

Women 16. Men, legally no age so it would not be an offence for a 15-year-old male to have sex with a 16-year-old female.

Abortion

National policy.

1977/8 amendments to the Crimes Act – abortion is permitted during the first 20 weeks if there is danger to the life or physical or mental health of the woman or child. After 20 weeks, abortion is permitted only to save life or prevent serious injury to mother or child.

Procedures under the Contraception, Steralisation and Abortion Act of 1977 – system of certification from two consultants.

Bureaucracy has been blamed for making abortion more restrictive in New Zealand.

Source: Age of Consent Campaign (1998); United Nations (1994).

Appendix C – Record of CDROM searches

Popline 1983 to 1998

No.	Records	Request
1	3126	'Pregnancy-in-adolescence'/all subheadings
2	114,015	LA = 'English'
3	2788	#1 and (LA = 'English')
4	56,317	CP = 'US'
5	2046	#3 and (CP = 'US')
6	2376	CP = 'Canada'
7	31	#3 and (CP = 'Canada')
8	393	CP = 'New Zealand'
9	2	#3 and (CP = 'New Zealand')
10	1645	CP = 'Australia'
11	26	#3 and (CP = 'Australia')

Psyclit 1981 to 1998

No.	Records	Request
1	610	'Adolescent-pregnancy' in DE
2	689,968	LA = 'English'
3	594	#1 and (LA = 'English')

(country-based limits not available on this database)

BIDS IBSS Database 1980 to 1998

4 – 1980–1998

3 – 1980–1998

2 – 1980–1998

1 – 1980–1998

61 (teen* & preg*)@TKA

102 (adol* & moth*)@TKA

103 (adol* & preg*)@TKA

71 (teen* & moth*)@TKA

Appendix D – Reviews and meta-analyses used

Authors	Number of studies included	Method
Franklin *et al.* (1997)	32	32 studies selected from 500 identified studies published in the US since 1995 for quantitative meta-analysis of study data.
Frost & Forrest (1995)	5	Quantitative meta-analysis of study data. All were school-based programmes reported as quasi-experimental studies.
Kirby (1997)	77	Review of intervention programmes by type of approach.
Moore *et al.* (1995c)	>50	Review of programmes and best practice for evaluations across a broad range of locations and approaches.
Grunseit *et al.* (1997)	52	Review of sexuality education, drawing mainly on US studies.
Kirby (1995)	25	Education programmes for school-aged adolescents.
Pierre & Cox (1997)	17	Review of US intervention programmes in medical, school and community-based environments.