

# Promoting Positive Adolescent Sexual Health & Preventing Teenage Pregnancy - A Review of Recent Effectiveness Research

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RESEARCH

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## TABLE OF CONTENTS

<b>1.0</b>	<b>Introduction</b>	<b>3</b>
1.1	Aim of the review	3
1.2	Methods	3
1.2.1	Search strategy	3
1.2.2	Inclusion criteria	4
<b>2.0</b>	<b>Adolescent Sexual Health and Teenage Pregnancy</b>	<b>4</b>
2.1	Sexual health among young people in Ireland	4
2.2	Sexually transmitted infections in Ireland	7
2.3	Teenage pregnancy in Ireland	7
<b>3.0</b>	<b>Antecedents and Outcomes of Teenage Sexual Behaviour</b>	<b>8</b>
3.1	Outcomes of teenage pregnancy	8
3.2	Factors associated with adolescent sexual activity and teenage pregnancy	9
3.2.1	Sexual behaviour and teenage pregnancy – the impact of disadvantage	10
3.2.2	General education	11
3.3	Sexual behaviour and teenage pregnancy – the impact of individual factors	12
3.3.1	Biological influences – menarche	12
3.3.2	Age of first intercourse	12
3.3.3	The home	13
3.3.4	Peer influences	14
3.3.5	‘Experimental behaviours’	15
3.3.6	Media Influences	15
3.3.7	Social and community influences	16
3.3.8	High-risk groups	16
3.4	Access to contraceptive services and counselling	16
3.4.1	Adherence to contraceptive methods	18
3.5	Summary of antecedents	19
<b>4.0</b>	<b>Preventing Teenage Pregnancy and Promoting Positive Sexual Health</b>	<b>19</b>
4.1	Approaches to prevention	19
4.2	Evidence of effectiveness	20
4.2.1	Evaluating prevention programmes	20
4.3	Sexual health promotion programmes - what works?	21
4.4	Approaches to school-based sex education	22
4.4.1	Abstinence programmes	23
4.4.2	Comprehensive sex education	23
4.4.3	School-based education with parental involvement	24
4.4.4	School-based programmes linked with contraceptive services	25
4.4.5	One-to-one counselling	26

4.4.6	Youth development programmes	27
4.4.7	Early years programmes	29
4.5	Features associated with successful education programmes	29
4.5.1	Delivery of programmes	30
4.5.2	Timing of programmes	31
4.5.3	Cost-effectiveness	31
4.6	Summary of prevention programmes	31
4.7	Contraception and contraceptive service delivery	32
4.7.1	The effectiveness of different ways of delivering contraceptive services	32
4.8	Summary - contraceptive services	33
4.9	Mass communication	34
<b>5.0</b>	<b>Findings and Conclusions</b>	<b>36</b>
5.1	Educational approaches	36
5.2	Contraceptive and sexual health services	36
5.3	Tackling inequalities and promoting social inclusion	37
5.4	Future research	37
	<b>Bibliography</b>	<b>39</b>
	<b>Appendix 1</b>	<b>52</b>
	<b>Appendix 2</b>	<b>53</b>

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*The views expressed in this report are those of the authors and do not necessarily reflect the views or policies of the sponsors*

## 1.0 Introduction

This review was commissioned by the Crisis Pregnancy Agency to inform their work in the area of prevention of crisis pregnancy. The review commences with a brief description of the current epidemiological data on teenage pregnancy and adolescent sexual behaviour in Ireland. This is followed by an analysis of current understanding of the antecedents for early sexual initiation, teenage pregnancy and/or unprotected sexual intercourse. A consideration of the evidence of the effectiveness of prevention programmes will then be presented. Two main approaches to the prevention of teenage pregnancy and the promotion of positive sexual health are examined: educational interventions (primarily home- and school-based), and the provision and delivery of contraceptive and sexual health services. The review concludes with recommendations for health, education, health promotion and social services, and suggests areas for further research.

### 1.1 Aim of the review

This review addresses two questions:

1. What is the current evidence of the effectiveness of programmes aimed at promoting sexual health among young people (aged eighteen or under)?
2. What is the current evidence of the effectiveness of programmes aimed at preventing teenage pregnancy?

Given that a number of programmes have the dual aim of promoting sexual health and preventing teenage pregnancy, this review considers prevention of pregnancy as an outcome of effective sexual health promotion rather than as a separate research question.

### 1.2 Methods

Over the last decade a number of systematic reviews of the effectiveness of programmes aimed at preventing teenage pregnancy and promoting sexual health have been published. This overview of research presents a synthesis of evidence of effectiveness identified from extensive literature reviews in the following areas: teenage pregnancy prevention (NHS Centre for Reviews and Dissemination 1997, Dicenso, Guyatt, Willan and Griffith 2002, Silva 2002, Swann, Bowe, Mc Cormick and Kosmin 2003), sexual health promotion among young people (Peersman, Oakley, Oliver and Thomas 1996), and additional primary studies published since the most recent systematic review. The review also includes findings from relevant literature reviews and discussion papers on the topic of teenage pregnancy and adolescent sexual behaviour (Peckham, Inghamand Diamond 1996, Franklin and Corcoran 1999, Kirby 1999, UNICEF 2001, Collins, Alagiri, Summers and Morin 2002, Kirby 2002, Manlove, Terry -Humen, Romano Papillo, Franzetta, Williams and Ryan 2002).

#### 1.2.1 Search strategy

Reviews and primary studies were identified by searches of computerised databases (Medline, ERIC, CINAHL, PsycLit, Cochrane Database of Systematic Reviews, HEBSWEB, Health Development Agency (HDA) online), websites (Centre for Disease Control, Alan Guttmacher Institute, National Campaign to Prevent Teenage Pregnancy), and hand

searches of relevant journals such as Family Planning Perspectives, Journal of Adolescence, Journal of Adolescent Health, and Health Education Journal. Citations in identified papers and previous reviews were followed up. Professionals from relevant UK and US agencies such as Catherine Dennison from the Teenage Pregnancy Unit, Geraldine Mc Cormick from the HDA, Simon Ellis from NHPIS in HDA, and Susan Philliber from Philliber Research Associates (evaluators of the Children's AID Society Carrera Programme) were contacted.

### *1.2.2 Inclusion criteria*

The main criteria for inclusion of reviews were that (a) the paper had a focus on prevention of teenage pregnancy or the promotion of young people's sexual health, and that (b) authors were systematic in their identification, assessment and pooling of the primary studies. Additional primary studies not included in the quality reviews were assessed using the structured guidelines.

A hierarchy of evidence based on study design, which classifies well designed experimental designs (randomised controlled trials in particular) as the most effective, (Level 1 studies) was used to judge the degree to which studies were susceptible to bias. Consideration was also given to the sample size and follow-up period. (See section 4 for more detailed discussion of the different designs used to evaluate prevention programmes.)

## **2.0 Adolescent Sexual Health and Teenage Pregnancy**

### **2.1 Sexual health among young people in Ireland**

There is no national research on young people's sexual attitudes and lifestyles in Ireland. The European Health Behaviour of School Children (HBSC) survey, which is carried out across Europe, carries a module on sexual behaviour and knowledge, but this has not been included in the Republic of Ireland sample. In the absence of this research, the picture of young people's sexual attitudes and lifestyle is at best patchy. Table 2.1 below summarises the key features of surveys completed with young people in Ireland in the last decade.

Table 2.1 Summary of surveys of young people in Ireland

Author(s) Year	Location	Population Group Sample Size/Response Rate	Methods	Content	Comments Findings
AIDS Alliance 1996 (Dunne, Seery, O'Mahoney and Grogan 1997)	Cork	Young people aged 15-24 N= 800 – self selectors	Self completion questionnaire across a range of settings including schools, Further Education (FE) and Higher Education (HE) colleges, Vocational training centres Programmes for early school leavers, Youth groups etc	Two questionnaires Shorter questionnaire for younger (under 18 age group) Long questionnaire included: Sources of information about AIDS Knowledge of HIV Perceived risk of AIDS Alcohol and drug use Sexual behaviour and practices Condom use Risk - reduction behaviour	The study did not employ random sampling methods but highlights the importance of seeking to access young people in a range of settings.  30% of 15-17 yr. old females were sexually active 45% 15-17 yr. old males were sexually active Use of protection at first intercourse high but inconsistent thereafter
Athlone Institute of Technology Lifestyle Survey (Duggan 2000)	Athlone	FE college Year 1 to Year 4 (Age 18-21) N=487 (86% Response rate)	Self completion survey of 20% sample of college population	General health behaviour including smoking, alcohol and drug use, stress, diet and nutrition and physical fitness. Questions on sexual behaviour included levels of sexual experience, protection during intercourse, sources of contraception/advice, methods of contraception, reasons for using contraception, concerns about pregnancy, and sources of advice on pregnancy options.	Very detailed survey of students' lifestyle including sexual behaviour. Provides a context to sexual behaviour among this population group.  63% always used contraception (declined with older students) 94% used contraception to prevent pregnancy 80% to prevent STIs 14% used emergency contraception, 12% used withdrawal 3% natural methods 47% obtain condoms from vending machines.

Midland Survey Bonner (1996)	Midlands	Post-primary school pupils n=1654 (males and females)	Self completion survey of 16-18 year olds from twelve randomly selected schools	General lifestyle questionnaire with module on sexual behaviour, smoking, alcohol and drug use Sources of sex education Sexual behaviour Contraceptive use	32% sexually active by age 17 (38% males 26% females) 70% used contraception at first intercourse 50% believed that 16-18 year olds were sexually active 73% felt they should receive school-based sex education
Midland Health Board Sheerin (1998)	Midland	Qualitative Research			There was a lack of awareness of contraception Most claimed to use contraception but less when drunk There was a lack of awareness of STIs other than HIV/AIDS There was a considerable lack of awareness of sexual health services
FE Colleges (Condon, Collins and Jenkins 1993)	Cork	University students 17-33 200 undergraduates selected at random 192 returned (15 spoiled)	Self completion survey	Background characteristics (Age, sex, living with parents) Sexual activity Contraceptive use	35% sexually active 58% had sex at least once weekly 66% used some form of contraceptive Weak study – not representative of student population Limited questionnaire
Mc Hale and Newell (1997)	Galway City	School-going teenagers 15-18 years (mean age 16) 40 of the 47 schools participated in the survey (85%) Questionnaire completed by 2754 pupils (98%)	Self completion questionnaire 47 Schools Pre-leaving cert. class		21% had sexual intercourse 72% had reported using condom at first intercourse 20% had regular sexual intercourse

Analysis of research with young people completed in Ireland to date indicates some variation in the proportion of young people reporting sexual intercourse by seventeen years (21% - 36%). This variation may reflect the research approach adopted and the population surveyed. However, one consistent finding does emerge: approximately 70% of young people report using condoms or other contraception at first intercourse, with a pattern of inconsistent use thereafter. Barriers to the use of contraception reported in the studies included low level of knowledge, cost and embarrassment at buying condoms, fear of side effects of contraception, inability to negotiate contraceptive use, alcohol and drug use, sporadic/unplanned nature of sexual activity and indifference.

## 2.2 Sexually transmitted infections in Ireland

The number of notifications of diagnoses of sexually transmitted infections (STIs) has increased in the general population over the last decade – from 2228 cases in 1989 to 8869 cases in 2000 (NDSC, 2000). Of particular concern is the rise in notifications of chlamydia trachomatis infection in the general population in the five-year period from 1995-2000. In 1995, 245 cases were recorded (sixteen of which were among under twenty year olds) and in 2000 1343 cases were recorded (116 of which were among under twenty year olds). Chlamydia is a particularly worrying STI, as approximately 50% of females and 70% of males are have no symptoms, and, if left untreated, it can result in infertility.

This increase in notifications of STIs may represent better recording and improved detection, but also indicates an increase in unprotected sexual behaviour. Of concern is the rise in notifications of sexually transmitted infections among teenagers.

## 2.3 Teenage pregnancy in Ireland

In 2000 there were 93<sup>1</sup> conceptions among young women aged under sixteen in Ireland, 27 (29%) of whom travelled to the UK for termination. In the same year, there were 4019 conceptions among the older teenagers (aged under twenty), of whom 884 (22%) travelled to the UK for a termination. The most recent figures show that in 2000 the rate of births to under twenty year olds was 19.31 per 1000. (Source – PHIS) This rate varies across health boards.

Recent international comparisons of births among fifteen to nineteen year olds in 28 developed countries showed Ireland to be in the top ten highest (UNICEF 2001). The US has the highest rate of teenage births, followed by the UK. Countries with the lowest rates of teenage births include Korea, Japan, Switzerland, the Netherlands, Sweden and Italy.

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<sup>1</sup> This figure may not represent all conceptions as it does not account for miscarriage or women from Ireland who do not give an Irish address at UK abortion clinics.



### 3.0 Antecedents and Outcomes of Teenage Sexual Behaviour

#### 3.1 Outcomes of teenage pregnancy

For many young women pregnancy and motherhood are positive and welcomed experiences without long-term negative outcomes (Hudson and Ineichen 1991, Phoenix 1991). However, compared to women aged 20 to 35 years, teenagers have a higher risk of experiencing adverse health and obstetric outcomes, and, more importantly, educational, social and economic outcomes (Table 3.1) (Scholl, Hediger and Belsky 1994, Kiernan 1995, NHS Centre for Reviews and Dissemination 1997). There is evidence to indicate that compared to older mothers, teenage mothers and their babies have an increased risk of anaemia, hypertension, pre-eclampsia, urinary tract infections, obstetric complications and low birth weight (Dickson, Fullerton, Sheldon and Granville 1997). More recently, researchers have argued that the higher risk is associated with social deprivation and is less a consequence of physical immaturity. Some argue that adverse health outcomes associated with teenage pregnancy and motherhood are not due to the age of the mother, but are a result of lifestyle factors such as smoking and alcohol use during pregnancy and/or poor diet and nutrition (Hoffman 1998, Olausson, Haglund, Weitoft and Cnattingius 2001, Smith and Pell, 2001).

**Table 3.1 Adverse outcomes for the teenager and her child**

	Health outcomes	Educational outcomes	Social and economic outcomes
Young person	Hypertension, anaemia, placental abruption, obstetric complications, depression and isolation. Termination of pregnancy	School drop-out and gaps in education.	Reduced employment opportunities due to missed education. Increased reliance on state welfare. Poor housing and nutrition.
Child	Increased risk of sudden infant syndrome, prematurity, hospitalisation due to accidental injuries. Increased risk of experiencing abuse and teenage pregnancy.	In the pre-school years children of teenage mothers display developmental delays.	Increased risk of living in poverty. Poor housing and nutrition

Source: Adapted from the Effective Health Care Bulletin (NHS Centre for Reviews and Dissemination 1997)

### 3.2 Factors associated with adolescent sexual activity and teenage pregnancy

A number of factors have been identified as being associated with early sexual initiation, non-use of contraception, and teenage pregnancy<sup>2</sup>. Much of the material included in this section of the report has been identified from reviews of the literature in this area (Hayes 1987, Peach, Harris and Bielby 1994, DiCenso 1995, Moore, Miller, Gleib and Morrison 1995, Miller, Benson and Galbraith 2001), supplemented by additional relevant UK research evidence [Swann et al. 2003, Hughes 1999, Social Exclusion Unit 1999, Burtney 2000, Aggleton, Oliver and Rivers 1998, Hosie 2002, Ingham and Partridge 2002].

The Social Exclusion Unit report on Teenage Pregnancy in the U.K. (Social Exclusion Unit 1999) brings together the state of knowledge in the area of teenage pregnancy. The report identifies eight different risk factors such as being in care, experiencing physical or sexual abuse, involvement in crime, poor mental health, poverty/disadvantage, family history of teenage pregnancy, low educational achievement and not being in education or training. Whilst each of these factors individually may be associated with an increased risk of teenage pregnancy, many young people are exposed to multiple risk factors. The Effective Health Care Bulletin (EHCB) (NHS Centre for Reviews and Dissemination 1997) grouped the antecedents of teenage pregnancy (and sexual behaviour) into six categories (Table 3.2) and commented that many of the factors are inter-related and can contribute to, as well as be an outcome of, teenage pregnancy. This makes cause and effect relationships difficult to disentangle.

Socio-economic conditions such as poverty and disadvantage have been identified as key predictors of teenage pregnancy and parenthood. The current evidence on the role of poverty and disadvantage is presented in the next section. Individual factors associated with an increased or decreased risk of early sexual behaviour and/or teenage pregnancy will then be explored.

**Table 3.2 Factors associated with early sexual initiation, contraceptive use, and teenage pregnancy**

Socio-economic	Individual	Family	Educational	Community	Contraception
Poverty / low Income	Age of first intercourse	Family structure (including single parent families)	Academic attainment	Social norms (sexual activity/ pregnancy/teen parenthood)	Contraceptive services
Employment prospects	Emotional maturity	Family size	Educational goals	Peer influences	Awareness
Housing and social conditions	Knowledge	Parenting style (support, control, supervision)	Sex education	Cultural and religious influences	Availability
Poor general education	Self-esteem	Parent/child communication	Truancy/ exclusion	Media influences	Accessibility
Limited opportunities/ aspirations	Skills base	Mother or sister (teen pregnancy history)		Child abuse	
	Cognitive maturity	Child abuse/neglect		'Experimental' behaviour	
	Physical maturity				
	'Experimental' behaviour				

Source: Adapted from the Effective Health Care Bulletin (NHS Centre for Reviews and Dissemination 1997)

<sup>2</sup> Much of the research on risk factors has been carried out in the UK and US based on large-scale studies such as the National Sexual Attitudes and Lifestyles (NATSAL) survey and the National Child Development Study (NCDS) in the UK. More research is needed in Ireland to examine the risk factors.

### *3.2.1 Sexual behaviour and teenage pregnancy – the impact of disadvantage*

#### *UK Research*

A number of epidemiological studies have highlighted that teenage pregnancy and childbirth rates are higher in more socially deprived areas (Smith 1994, Wilson 1994, Garlick 1993). Secondary analysis of the National Child Development Study (NCDS) found teenage mothers and young men who become fathers before the age of 22 were more likely to come from families with low socio-economic status, where financial hardship was reported (Kiernan 1995). Diamond, Clements, Stone and Ingham (1999) explored individual and spatial characteristics thought to be important in influencing levels of teenage pregnancy. Reflecting findings from previous studies, Diamond and colleagues found that the first important influence on the chance of conception during the teenage years was deprivation. Where a woman lives was found to predict the chance of teenage pregnancy. However, Diamond et al. argue that the explanation for higher rates of teenage pregnancy in some areas is multi-factorial, and may include a range of individual factors such as low self-esteem, lower educational and occupational aspirations, less knowledge of contraception and sexual health services and higher gender power differentials. Given that many young people living in deprived areas may be exposed to many, if not all, of the individual factors, it is clear that teenage pregnancy and the associated burden of unintended pregnancy may therefore be greater in poorer localities.

#### *International research*

A number of studies have examined the experience of countries with lower rates of teenage pregnancy and STIs such as Canada, and European countries such as Finland and the Netherlands (Singh and Darroch 2000). Some researchers propose that the variation in levels of teenage pregnancy and sexually transmitted infections (STIs) lies in other countries' comprehensive relationship and sex education programmes, greater societal openness regarding sexuality, and accessible sexual health services (Ingham and Partridge 2002, Hosie 2002). Other researchers propose that that social and economic disadvantage may contribute to differences in teenage pregnancy, parenthood and STIs (Jones, Forrest, Henshaw, Silverman and Torres 1989). In a recent study, Singh and colleagues compared data from Canada, France, GB, Sweden and the United States on adolescent sexual and reproductive behaviour and disadvantage (Singh and Darroch 2000). The research found that adolescent childbearing was more likely among women with lower levels of income and education than their better-off peers. The level of childbearing was also found to be strongly related to race, ethnicity and immigrant status, although there were some differences across countries. While early sexual activity had little association with income, the level of contraceptive use at first intercourse was found to vary across income group and social class in the US and the UK. (A separate US study found poor and minority adolescent women to be less successful contraceptive users (Fu, Darroch, Haas and Ranjit 1999)). Across all countries, young women who had little education were more likely to initiate sexual activity than those with higher levels of education. This finding is consistent with other studies, which found that adolescents who have greater motivation to achieve and who have better access to educational opportunities are also motivated to delay sexual activity and childbearing (Trent and Crowder 1997).

Singh and colleagues (2001) conclude that improving teenagers' sexual and reproductive behaviour requires strategies to reduce the number of young people growing up in disadvantaged conditions and to help those who are disadvantaged to overcome the obstacles they face.

The complex nature of the factors associated with teenage pregnancy is highlighted in a review of teenage conception rates across Europe by Kane and Wellings (1999). This review found the following macro factors to be associated with teenage birth:

- **teenage marriage rates** – the lower the average age of first marriage and the higher the proportion of teenagers who are married, the higher the teenage birth rate
- **the overall wealth of a country** – the higher the wealth resources of a country, the lower the teenage birth rate
- **income distribution** – the greater the difference between those at the bottom and top of income scales, the higher the teenage birth rate
- **mean years of education** – the longer the average length of time spent in schooling in a country, the lower the teenage birth rate
- **strength of religion** – the higher the proportion of people who see themselves as members of a religious community in a country, the lower the teenage birth rates.

Such cross-national comparisons support the findings of more localised British research, indicating that efforts to reduce inequalities in deprivation and to promote and improve general education may be as important as specific sexual health programmes and policies.

### *3.2.2 General education*

Poor educational performance has been linked with an increased risk of early sexual initiation and teenage pregnancy. A number of US studies have shown a link between low academic achievement, lack of educational goals and early sexual activity (Hayes 1987, Moore et al. 1995). Adolescent girls who score low on intelligence tests and place little value on educational attainment are more likely to have intercourse at an early age than those who are educationally ambitious (Hayes 1987). Higher educational attainment is also associated with becoming sexually active at a later age, and an increase in the use of contraceptives (Moore and Wertheimer 1984, Hayes 1987, Wellings, Wadsworth, Johnson, Field, J., Field, B. et al. 1996).

In the UK, analysis of the National Child Development Study (NCDS) found that young parents (males and females who became parents before the age of 22) were less likely to have performed well in school and to have completed their education with qualifications (Kiernan 1995). Young parents were twice as likely to have registered low scores (lowest quartile) in reading and mathematical tests when they were seven and sixteen; similar results were found in US research. Six out of ten teenage mothers (61%) had no qualifications by the time they were 23, compared with fewer than one in four women (23%) who became mothers when they were older. Kiernan's study concluded that low educational attainment was the most powerful single factor associated with the chances of becoming a young parent.

However, Kiernan's study identified clear opportunities for intervention in terms of educational disadvantage. The analysis revealed strong evidence that an improving school record was associated with a reduced likelihood that children would become parents at an early age. Boys and girls whose school performance improved between the ages of seven and sixteen were among the least likely to become parents at a young age.

Similarly, the recent NATSAL survey in 2000 found that 29% of sexually active young women who left school at sixteen without any qualifications had a child before the age of eighteen (Wellings, Nanchahal, MacDowall, McManus, Erens et al. 2001). While this finding indicates that education level and prospects are highly associated with motherhood before the age of eighteen, it is less clear to what extent poor educational aspirations lead to early sexual experience.

### 3.3 Sexual behaviour and teenage pregnancy – the impact of individual factors

#### 3.3.1 Biological influences – menarche

Age of menarche (first period) for girls, and body development and hormonal levels for boys have been found to be associated with early initiation of sexual activity (Udry and Billy 1987, MacDowall, Gerressu, Nanchahal and Wellings 2002). Age of menarche had been reported to be decreasing for each generation but has now levelled off. (Hunt 1976, Dann and Roberts 1993, Dann 1996) However, these biological factors are unlikely to operate independently of the social context of young people's lives (Hofferth 1988).

#### 3.3.2 Age of first intercourse

First intercourse among those aged under sixteen has been found to be associated with poor sexual health outcomes. Analysis of the NATSAL 2000 data found that the prevalence of pregnancy before eighteen years of age was higher among women who had first intercourse before the age of sixteen and among those who left school at sixteen (Wellings et al. 2001). There is limited Irish research on age of first intercourse. McHale and Newell's (1997) survey of 2754 pupils aged between fifteen and eighteen in Galway found that approximately one fifth (21%) of pupils had already had sexual intercourse; the mean age for first intercourse was 15.5 years. Just under three-quarters (72%) reported using condoms at first intercourse, and a third reported inconsistent use of condoms thereafter.

This pattern is similar to recent findings from the NATSAL 2000 survey in GB that found that the median age for first intercourse was seventeen years. In this survey approximately one fifth (20%) reported first intercourse before the age of sixteen<sup>3</sup>, and four in five men and women who had intercourse before the age of sixteen reported using condoms at first intercourse (Wellings et al. 2001). However, contraceptive use at first intercourse increases with age, as does 'planned' sexual intercourse (Johnson, Wadsworth, Wellings, Field and Bradsay 1994, Moore et al. 1995, Wellings et al. 2001).

Non-use of contraception among younger teenagers may reflect concerns about the age of consent and confidentiality, as well as a reluctance to pre-plan for fear of being labelled as promiscuous by their peers (Peach et al. 1994). Cognitive immaturity has been proposed as an explanation for young people's failure to take preventive action in spite of an awareness of the risks involved (Gordon 1990, Stuart-Smith 1996), but further research is needed to explore the relationship between sexual behaviour and cognitive development.

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<sup>3</sup> This proportion decreased by age of cohort whereby a higher proportion of younger cohorts reported first sexual intercourse before the age of sixteen.

### 3.3.3 *The home*

Learning about sex and relationships is a lifelong process, which for many young people commences in the home. Many aspects of the family have been found to affect young people's sexual behaviour, including parents' characteristics, family structure, relationship and interactions (Miller et al. 2001). Parental influences include parenting styles or strategies, parent-child communication, and parental structure. Parent-child communication about sexuality can act as a protective factor in young people's sexual activity and teenage pregnancy (Wellings et al. 1996).

#### 3.3.3.1 *Parent/child communication*

The home is a first influence on developing sexuality. Parenting styles can affect the nature of communication, and subsequently the sexual attitudes of children. For example, parents who adopt a more realistic or humanistic parenting style rather than a moralistic one are more likely to discuss issues – specifically sexual matters (Ingham 1997, Aggleton et al. 1998). An open and positive environment in which to discuss sexuality is crucial. The quality of the parent/child relationship has been identified as a crucial component in lower rates of teenage pregnancies. Research has found consistent evidence that parent/child connectedness (support, quality and warmth) is related to lower adolescent sexual risk, and evidence is greatest for this effect through delaying and reducing adolescent sexual intercourse (Whitaker, Miller, May and Levin 1999).

Relationship and sex education commences in the early years. Parents and carers provide children with the foundation of future sex education. This foundation is based on how parents relate to each other and to their children. Many parents believe they have a responsibility to contribute to their child's sex education, but some lack confidence in their ability to do so effectively. Good parent-child communication about sexuality has been found to act as a protective factor, delaying sexual initiation among young people and limiting adverse sexual health outcomes (MacDowall et al. 2002). Analyses of the SHARE data indicate that parenting style and parental monitoring are associated with age of first intercourse (Wight, Henderson, Abraham, Buston, Scott and Hart 2002). Similarly, analyses of the Scottish Health Behaviour of School Children Survey (HBSC) indicate that boys who have discussed contraception with their parents feel more comfortable about carrying condoms and that positive attitudes increased the likelihood of condom use threefold. Girls who had talked with their parents about contraception were twice as likely to buy and carry condoms (Todd, Currie and Smith 1999). The quality of parent/child communication, especially parents' ability to be open and responsive, is a key communication dimension that has been found to change the direction of the relationship between parent and teen, and sexual communication, and adolescents' use of condoms (Whitaker et al. 1999, Feldman and Rosenthal 2000).

Parental control and supervision has been suggested to be associated with lower levels of adolescent problem behaviour. In a review of two decades of research in this area, Miller et al. (2001) found that in a large majority of studies, investigators have reported that parental control is inversely related to adolescent pregnancy or pregnancy risk (i.e. higher parental control, lower risk of pregnancy). However, low parental supervision and control may influence sexual behaviour and teenage pregnancy through mediating mechanisms such as alcohol and drug use and high-risk peer associations, which increase sexual behaviours and decrease contraceptive use. Miller et al. comment that it

is important to make the distinction between parental supervision and parents' intrusive psychological over-control. They suggest that it is plausible that parental regulation might have a curvilinear (u-shaped) relationship with risk of pregnancy, with adolescents being at greatest risk if their parents are at either extreme of very low or very high control.

### *3.3.3.2 Family structure*

Children raised in intact families with both biological parents are consistently found to have a lower probability of becoming a teenage parent (Moore et al. 1995). The most recent analysis of the NATSAL study in GB found that the prevalence of motherhood before the age of eighteen was higher among women who did not live with both parents until they were sixteen (Wellings et al. 2001). This supports other research indicating that daughters of single parent households are more likely to begin sexual activity at a young age than their peers from two-parent families (Hayes 1987, Di Salvo 1992).

Residing in disorganised/dangerous neighbourhoods and in a lower SES family, living with a single parent and having older sexually active siblings all place teenagers at elevated risk of poor sexual health outcomes. Having pregnant or parenting teenage sisters, or being a victim of sexual abuse also increases this risk. (Whitaker et al. 1999).

### *3.3.3.3 Family history of early childbearing*

Daughters of teen mothers have a higher probability of becoming a teen parent (Newcomer and Baldwin 1992, Manlove 1993, Burghes and Brown 1995). Kiernan's study found that teenage parents were more likely to have had mothers who were teenagers themselves when they first gave birth. One in four young mothers (26%) and one in five young fathers (22%) had teenage mothers, compared with one in eight (13%) women and men who became parents at a later stage (Kiernan 1995).

There is increasing evidence that younger sisters of childbearing teenagers are at greater risk of adolescent childbearing. (East and Felice 1992) However, it is not clear the extent to which shared parental influences, shared societal risks (cultural, socio-economic and class), or social modelling contribute to this risk.

### *3.3.3.4 Parents' education*

Parents' education has been associated with the age of a young person's sexual initiation (Hayes 1987). For example, higher maternal education has been associated with a lower probability of a teen birth. Better-educated mothers are more likely to influence their daughter's attitudes in favour of abortion, which in turn influences their likelihood of opting for termination of an unintended pregnancy.

## *3.3.4 Peer influences*

Pressure to have sex comes in many forms. Some teenagers experience direct pressures from partners, which range from subtle verbal and non-verbal messages to outright coercion and rape. Many teenagers feel sexual pressure from the media, peer groups, and friends. (Moore et al. 1995) Influences in this area are diverse, and it is difficult to directly measure their effect on teenage sexual behaviour. A number of factors have been identified, most requiring further investigation, including presumed sexual activity patterns of peers, with teenagers attempting to behave according to a perceived norm (DiCenso 1995).

In a recent qualitative study (Hughes 1999) two types of pressure were identified – pressure from specific individuals over a specific period, and a second, more subtle, ambient pressure from the culture, environment and peer group. In the UK, for both young men and women, peer pressure and opportunity were more likely to be factors in first intercourse than love and commitment (Ingham and van Zessen 1998).

### 3.3.5 *Experimental behaviours'*

There is research to suggest that adolescent sexual involvement and pregnancy are related to other behaviours that may constitute a 'syndrome' of risk behaviours (Moore et al. 1995). These risk behaviours that are associated with early onset of sexual intercourse include smoking, alcohol use, drug use, school suspension, theft and violence (Jessor and Jessor 1985, Hayes 1987, Moore et al. 1995). The decision by an adolescent to become sexually active may more accurately reflect the conscious or unconscious decision to assume a particular lifestyle rather than to adopt a single isolated behaviour (Hayes 1987).

The role that alcohol or drug use plays in sexual risk-taking among young people is not clear. There are indications of an association between alcohol/drug use and non-use of contraception (Leland and Barth 1992). Recent US research using the Youth Risk Behaviour Survey (YRBS) examined the relationship between alcohol and drug use and sexual behaviour (Santelli, Robin, Lowry and Brener. 2001). Failure to use a condom at last intercourse was associated with lifetime substance use or age at initiation of alcohol use. Among young men and women, recent substance use and either alcohol or drug use at last intercourse were both strongly associated with having more than one partner in the past three months. For females only, lifetime substance use also increased the probability of recent multiple partners. Santelli et al. suggest that two possible health promotion messages emerge from these findings. If alcohol/drug-induced loss of inhibition is causing sexual risk taking, education and counselling should warn young people about how alcohol or drugs may affect judgement, and should underline the connection between substance use and risky sexual behaviour in certain social contexts. However, if personality or individual factors are driving risk taking – including sexual risk taking – there is a need to target adolescent risk-takers with specific prevention messages and to consider ways of channelling potentially destructive risk-taking behaviours into less damaging activities.

### 3.3.6 *Media Influences*

Young people are exposed to many forms of mass media including music, music videos, television, films, magazines and advertising. There is an increasingly high sexual content in the media used by teenagers, particularly music and music videos. Some authors have expressed concerns that many young people are exposed to images of sexuality that do not include warnings of the potential risks and consequences. However, the relationship between the media and young people's sexual behaviour has not been thoroughly researched (Moore et al. 1995).

The media may play an important role in promoting contraception, and educating young adults in its use, but only magazines aimed at teenagers take this role seriously and play a useful part in health education (Drife 1993). Marketing and advertising of the different contraceptive methods is limited. The marketing of condoms has become acceptable since the emergence of HIV (Drife 1993).



### *3.3.7 Social and community influences*

Research from the northern European countries suggests that openness about sexuality, the content, context and scope of education, and the accessibility of counselling and contraceptive services contribute to lower rates of teenage conceptions (David, Morgall, Osler, Rasmussen and Jensen 1990, Hosie 2002). Similarly Ingham and Partridge (2002), in their review of sexual health policies in other English-speaking countries (USA, Australia, New Zealand), conclude that a more liberal climate towards sexuality among young people is protective – in other words countries such as Australia, which have a more open attitude, have lower rates of teenage pregnancy.

Research with young females concluded that neighbourhood characteristics have an important effect on teen sexual intercourse. Young men in areas of high unemployment have been found to have more sexual partners and were more likely to have made someone pregnant or to have fathered a child (Ku, Sonenstein and Pleck 1993). It is, however, difficult to disentangle the socio-economic influences from the social and community influences.

In the UK, social norms and beliefs about abortion have been found to be important in the decision to continue with, or terminate an unintended pregnancy (Burghes and Brown 1995). Opposition to abortion is greater in poor socio-economic areas and lower in more affluent areas (Hudson and Ineichen 1991, Johnson et al. 1994).

### *3.3.8 High-risk groups*

There is evidence to suggest that characteristics of some young people place them at greater risk of early sexual initiation and teenage pregnancy/parenthood. Young people (male and female) who have been looked after by the state are at particular risk of teenage pregnancy. Up to one quarter of young people from public care have a child by age sixteen, and nearly half are mothers 18 to 24 months after leaving care (Biehal 1992, Biehal 1995, Corlyon and McGuire 1997). A Northern Irish study, based on 95 young people who were aged sixteen and over and who had recently left care, indicated that one in five young people leaving care had been pregnant or were responsible for a pregnancy. For the young women the rate was two in five. Therefore, it is clear that, compared to their peers, teenage pregnancy is a disproportionate feature of the leaving care experience for young women (Pinkerton and McCrea 1996).

## **3.4 Access to contraceptive services and counselling**

Levels of access to and use of contraception are strongly associated with teenage pregnancy. Diamond et al. (1999) found that proximity to youth-centred services was strongly associated with lower rates of teenage pregnancies in urban locations. However, contraceptive use among young people is complex and does not follow a simple, straightforward pattern. Difficulty in gaining access to contraception and finding an acceptable method of contraception can contribute to unprotected sexual intercourse (Burghes and Brown 1995). A number of authors suggest possible explanations for young people's poor use of available contraception services including concerns about confidentiality, fear of disapproval, and lack of access (location and times) (Peach et al. 1994, Wilson 1994).

There is limited access to free condoms in Ireland. Some organisations (generally confined to high-risk groups) distribute condoms without charge but, in general, condoms must be purchased from pharmacies, shops, supermarkets, and vending machines. Most other forms of contraception are available only on prescription, which for some young people has the associated cost of a visit to the GP.

Lack of services for young people and insufficient publicity about contraceptive services have been identified as important barriers to young people's contraceptive use (Health Education Authority, Brook Advisory Centres and The Centre for Sexual Health Research 1996). Fear about the lack of confidentiality in contraceptive services, especially among under sixteen year olds, emerges frequently as a reason for non-use of contraceptive services and contraception by young people.

Table 3.3 presents a summary of the issues of access to sexual health services that contribute to young people's uptake of available services. The key issues include access, availability and appropriateness of service, and approachability of staff. For the Irish context cost of service is also an important consideration.

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**Table 3.3 Issues of access to sexual health services**

Research Area	Description
Geographical location	Young people who are sexually active are more likely to attend a service if it is geographically convenient (Cheesbrough, Ingham and Massey 1999). The proximity of youth-friendly clinics has been associated with lower conceptions in urban areas (Clements, Diamond, Ingham and Stone 1996, Diamond et al. 1999).
Hidden from parental view	Young people do not want parents to know they are sexually active; therefore they may chose non-local services or none at all, if no other choice is available. Services, which are not 'sexual health' but 'youth orientated', may help to hide the nature of the visit. School-based services may help to hide young people's use of a service (Zabin, Hirsch, Smith, Streett and Hardy 1986).
Suitable opening times	Young people have limited windows of opportunity to seek advice: Services are often only available when young people are meant to be in school and often require a bus ride (Clements et al. 1996). Sexual activity is often sporadic and unplanned, requiring immediate advice. Longer opening times are critical.

Confidentiality	Unanimously presented as one of the most important keys to access for young people: confidentiality is essential (Jones et al. 1989, Social Exclusion Unit 1999).
Informal and user- friendly	Access starts with the reception staff. An informal and friendly atmosphere, rather than an intimidating one, is recommended by research in this area (Social Exclusion Unit 1999).
Professionals' attitudes	Young people need to be treated with respect; this is identified by young people as service providers who are friendly, talk to young people not at them, listen objectively, do not judge and are genuinely interested in what young people are saying (Aggleton et al. 1998).
'Sex-speak' - youthful linguistics	Young people prefer professionals to use language they use themselves or to at least explain 'jargon' (Aggleton et al. 1998). Words such as 'family planning' are irrelevant to young people: they are developing sexual identities not 'planning families'.
Inclusive access for and recognition of the needs of young men	Historically aimed at the needs of women. Young men often perceive services as predominantly run for and by women (Social Exclusion Unit 1999).

In 2000 Best Practice Guidance on the Provision of Effective Contraception and Advice Services for Young People, published as part of the GB Teenage Pregnancy Strategy in 2000, outlined criteria for quality services:

- open to young women and young men with an upper age limit of 25
- involve young people in planning and evaluation of the service
- an explicit confidentiality policy highlighting the right of young people, including under sixteen year olds, to the same degree of confidentiality as older patients
- staff with non-judgmental attitudes, trained in working with young people
- a non-clinical atmosphere reflecting young people's culture and the diversity of the local community
- a location that offers young people easy access with sufficient anonymity
- opening hours that match young people's availability
- service publicity that is actively disseminated to young people in places where they meet.

#### 3.4.1 Adherence to contraceptive methods

Interviews of women presenting for termination have identified poor adherence to contraceptive methods as an important factor in the unintended pregnancy (Pearson, Owens, Philips, Periera Gray and Marshall 1995). Younger women were found to experience failure rates several times higher than women aged 25 and over (Fleissig 1991). Incorrect use of contraceptive methods is often due to a lack of accurate and

complete information. Many of the oral contraception users did not know what to do if a pill was missed or if they experienced medical complications (Wareham and Drummond 1994, Pearson et al. 1995). These research findings highlight the importance of a good sex education that includes clear guidance on effective use of all contraceptive methods.

Chapter 4 presents the evidence of the effectiveness of different ways of delivering sexual health and contraceptive services for young people.

### 3.5 Summary of antecedents

Accurate and clear knowledge about sex and contraception is a prerequisite for positive sexual health. It is frequently assumed that current generations of young people are well informed about sexuality, sexual health and contraception. This is not borne out by the research evidence.

As the previous sections have highlighted, learning about sex is a lifelong process that commences in the early years and continues throughout life. Learning about sex is influenced by a range of factors including biology (puberty), family communication, family structure, peers, neighbourhoods, church, school and the media. Where someone lives, their experience of education, their aspirations for the future, their family structure and peer networks all influence the young person's decisions about sex and parenthood. Equally, decisions about sexual behaviour depend on a range of individual factors such as knowledge, interpersonal communication and skills, as well as access to contraceptive services and advice.

## 4.0 Preventing Teenage Pregnancy and Promoting Positive Sexual Health

### 4.1 Approaches to prevention

Reviews of international policies indicate that crisis pregnancies and sexually transmitted infections can be prevented. There are three broad approaches to promoting positive sexual health and preventing pregnancy and STIs, which include:

1. The provision of sex education in order to:
  - provide skills and confidence to form and maintain respectful relationships
  - provide information and skills to encourage delay in initiation of sexual activity
  - provide information and skills to encourage protected sexual activity
  - increase knowledge of contraceptive use and availability of contraceptive services
  - increase awareness and understanding of post-coital contraception.
2. The provision of contraceptive services and counselling to:
  - increase contraceptive use and compliance
  - increase use of post-coital contraception in case of contraceptive failure or unprotected sex.
3. Good general education/vocational programmes:
  - to increase aspirations and expectations from the future (thus avoid early parenthood)
  - as a motivation to avoid risk behaviour.

The following sections provide an overview of the research evidence of the effectiveness of different strategies aimed at preventing unintended pregnancy and promoting positive sexual health. The first part of this section provides an overview of approaches to sex education and presents the current evidence of their effectiveness in preventing pregnancy and promoting sexual health. The second part of the section presents an overview of contraceptive counselling and service delivery and presents the current research knowledge of these services in reducing unintended teenage pregnancy and sexually transmitted infections.

## 4.2 Evidence of effectiveness

### 4.2.1 *Evaluating prevention programmes*

Over the last two decades the evaluation of sexual health promotion programmes has been plagued by a number of methodological and logistical challenges. One of the major obstacles in the evaluation of programmes is the absence of clear and measurable objectives (Hayes 1987, Smith and Gorry 1980, Moore et al. 1995). The usefulness of an evaluation is dependent on the meaningfulness of the outcome measures selected to establish effectiveness. For example, outcome measures of sex education programmes can range from changes in knowledge, attitudes and values to measures of behavioural change including initiation of sexual activity and pregnancy rates. Over the last decade there has been some debate about the usefulness of judging the effectiveness of sex education programmes solely in terms of behavioural outcomes (British Medical Association (BMA) Foundation for AIDS 1996). The aims of sex education are often ambitious, relating to lifelong quality of relationships, as well as pregnancy and STI prevention.

#### 4.2.1.1 *Evaluation research designs*

The term evaluation covers a number of designs that aim to describe the processes and/or outcomes of a given programme/service. Process evaluation refers to the ways in which the programme or service is delivered. Outcome or impact evaluations are designed to generate answers about the effectiveness of particular interventions in changing specific outcomes. In outcome evaluation, the randomised controlled trial (RCT) is often considered to be the most rigorous research method for evaluating the effectiveness of a given programme. Using the RCT, individuals/groups have an equal and known chance of receiving the programme. The random allocation to either the programme or control aims to overcome the possible contribution of the range of outside influences (such as exposure to media), which might contribute to any observed differences. As the previous chapters have highlighted, a number of external social factors influence decisions about sexual activity. Using the randomised control design, the researcher acknowledges that these outside influences cannot be controlled or eliminated, but as both the programme group and control group will experience the same background influences<sup>4</sup> any observed differences between the two groups after the programme can be attributed to the programme.

A number of reviews have commented on the difficulties in evaluating prevention programmes. (Kirby 2002, DuCette 1989). One review (Stahler 1991) has outlined the key barriers to programme evaluation which include:

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<sup>4</sup> Good outcome evaluations compare the intervention and control groups prior to the introduction of the programme to ensure the groups are similar in all relevant measures.

- **Cost** – Rigorously controlled impact studies using comparison or control groups are relatively expensive.
- **Staffing** - One is an issue of the competency of the individuals carrying out the evaluation and the second is the relationship that develops between the evaluators and the implementers.
- **Time** - Usually too little time is allowed between the programme and the follow-up evaluation.
- **Data collection** - The process of compiling complete and accurate data is difficult. The project must also be sure that it is collecting data on all factors that may be affecting the outcomes to be measured.

Establishing control groups - Random assignment is the best method to ensure comparability between groups; however, such assignment is not always possible.

An additional factor omitted from this list is the difficulty in measuring the impact of programmes on outcomes which have low incidence within the research population e.g. pregnancy among under sixteen year olds is quite low. A large sample size is required in order to have sufficient power to identify statistical differences. A number of researchers have therefore chosen to use proxy measures such as time of initiation of intercourse, contraceptive use or number of sexual partners rather than short-term changes in pregnancy rates as indicators of success.

#### 4.3 Sexual health promotion programmes - what works?

The search identified twenty reviews of research in the area of teenage pregnancy and sexual health promotion, of which five were considered to be relevant and of high quality (Peersman et al. 1996, NHS Centre for Reviews and Dissemination 1997, Kirby 2001, Dicenso et al. 2002, Swann et al. 2003). An additional five reviews, although not systematic, were also included as important source material [Collins et al. 2002, UNICEF 2001, Kirby & Coyle 1997, Kirby 2002, Grunseit 1997].

One of the reviews (Dicenso et al. 2002) adopted very strict criteria for the inclusion of evaluation studies. Studies that did not use randomisation in the study design were excluded from the review. This meant that studies that included control or comparison groups and had long-term follow-up but did not use randomisation (to decide who received the programme) were omitted from the review. However, despite the strict inclusion criteria adopted by DiCenso et al., included studies were not rated by sample size and/or follow-up period, which resulted in findings from studies with small sample size and short follow-up receiving equal weight to large-scale studies with substantial follow-up. A further limitation of the DiCenso review was the exclusion of studies that only measured condom use. These exclusion criteria meant that a large number of evaluations of the most theoretically advanced and behaviourally effective adolescent health education programmes were not included in their final analysis.

The remaining reviews (NHS Centre for Reviews and Dissemination 1997, Kirby 2001, Swann et al. 2003) acknowledge the strength of the evidence from well designed studies that include randomisation (Level 1), but also include the findings from non-random evaluations that include comparison/control groups, applying caveats where necessary. It is the view of the author that a pragmatic approach is necessary in the appraisal of

evaluative studies, which incorporates the findings from both process (generally qualitative research) and outcomes (behavioural changes).

These reviews, together with additional searches, identified more than fifty evaluations of programmes aimed at preventing teenage pregnancy or promoting positive sexual health among young people. The key features of the evaluations are summarised in Appendix 2. The majority of the evaluations of educational approaches to prevent teenage pregnancy have been conducted in the USA, and are principally comparisons of new methods of delivering sex education and those programmes that are routinely provided.

In this review, all evaluated studies (with comparison groups) are included in the analysis, and consideration is given to the strength of the findings based on the design, sample size, outcome measures and follow-up period. The details of the studies are presented in Appendix 2. Studies are grouped by approach: school-based programmes, programmes involving parents, programmes delivered by community and youth organisations, school-based clinics, and early years programmes.

The following sections provide a description of different approaches, highlighting the findings of such evaluations.

#### 4.4 Approaches to school-based sex education

Sex education is an essential part of any sexual health promotion strategy. The NATSAL survey indicates that young people learn about sex from a range of sources including parents and family, school, friends, media and health professionals. Parents and school have been found to be important sources of sex education for young people if poor sexual outcomes are to be prevented.

Collins and colleagues (2002) have grouped approaches to sex education into two categories: abstinence-only programmes and comprehensive sex education (or Abstinence-Plus Programmes).

**Table 4.1** Below summarises the key features of the two approaches

<b>Comprehensive Sex Education (Abstinence – Plus Education)</b>	<b>Abstinence – Only Education</b>
<p>Teach that sexuality is a natural, normal, healthy aspect of life</p> <ul style="list-style-type: none"> <li>• Promote abstinence from sex</li> <li>• Offer students the opportunity to explore and define their values</li> <li>• Acknowledge that many teenagers will become sexually active</li> <li>• Teach about contraceptive and condom use</li> <li>• Include discussions about contraception, abortion, sexually transmitted diseases and HIV</li> </ul>	<p>Abstinence-only education includes discussion about values, character building, and in some cases, refusal skills</p> <ul style="list-style-type: none"> <li>• Teaches that sex outside marriage will have emotional, physical and social consequences</li> <li>• Promotes abstinence from sex</li> <li>• Teaches one set of values as morally correct for all students</li> <li>• Does not acknowledge that many young teenagers will be sexually active</li> <li>• Avoids discussions of abortion</li> <li>• Cites STIs and HIV as reasons for abstinence</li> <li>• Discusses condoms only in terms of failure rate, often exaggerates failure rate</li> </ul>

#### 4.4.1 *Abstinence programmes*

The main aim of abstinence-based programmes is to delay sexual activity until later, typically until marriage. As discussed in the previous sections, many abstinence programmes do not acknowledge that a number of young people are sexually active, and do not teach about contraception and condom use, or where to access contraceptive services. Where programmes do discuss contraception they briefly discuss the failure of contraception to provide complete protection against pregnancy or sexually transmitted infections. Some programmes include the development of decision-making and refusal skills. Five evaluations of abstinence-only programmes were identified in this review: Project Taking Charge (Jorgensen 1991), Stay Smart (St Pierre, Mark, Kaltreider and Aiken 1995), Success Express (Christopher and Roosa 1990, Roosa and Christopher 1990), Managing the Pressures Before Marriage (Blake, Simkins, Ledsky, Perkins and Calabrese 2001) and Postponing Sexual Involvement (Kirby, Korpi, Barth and Cagampang 1997, Aarons, Jenkins, Raine, El-Khaorazaty, Wooward et al. 2000). When compared to no sex education or usual sex education, abstinence programmes have not been found to have any additional effect on either delaying sexual activity or reducing pregnancy. The most rigorous evaluation of an abstinence-based programme to date is the 1997 evaluation by Kirby et al. of the Postponing Sexual Involvement (PSI) programme. The evaluation employed randomisation to programme or control, and compared different delivery formats. The evaluation concluded that, at twelve-month follow-up, the programme had no measurable impact on the initiation of sex, the frequency of sex, or the numbers of sexual partners.

Based on the findings from these studies there is little evidence that abstinence programmes delay initiation of sexual intercourse or reduce sexual risk behaviours. However, the evidence is not conclusive as many of the evaluation designs had significant methodological weaknesses such as lack of randomisation, small sample size and short follow-up period, which may have obscured the impact of the programme.

#### 4.4.2 *Comprehensive sex education*

Programmes that emphasise the postponement of sexual activity, through the development of more sophisticated skills than in abstinence programmes, combined with factual information on contraceptives and where to access them, have had some success in changing young people's sexual and contraceptive behaviours - see Reducing the Risk (Barth, Fetro, Leland and Volkan 1992), Human Sexuality (Howard and McCabe 1992), and Safer Choices programmes (Coyle, Basen-Enquist, Kirby, Parcel, Banspach et al. 2001). A number of studies evaluated abstinence-plus programmes - whereby the programme included an abstinence programme with additional information on contraception. For example, Howard and McCabe (1990) evaluated the Postponing Sexual Initiation (PSI) programme combined with a Human Sexuality programme, and found some positive effects on sexual initiation and contraceptive use. Omitting guidance on contraceptives and where to access them is less effective - see McMaster's Teen Programme (Thomas, Mitchell, Devlin, Goldsmith, Singer and Watters 1992).

A small number of studies have compared the outcomes of abstinence programmes with abstinence-plus programmes. One study compared Be Proud Be Responsible, an abstinence programme, with Be Proud Be Responsible, a safer sex programme (Jemmott, J., Jemmott, B. and Fong 1998). While the abstinence programmes had short-



term (three-month) effect on initiation of intercourse, the safer sex programme had longer-term (twelve-month) effects on use of protection/birth control. These findings indicate that encouraging abstinence and urging better use of contraceptives are compatible goals. This evidence supports the theory that providing sex education that discusses contraception does not lead to increased sexual activity. These findings also indicate that emphasis on abstinence as the safest and best approach while teaching about contraception does not lead to decreased contraceptive use.

In the UK, the interim evaluation of the SHARE project, a teacher-delivered comprehensive programme aimed at thirteen to fifteen year olds, revealed some mixed findings (Wight et al. 2000, Wight et al. 2002). The findings to date confirm that sex education does not encourage earlier sexual activity. The SHARE programme improved pupils' knowledge about sexual health and relationships, increased their personal and social skills, and had some impact on the quality of relationships. Whilst there was no difference in levels of regret at first intercourse, participants in the SHARE programme were significantly less likely to report regret about the first intercourse with their most recent partner. In terms of behavioural outcomes, there were no differences between SHARE and comparison pupils in sexual activity by the age of sixteen, or in the use of condoms or contraceptives. Importantly, the SHARE programme was received more positively by both teachers and pupils than conventional provision. Qualitative research revealed that for a number of the young people, the school programme had been delivered 'too late' for themselves or their sexually-active peers, and that the programme tended to be seen as supplementary to other sources of information, particularly friends, magazines and mothers (Buston, Wight, Hart and Scott 2002). The evaluation team concluded that the utility of such a programme should not be dismissed, but more attention should be given to the timing of programmes and their relevance to young people. A further UK study evaluating the RIPPLE project, a peer-led school-based programme, is currently underway. A number of papers have been published on the findings of the process evaluation (Strange, Forrest, Oakley and the RIPPLE team 2002a, 2002b), and findings on the outcomes are expected later this year.

In summary, the current available evidence suggests that school-based comprehensive sex education programmes – whether focused on pregnancy or STI/HIV prevention – do not lead to earlier sexual initiation or increased sexual activity. A number of the comprehensive programmes have demonstrated evidence of delayed initiation of intercourse, a reduction in the number of sexual partners and feelings of coercion, and a lowering of teenage pregnancy rates.

#### *4.4.3 School-based education with parental involvement*

A small number of programmes have attempted to involve parents in school-based sex education, with different degrees of success. The multi-component Safer Choices programme (Coyle et al. 2001) included a parent component as part of the school-based programme. Parents received three newsletters that provided information about the programme, as well as information regarding HIV/AIDS and other STIs and pregnancy. The newsletter provided tips on talking with teenagers about these issues, and included student/parent homework activities to facilitate communication. The Safer Choices programme was found to reduce selected risk behaviours at twelve-month follow-up.

A number of the abstinence-based programmes have included parent involvement. For example, Jorgenson (1991) and Jorgenson, Potts and Camp (1993) evaluated the Project Taking Charge project, which invited parents to evening sessions on communicating with young people, pregnancy and sexually transmitted infections. The evaluation design was very weak, with a short (six-week) follow-up, which limited the usefulness of the study. A second abstinence-based programme – a modified version of Managing the Pressures Before Marriage – was delivered with additional homework assignments to involve parents (Blake et al. 2001). Again, the follow-up period for this evaluation was very short (only seven weeks) but the authors found pupils in the intervention group to have higher self-efficacy for refusal/avoidance, and more frequent communication.

The Growing Together programme was designed to help parents communicate with their daughters. Five two-hour interactive sessions located in Girls Clubs were designed to help parents communicate with their daughters. Follow-up at 24 months (Nicholson and Postrado 1991, 1992) found that those in the programme group were less likely to initiate sexual activity, but the sample size was quite small which limited the generalisability of the programme.

In a slightly larger study, Miller, Norton, Jenson, Lee, Christopherson and King (1993) evaluated the Facts and Feelings programme, a home-based video programme (with/without mailed newsletters). After the materials were sent to the home, bi-weekly home calls were made to parents to encourage them to use the material. At three- and twelve-month follow-up no differences were found in the sexual behaviour of the young people, but a significant improvement was found in the quality of parent-child communication within the programme group.

**In summary, the effectiveness of parent involvement programmes appears to be dependent on their content. While only a small number of comprehensive programmes (Safer Choices and Growing Together programmes) included a parent involvement element, such programmes appear to be more useful in effecting change than the abstinence programmes. Again, methodological weaknesses (design and short follow-up) in the evaluations of the abstinence programmes may obscure the effects of such programmes.**

#### *4.4.4 School-based programmes linked with contraceptive services*

Programmes that combine sex education with access to contraceptive services have been proven to be effective in increasing contraceptive use (Zabin et al. 1986, Koo, Dunteman, George, Green and Vincent 1994). Zabin et al. (1986) undertook one of the earliest evaluations of a school-based sex education programme combined with an on-site sexual health advice and contraceptive service in Baltimore, USA. The key findings of the study were a delay in the onset of sexual activity amongst the young women involved, an increase in contraceptive use amongst those men and women already sexually active prior to the study and a significant decrease in pregnancy rates for the surrounding area. When the programme was discontinued, however, the pregnancy rate returned to the pre-programme level.

One multifaceted community approach featured sexuality education training for school staff, classroom training and decision-making skills for students, as well as a school nurse dispensing condoms and providing transport to contraceptive services. This

programme found that at two-year follow-up teenage pregnancy rates dropped (Vincent and Dod 1989). A second evaluation of this programme, described by Koo and colleagues, found that after local legislation prohibited the provision of contraceptives from school clinics, the pregnancy rate returned to pre-programme levels (Koo et al. 1994).

Evaluations of school-based and school-linked clinics providing health and contraceptive services in the USA have been methodologically weak with poor selection of comparison groups and the results are contradictory. Some show delay in sexual initiation, (Kisker 1984) and reduction in birth rate (Ralph and Edgington 1983), but no changes in contraceptive use (Kisker 1984, Kirby, Waszak and Ziegler 1991).

It is important to note that many of the studies of schools with health clinics and schools with condom availability have consistently shown that the provision of condoms or other contraceptives through schools does not increase sexual activity (Kirby 2001). While studies of school condom availability consistently demonstrate that such programmes do not increase sexual activity, they provide conflicting results about their impact on school-wide use of condoms. These studies may reflect methodological limitations, differences in availability of condoms in the community, or differences in the programmes themselves (Kirby 2001).

#### *4.4.5 One-to-one counselling*

A small number of studies have evaluated the effectiveness of one-to-one education through counselling within health care settings. Again, the evaluation designs are weak and findings mixed (Baker 1990, Danielson, Marcy, Plunkett, Wiest and Greenlick 1990, Winter and Breckenmaker 1991).

Of particular interest are programmes targeted at 'hard to reach' groups. A number of US programmes delivered outside school hours have exhibited some success in changing young people's sexual activity. For example, the Behaviour Skills Training programme, delivered to substance-dependent black young people in a health centre, was successful in delaying sexual initiation, reducing the numbers of sexual partners and increasing the use of protection during sexual activity (St Lawrence, Jefferson, Banks and Cline 1994). A second programme, Be Proud, Be Responsible, which provided culturally and developmentally-appropriate active learning activities to young black people found some short-term increase in condom use (Jemmott 1993).

Becker and Barth (2000) used a before-and-after study (no comparison group) to evaluate Power Through Choices, delivered as part of an independent living programme for young people in public care. The generalisability of the programme is limited due to the weak design, but short-term evaluation indicated positive feedback from participants and changes in knowledge levels. Currently in the UK, the researchers at the Thomas Coram Research Unit are developing programmes based on the needs of young people in public care.

Finally, an educational programme delivered to young women in sheltered housing was effective in improving preventative sexual behaviours (Rotheram-Borus, Koopman, Haignere and Davies 1994). At six-month follow-up, young people in the programme group were more consistent condom users and had avoided high-risk situations.

**In summary, there are limited evaluations of one-to-one counselling programmes. Where programmes have been evaluated, methodological weaknesses such as short-term follow-up or absence of control/comparison groups limited the generalisability of the findings. However, a small number of evaluations of programmes using one-to-one counselling with hard to reach groups such as substance-dependent young people, homeless women, and young people from public care found some encouraging results.**

#### *4.4.6 Youth development programmes*

Youth development programmes provide a further opportunity to promote positive sexual health. These programmes do not focus primarily on sexuality, but attempt to improve young people's life skills and belief in their future. Given the strength of the evidence about the influence of general education and socio-economic factors on sexual behaviour, these programmes address some of the antecedents of unprotected sex and teenage pregnancy. Some programmes strive to provide mechanisms for youth to fulfil their basic needs including a sense of safety and structure, belonging to a community, increasing self-worth and control over their lives. As such tasks cannot be achieved quickly, such programmes tend to be long-term in duration.

To date, none of the evaluations of youth development programmes have examined their impact on adolescent sexual behaviour (sexual initiation, condom use or numbers of partners) but a number have examined the impact on teenage pregnancy. For example, the Youth Incentive Entitlement Project (YIEP) targeted youths from low-income households. It offered part-time jobs during the school year and full-time jobs during the summer if participants stayed at school (Olsen and Farkas 1991). The evaluation compared eight matched community sites with and without the YIEP. The study evaluated the impact on all youths in the participating areas (including those who did not participate in the programme). The study concluded that increasing economic opportunity decreased adolescent birth rates among blacks (the only group studied).

The Summer Training and Education Programme (STEP) programme targeted fourteen and fifteen year olds from poor urban areas who were seriously behind academically (Walker and Vilella-Velez 1992). 4800 participants were randomly assigned to programme or control group. During each of two successive summers, the programme provided 90 hours of work experience, 90 hours of academic support focusing on remedial reading and maths, and eighteen hours of lifeskills education that included sexuality education. During the school year, the program provided between five and fifteen hours of other support with limited one-to-one contact, recreation, and other non-education activities. However, those in the comparison group in the evaluation were offered summer jobs. The evaluation failed to find any consistent or significant effect on sexual behaviour or contraceptive use.

A number of programmes, which combined sex education with career planning or work experience during the summer holidays, have shown some success in increasing contraceptive use (Smith 1990, Nicholson and Postrado 1992, Smith 1994) and reducing pregnancy rates (Philliber and Allen 1992, Allen and Philliber 1997). The Teen Outreach Programme (TOP), a year-long curriculum and volunteer-service programme implemented in several cities, achieved reductions in teenage pregnancies among participating teenagers. The primary aim of the TOP was to foster positive development of adolescents using three approaches. Youth participated in individual and group service

projects and engaged in discussions that enhanced their personal growth and development by exploring their values as well as their relationship with family and peers. This process developed communication and decision-making skills and goal setting. Finally, they used a process of reflective discussion to connect learning from school and the Teen Outreach Programme. Two evaluations of the TOP programme have been completed. The first compared the 9116 students who participated in the evaluation from TOP sites across the country with a non-random matched group. The second evaluation used a randomised controlled design consisting of 695 students from 25 sites. Both evaluations found evidence that the programme reduced pregnancy rates during the year the young people participated in the programme and that, compared to comparison groups, the programme group had fewer school failures and suspensions and lower school drop-out rates. Kirby and Coyle (1997), in their review of Youth Development programmes, outline a number of possible reasons for the positive outcomes of this approach. These include the development of ongoing relationships between participants and caring program facilitators (mentors), the fact that both supervision and alternative activities reduced opportunities for youth to engage in problem behaviour, and the volunteer experiences, which improved self-esteem and encouraged youth to think about their future.

Similarly, the CAS-Carrera programme, an after-school youth development programme which combined sexuality education with academic and vocational advice and access to health services, has proved to be extremely effective in reducing sexual risk taking and teenage pregnancy among young people from disadvantaged communities (Philliber, Williams, Herrling and West 2002). The CAS-Carrera programme consisted of five major activities including a work-related intervention called Job Club (with stipends, help with bank accounts, graduated employment experiences and career awareness). The programme also included an academic component (featuring individual assessment, tutoring and homework help, exam preparation (PSAT and SAT tests), and assistance with the college admissions process) and comprehensive family life and sexuality education (weekly sessions emphasising sexual knowledge given at age-appropriate and developmentally appropriate levels by an educator/reproductive health counsellor). Finally, an arts component (designed to help young people discover and develop talent and confidence through weekly music, dance, writing or drama workshops led by theatre and arts professionals) and an individual sports (as opposed to team sports) component were included. The sports component emphasised activities requiring impulse control that can be practised at all ages, such as squash, golf, snowboarding and swimming. These five major activities were supplemented by two service components: mental health care (which includes counselling and crisis intervention, as needed, and weekly discussion groups led by a social worker) and medical care (which includes an annual comprehensive medical exam and access to contraceptive services). At three-year follow-up, compared to the control group, female participants were less likely to become sexually active or to experience a pregnancy. Female participants were more likely to use a condom or pill at last intercourse. No differences were found between the male participants and comparison group.

#### 4.4.7 Early years programmes

Two studies have evaluated early childhood programmes. One study, the Seattle Social Development Program, used teacher training and parenting classes at primary school to increase children's sense of attachment to their school and family, while developing their social skills. Follow-up of the children at age 21 found that the students who received the programme were less likely to report a pregnancy than those in the comparison group (Hawkins, Catalano, Kosterman, Abbot and Hill 1999, Lonczark, Abbot, Hawkins, Kosterman and Catalano 2002).

A second US study, the Abecedarian project, which is included in Kirby's Emerging Answers review (2001), randomly assigned children from low-income families to full-time, year-round day care focused on improving intellectual and cognitive development, or to regular infant day care. In elementary school they were again randomly assigned to a three-year parent involvement programme with a home-school resource teacher or to a normal school environment. The children were followed until age 21. Compared to the control group, the children who received the programme at preschool delayed childbearing by more than a year. They also performed higher on a number of intellectual and academic measures (Campbell 1999).

Such findings have been reinforced in the findings from a systematic review of the long-term effects of day care that highlight the benefits of long-term strategies, beginning in early years, in preventing teenage pregnancy (Zoritch, Roberts and Oakley 2000). Further research is needed to identify the essential elements of early years prevention programmes.

#### 4.5 Features associated with successful education programmes

Despite the variety of the different approaches used in the delivery of sex education programmes, some general lessons emerge. **Importantly, there is consistent evidence that providing sex and contraceptive education within school settings does not lead to an increase in sexual activity or incidence of pregnancy.** Indeed, the provision of clear information about contraceptive methods and how and when to access contraceptive services appears important to the success of educational programmes.

The findings of this review concur with the conclusions from Kirby (2001), which identified ten characteristics of effective programmes. Successful programmes should:

- focus on reducing one or more of the behaviours that lead to unintended pregnancy or HIV/STI infection
- include behavioural goals, teaching methods, and materials that are appropriate to the age, sexual experience and culture of the students
- employ theoretical models and approaches demonstrated to be effective in influencing other health-related risk behaviours – i.e. a clear rationale for the intervention
- deliver and consistently reinforce clear prevention messages about abstinence, condom use and other forms of contraception
- provide basic, accurate information about the risks of sexual activity and about ways to avoid intercourse or methods of protection against HIV/STI and pregnancy
- include activities that address social pressures related to sexual behaviour

- provide modelling and practice of communication – include examples of and rehearse (e.g. role play) communication, negotiation, and refusal skills
- use teaching methods that involve students and have them personalise the information
- last a sufficient length of time to complete a range of activities
- select teachers or peer leaders who support the programme and provide them with adequate training.

#### 4.5.1 *Delivery of programmes*

##### 4.5.1.1 *Delivery of sex education - peers*

The delivery of educational messages ranges from the traditional didactic approach to more innovative, participatory approaches such as peer education. Peers have been identified as an important influence on young people's health behaviours, and are considered to be credible role models and disseminators of social information. They have been used to deliver a number of health promotion activities (Fennell 1993). Government policy in the UK has recently recommended peer-led approaches for delivering sex education in schools (Social Exclusion Unit 1999). Peer education has been reported to be popular with young peer educators, and professionals have enthused about its application (Mellanby, Newcombe, Rees and Tripp 2001, Strange et al. 2002a, Strange et al. 2002b). However, until recently robust evidence of effectiveness was limited (Harden, Oakley and Oliver 2001). One large-scale study, funded by the Medical Research Council in London, is currently evaluating the impact of the school-based, peer-delivered RIPPLE programme. The findings from the process evaluation have recently been published (Strange et al. 2002a, Strange et al. 2002b). The findings echo conclusions from other studies, which highlight the benefits for the peer educators.

##### 4.5.1.2 *Delivery of programmes – peers versus adults*

School-based education programmes have been delivered by a range of personnel including peers, teachers, and healthcare professionals. As already stated, the RIPPLE programme in England, a peer-led school-based programme (Strange et al. 2002a, Strange et al. 2002b) is currently being evaluated. In contrast, the SHARE programme is a teacher-led sex education programme currently being evaluated in Scottish schools (Wight, Henderson, Raab, Abraham, Buston, Scott and Hart 2000, Buston et al. 2002, Wight et al. 2002). Whilst it is not possible to compare the findings - as the content of the programmes and the context in which the programmes are delivered may differ across the two countries - important learning will emerge from both studies.

Few studies have compared the effectiveness of different forms of programme delivery of the same programme. Two recent publications have attempted to compare peer and adult-led sex education (Jemmott et al. 1998, Mellanby et al. 2001). Mellanby and colleagues compared peer and adult delivery of the APAUSE programme<sup>5</sup>. They concluded that both adult- and peer-led methods have an important place in effective sex education. Similarly, Jemmott and colleagues found little difference in the impact of adult or peer delivery of programmes, but did find differences in the effectiveness of different programmes (abstinence v abstinence plus).

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<sup>5</sup> The APAUSE programme is currently undergoing an external outcome evaluation – the findings will be available in early 2004.

#### 4.5.2 *Timing of programmes*

The timing of these educational programmes also appears to be important: young people who are already sexually active at the commencement of the interventions, for example, are less likely to change their sexual and contraceptive behaviour. As young people are not homogenous, programmes should be tailored to the needs and experiences of the group.

#### 4.5.3 *Cost-effectiveness*

Few studies have included a cost-effectiveness evaluation of prevention programmes. One of the few economic evaluations of prevention programmes is the evaluation by Wang, Davies, Robin, Collins, Coyle, and Baumler (2000) of the multi-component Safer Choices programme (Wang et al. 2000). The cost to deliver the Safer Choices programme was estimated to be \$105243. At one-year follow-up the Safer Choices programme achieved a 15% increase in condom use and an 11% increase in contraceptive use among 345 students. This was estimated to prevent 0.12 cases of HIV, 24 cases of chlamydia, 2.8 cases of gonorrhoea, 5.8 cases of pelvic inflammatory disease (PID), and 18.5 pregnancies. The researchers estimated that for every dollar invested in the programme \$2.65 in medical and social costs was saved.

#### 4.6 *Summary of prevention programmes*

This review of evaluations of programmes designed to reduce teenage pregnancy and/or promote positive sexual health among adolescents confirms that sex education does not lead to early sexual behaviour.

The few studies that have demonstrated a reduction in teenage pregnancy and/or promotion of positive sexual health adopted a multifaceted approach linking sex education programmes with youth development projects and/or contraceptive services. However, the lack of evidence of effectiveness of other approaches may reflect poor evaluation design: lack of an appropriate control group, small sample sizes or short follow-up. Such design flaws may account for the absence of significant effect, rather than the ineffectiveness of the programme.

Most of the evaluated programmes described in this review have focused on addressing a number of individual factors associated with teenage pregnancy, and have shown some success. Chapter 3 in this report presented current evidence of the range of social, economic and educational factors that are associated with increased risk of early sexual initiation and teenage pregnancy. The more successful programmes have aimed to address specific antecedents. However, only a small number of programmes have attempted to tackle the underlying social, economic and educational factors associated with an increased risk of pregnancy or risky sexual behaviour. Programmes that include a focus on the non-sexual antecedents such as poor academic performance from early years have shown some encouraging findings. Further research is needed in this area.

The recent Health Development Agency (HDA) review of reviews (Swann et al. 2003) in this area supports the findings of this review, concluding that there appears to be a reasonable amount of consensus for the effectiveness of the following types of programmes:



- school-based sex education, particularly linked to contraceptive services
- community-based education programmes (e.g. family or youth centres) providing education, youth development and contraceptive services
- development programmes may increase contraceptive use and reduce pregnancy rates
- family outreach – there is some good evidence for the effectiveness of including parents in information and prevention projects.

#### 4.7 Contraception and contraceptive service delivery

Contraceptives, when used properly, are highly effective at preventing pregnancy. Recent economic evaluations have shown that family planning services are also highly cost effective and provide a high rate of return to the NHS (McGuire and Hughes 1995, Trussell, Leveeque, Koenig, London, Borden et al. 1995). When the resource consequences of pregnancy are taken into account, family planning provision of contraceptive services to a teenager is calculated to save £377 per unwanted pregnancy avoided, and GP provision of oral contraception saves £466 per unplanned pregnancy avoided when compared to no service. The economic cost-benefit ratio of family planning provision is even higher if the economic implications of health gains other than avoided unplanned pregnancy are included and if the averted costs generated by the children arising from unplanned pregnancies are included (Hughes and McGuire 1996). In summary, the costs of providing contraceptive and counselling services are far less than the health and social costs of unplanned pregnancy.

##### 4.7.1 *The effectiveness of different ways of delivering contraceptive services*

Contraceptive services are available from a wide range of providers. Surveys show that there is great variation in the types of services provided, their management and accessibility and how well equipped they are. (Cooper, Diamond, Gould, High and Schlamm 1992a, Cooper, Diamond, High and Pearson 1992b, Family Planning Association 1993, Thompson and Chapple 1993, Pitts, Burtney and Dobraszczyc 1996.) Staff often expressed a need for further training and practical support.

Studies show an association between conception rates and the level and type of contraceptive services available locally (Lundberg and Plotnick 1995). The effect of these services in terms of use and pregnancy rates appears to be stronger when they are provided by clinics (Allaby 1993, 1995) or youth-oriented clinics (Clements et al. 1996, Stone, Clements, Ingham and Diamond 1996, Diamond et al. 1999). However, expanding the supply of contraceptive services without a corresponding increase in demand, for example through education, has not always been effective (Hughes and Furstenberg 1995).

The literature searches, however, revealed a complete lack of UK or Irish controlled evaluations of the effectiveness or cost-effectiveness of different approaches to the delivery of contraceptive services to young people. UK studies of contraceptive services are restricted to less reliable before-and-after studies of conception rates (Allen 1991, Wilson, Daniel, Pearson, Hopton and Madeley. 1994, Withnell 1994), audits of service utilisation and qualitative studies of users and potential users. (Cooper et al. 1992a, 1992b, West, Hudson, Levitas and Guy 1995.) In addition, a number of studies have attempted to evaluate the effect of publicity on awareness and use of contraceptive services (Knox and Kubba 1995, Hall and Milner 1996). In the absence of level 1

evidence, two UK reviews provide valuable information on contraceptive service delivery (Peach et al. 1994, Peckham et al. 1996). This body of research provides some useful insights into young people's needs from and use of contraceptive services but does not provide the high-level evidence of the effectiveness of different approaches to contraceptive counselling and contraceptive provision required to form a firm basis for decision making.

#### 4.8 Summary - contraceptive services

In the absence of clear evidence of the effectiveness of different ways of delivering contraceptive services, it seems sensible to develop services in the light of the more descriptive studies. Such studies indicate that services should take into account, in a systematic way, local circumstances and needs (Ubido and Ashton 1993). A GB survey of providers of sexual health services, however, found that few agencies undertake systematic local needs assessments before the development of services (Peckham et al. 1996).

In order to attract young people to use them, services need to be well advertised, easily accessed outside school hours (opening times and location), informal and, for under sixteen year olds, confidential. They should be developed in collaboration with key statutory agencies, relevant voluntary groups and community groups. They should also be broad based, and staffed by people trained to work with young people (Hosie 2002).

In the absence of evidence from rigorous evaluation of services, research with young people and service providers has provided clear direction for future service development. The recent Health Development Agency Review identified the following characteristics of services and programmes:

- making sure information and education is in place before young people become sexually active
- long-term services and interventions
- clear, unambiguous information and messages
- focus on local high-risk groups
- including interpersonal skills development – such as negotiating and refusal skills – and providing young people with the opportunity to rehearse these skills
- checking that interventions and services are accessible to young people
- selecting and training staff who are committed to the programme, the service goals and to the needs of young people
- respecting confidentiality of young people (where possible)
- maximising use of key opportunities (e.g. negative pregnancy test at clinic or GP) for education and information
- encouraging a local culture in which discussion of sex, sexuality and contraception is permitted
- making sure programmes and services are tailored to young men as well as young women
- joining up services and interventions aimed at preventing pregnancy with other services for young people, and working in partnership with local communities.

#### 4.9 Mass communication

None of the reviews or primary studies included examined the effectiveness of mass-communication programmes as a means of promoting positive sexual health or preventing teenage pregnancy. In England, the Teenage Pregnancy Unit is currently overseeing the implementation of a ten-year strategy to tackle the causes and consequences of teenage pregnancy and parenthood (Social Exclusion Unit 1999). In the three years since the publication of the Teenage Pregnancy Strategy, the government has already spent £60 million in implementing the thirty-point action plan.

One of the four broad themes of the action plan is a national campaign to help young people resist peer pressure, make their own choices and take responsibility. The campaign aimed to promote the facts about teenage sex and parenthood, advice on how to deal with pressures to have sex, and the importance of using contraception. The campaign aimed to take three main strands. Firstly, a campaign to help parents talk to their sons and daughters about sex. Secondly, a campaign to ensure that young men are aware of the need to be more responsible about contraception, focusing in particular on the longer-term impact of an unwanted pregnancy for parents and child, the risk of sexually transmitted infections, and child support (financial) responsibilities. Finally, a campaign to make those under sixteen aware of how they can obtain contraception (Eborall and Garmeson 2000).

In 2000 the Teenage Pregnancy Unit commissioned a team of researchers to review all information of relevance to the development of a public health campaign which aims to change teenage behaviour, and to recommend the most effective and appropriate approaches (Eborall and Garmeson 2000). The National Campaign was launched in 2000, and evaluation to date has shown that 78% of thirteen to seventeen year olds recognise the campaign materials (BMRB 2002).

While few rigorous evaluations (level 1 or level 2) have been carried out in this area, weaker evidence from pre/post-testing of materials and tracking surveys was included. Based on such evidence (level 3), the Eborall and Garmeson review described a series of features characterising communication that are likely to be effective in changing young people's behaviour. These features are summarised below:

##### **There must be a central message that is clear and unequivocal**

An important feature of all successful campaigns, whether in the public health or the commercial sectors, is that they are constructed around a single central idea or message. The message is usually quite simple, addressing a core need or specific benefit to the target audience. However, young people respond to scenario-based executions and portrayal of consequences.

##### **The message must be positive and treat young people as responsible for their own choices**

Research has indicated that young people are sensitive to the way they are addressed, particularly by authority figures. They strongly reject communication perceived as patronising, authoritarian and not addressing them as equals. The sources they respect treat them as equals, find out what their needs are, empathise with them, and provide them with the information to help them decide for themselves.

Messages that were factual and non-judgemental have had more success than messages based on fear or abstinence, which have proved to be ineffective.

**The message must be consistent over many years**

Messages need to be reinforced over long period for even simple messages to become ingrained in people's minds. Research indicates that young people do not value messages that are not consistently reinforced, but disregard them as unimportant.

**The message can be communicated in a number of different ways**

The use of humour and animation has proved effective with young people. Communication that tells a story engages young people and taps directly into the ways in which teenagers process information. Stories are more effective where they challenge young people to interact with them – by asking a question or posing a problem to be solved.

**Different types of mass media are appropriate for different facets of the message**

There is no one way to reach young people. Television is the most popular medium for reaching young people as it is immediate and effective in delivering short uncomplicated messages. It is good to bridge the communication gap between parents and child.

- Magazines are good for presenting a rational argument and detailed information.
- Radio is effective in delivering a single item of information e.g. helpline number.
- Newspapers are useful for advertisements for local sexual health services, if the advertisements are correctly placed.

**Mass media must be supplemented by a 'reaching out' to young people on their own territory, and they must have visual impact**

Leaflets are sometimes criticised by young people as being official, dull, clinical and a chore to read. Other methods such as posters, booklets, postcards and credit card-sized cards can be helpful if placed in schools, colleges, shopping centres or venues where young people wait. For posters, locations must be safe i.e. where young people can look without being noticed.

**The campaign must address boys' and young men's special needs separately**

The combination of demonstrating masculinity and achieving peer recognition combined with the lack of information and emotional support makes young men vulnerable; it is important to provide tailor-made messages to encourage sexually responsible behaviour. This can be achieved by appealing to masculine (not macho) values such as courage, action and the like, without suggesting weakness or blame. A campaign should also be direct, use minimal text and respond to practical questions.

There is a need to extend beyond young people and apply and test learning about the media in general to other age groups. Eborall and Garmeson looked at communicating with parents and society at large and although the main driver was young people, important messages emerged.

**A campaign for parents must give them the tools to communicate with children**

A campaign that draws parents' attention to the importance of sex education to their child's future welfare would be beneficial. Parents also want practical, actionable and

'bite size' information in a range of accessible forms, showing them how to talk to their children about sex at different stages of their development.

### **Using the media to disseminate the evidence in advance of the main campaign**

There is considerable evidence of the damage done to sexual health campaigns by adverse media coverage, and the importance of pre-empting this is widely recognised. Implementers need to be pro-active in communicating the facts. They need to line up panels of experts to support the arguments and establish PR and media contact in advance to anticipate and deal with misconceptions or misunderstandings in a reassuring way.

## **5.0 Findings and Conclusions**

### *5.1 Educational approaches*

This paper has summarised the most up-to-date knowledge on the effectiveness of educational approaches aimed at preventing teenage pregnancy and/or promoting sexual health among adolescents. The evidence is mixed. Programmes which focus on the issues of sexuality and contraception have demonstrated some effectiveness in delaying sexual intercourse and in improving the use of protection/birth control. Programmes that focus on antecedents that indirectly impact on sexual health outcomes, such as poor educational attainment, have also demonstrated positive effects on teenage sexual behaviour and teenage pregnancy. Programmes that combine sexuality education and youth development have provided very strong evidence of a reduction of teenage pregnancy. These findings support our increasing knowledge about the antecedents of teenage sexual behaviour and teenage pregnancy.

Programmes that focus on both sexual and non-sexual antecedents and that are comprehensive and long-term in duration, such as the CAS-Carrera Program, have demonstrated substantial reductions in teenage pregnancies over a sustained period of time. It is evident, therefore, that adopting a simplistic approach to a highly complex area of social behaviour will not succeed in changing adolescent sexual behaviour or reducing teenage pregnancy. Evidence from the success of the English Teenage Pregnancy Strategy to date indicates that a multi-faceted approach, of which sex education is just one part, may be required.

### *5.2 Contraceptive and sexual health services*

Contraceptive and sexual health services should be developed in the light of an assessment of the needs of the community they serve. Needs assessment should consider local demographic details, the location of current services, and data on service utilisation (including transport to and from services). It should also take into account the views of young people, parents, teachers and health professionals, and be developed in partnership with relevant statutory and voluntary organisations. Contraceptive service providers should ensure and publicise easy access (e.g. outside school hours and at weekends) and confidentiality for young people.

Within health care settings, information and education programmes targeted at young women presenting for emergency contraception or with negative pregnancy tests provide the ideal opportunity to provide advice on effective protection/contraceptive methods and use.

Evaluation and regular monitoring of services are crucial to ensure the appropriateness and effectiveness of services. Practical guidance is available for the evaluation of sexual health services for young people. The Department of Health in England has recently commissioned the evaluation of One-Stop Shops for sexual health services- the findings will not be available until 2004.

### 5.3 *Tackling inequalities and promoting social inclusion*

Chapter 2 has highlighted the range of factors (at both societal and individual level) which influence sexual health. Reflecting this complex range of individual, social and economic factors, multi-faceted approaches involving local people, education, health, and social services emerge as crucial in preventing teenage pregnancy and promoting sexual health among young people. In order to address the current inequalities in sexual health consideration should be given to developing programmes for specific vulnerable groups, such as young people in public care (in the care of the state), homeless young people, and school truants/excludees. Inter-agency collaboration may be required to develop programmes for hard-to-reach groups, such as runaway/homeless young people, school truants/excludees, or young drug users (particularly injecting drug users), who are hard to access in mainstream education. Specific interventions might include outreach projects, education programmes in hostels or counselling in health care settings.

Given the strength of the evidence about the influence of socio-economic factors on teenage childbearing, general anti-poverty strategies are likely to influence rates of teenage pregnancies and promote positive sexual health. Specific interventions aimed at addressing poor educational attainment such as early years projects and tailored education/youth development programmes warrant further attention. As the recent UNICEF Report (UNICEF 2001) noted:

“...the incentive to avoid early parenthood stems from a stake in the future, a sense of hope, and an expectation of inclusion in the benefits of living in an economically advanced society. Building in that sense of inclusion where it is now absent is a task that requires action on a much broader front.”

### 5.4 **Future research**

- Consideration should be given to commissioning a national survey of young people's sexual behaviour (including contraceptive use) and their experiences of sexual health promotion and services (including school- and home-based sex education). This may be commissioned as part of the adult survey of sexual attitudes and behaviour. Such research will provide invaluable data on the predictive and protective factors of adolescent sexual behaviour in Ireland. Such information will inform the development of appropriate programmes that respond to the needs of young people growing up in Ireland.
- A co-ordinated programme of rigorous research is needed to evaluate the effectiveness and appropriateness of the different approaches for the delivery of sex education in Irish context – within and outside school settings.
- A number of evaluations indicate that sex education programmes may need to begin earlier. Further research is required to develop and evaluate sex education programmes commencing in primary school.

- Consideration should be given to researching the information and service needs of young men. Whilst some programmes have been developed for young men (e.g. the Family Planning Association Bout You project), there are no evaluations of prevention programmes developed for young men.
- More research is needed to develop and evaluate internet-based programmes.
- More research is needed to develop and evaluate media-based prevention programmes aimed at young people living in Ireland (some limited evidence is available on UK media programmes).
- A co-ordinated programme of rigorous research is needed to evaluate the effectiveness and appropriateness of the different approaches for the delivery of contraceptive and sexual health services for young people, such as drop-in centres and health centre-based services.
- A number of evaluations indicate the usefulness of long-term strategies beginning in early years in preventing teenage pregnancy (Zoritch et al. 2000); further research is needed to identify the essential elements of early years prevention programmes.
- Young people should be involved in the design, development and evaluation of programmes – their views and experiences will ensure that programmes are responsive to their needs at different developmental stages.

## Bibliography

- Aarons S., Jenkins, R., Raine, T., El-Khaorazaty N, Woodward KM, Williams RL, Clarke MC and Wingrove BK (2000). "Postponing sexual intercourse among junior high school students - a randomised controlled evaluation." *Journal of Adolescent Health* 27: 236-247.
- Aggleton P., Oliver, C. and Rivers, K. (1998). *Reducing the rate of teenage conceptions - The implications of research into young people, sex, sexuality and relationships*. London, Health Education Authority.
- Allaby, M. A. (1995). "Contraceptive services for teenagers: do we need family planning clinics?" *British Medical Journal* 310: 1641-1643.
- Allaby, M. K. (1993). "Reviewing family planning services: a method for population based outcome related needs assessment." *British Journal of Family Planning* 18: 102-105.
- Allen, I. (1991). *Family Planning and Pregnancy Counselling Projects for Young People*. London, Policy Studies Institute.
- Allen, J.P., Kuperminc, G., Philliber, S. and Herre, K. (1994). "Programmatic prevention of adolescent problem behaviors: the role of autonomy, relatedness, and volunteer services in the Teen Outreach Program." *American Journal of Community Psychology* 22(5): 617-638.
- Allen, J.P. and Philliber, S. (1997). "Preventing teenage pregnancy and academic failure: experimental evaluation of a developmentally based programme." *Child Development* 64(4): 726-742.
- Baker, C. (1990). *Self-efficacy training: its impact upon contraception and depression among a sample of urban adolescent females*, Seton Hall University.
- Barth, R.P., Fetro, J.V., Leland, N.L. and Volkan, K. (1992). "Preventing adolescent pregnancy with social and cognitive skills." *Journal of Adolescent Research* 7(2): 208-232.
- Becker, M. and Barth, R. (2000). "Power through choices- the development of a sexuality education curriculum for youths in out-of-home care." *Child Welfare* LXXIX(3): 272-282.
- Biehal, N. (1992). *Prepared for living? A survey of young people leaving the care of local authorities*. National Children's Bureau, London.
- Biehal, N. (1995). *Moving on*. National Children's Bureau, London.
- Blake, S., Simkins, L., Ledsky, R. Perkins, C. and Calabrese, J. (2001). "Effects of a parent-child communications intervention on young adolescents' risk for early onset of sexual intercourse." *Family Planning Perspectives* 33(2): 52-61.
- Bonnell, C. (1996). *Outcomes in HIV prevention: Report of a research project*. London, The HIV Project.
- Bonner, (1996). *A Report on the Sexual Practices of 16-18 year olds in the Midland Health Board* Midland Health Board, Dept of Public Health.



British Medical Association Foundation for AIDS. (1996). Using effectiveness research to guide the development of school sex education. London, BMA Foundation for AIDS.

British Market Research Bureau (2002). Evaluation of the teenage pregnancy tracking survey: Report of the results of five waves of research. London, BMRB.

Burghes, L. and Brown, M. (1995). Single lone mothers: problem, prospects and policies. London, Family Policy Studies Centre.

Burtney, E. (2000). Teenage sexuality in Scotland. Edinburgh, Health Education Board Scotland.

Buston, K., Wight, D., Hart, G. and Scott, S. (2002). "Implementation of a teacher delivered sex education programme: obstacles and facilitating factors." *Health Education Research* 17: 59-72.

Campbell, F. A. (1999). Long term outcomes of the Abecedarian study. Society for Research in Child Development, Albuquerque.

Cheesbrough, S., Ingham, R. and Massey, D. (1999). Reducing the rate of teenage conception: A review of international evidence: the United States, Canada, Australia and New Zealand. London, Health Education Authority.

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

Clements, S., Diamond, I., Ingham, R. and Stone, N. (1996). Teenage conceptions in the Isle of Wight. Southampton, Centre for Sexual Research, University of Southampton.

Collins, C., Alagir, P., Summers, T. and Morin, S. (2002). Abstinence only or comprehensive sex education. San Francisco, AIDS Research Institute, University of California.

Condon, F., Collins, R. and Jenkins, D.M. (1993) Sexual and contraceptive practice in an Irish university. *Irish Medical Journal*, 86: 206-207.

Cooper, P., Diamond, I., Gold, C., High, S. and Schlamm, E. (1992a). The use, users and sources of contraception in the UK: A literature review. Southampton, Department of Social Statistics, University of Southampton.

Cooper, P., Diamond, I., High, S. and Pearson, S. (1992b). The provision of family planning services by Family Planning Clinics: a social survey in Wessex. Southampton:, Department of Social Statistics, University of Southampton.

Cooper, P., Diamond, I., High, S. and Pearson, S. (1992c). The provision of family planning services by General Practitioners: a social survey in Wessex. Southampton:, Department of Social Statistics, University of Southampton.

Corlyon, J. and McGuire, C. (1997). *Young Parents in Public Care*. London, National Children's Bureau.

Coyle, K., Basen-Engquist, K., Kirby, D., Parcel, G., Banspach, S., Harris, R., Baumler, E. and Weil, M. (1999). Short-term impact of Safer Choices: A multi-component, school-based HIV, other STD, and pregnancy prevention program. *Journal of School Health*, 69, 181-188

- Coyle, K., Basen-Engquist, K., Kirby, D., Parcel, G., Banspach, S., Collins, J. et al. (2001) Safer Choices: reducing teen pregnancy, HIV, and STDs. *Public Health Rep* 2001; 116(suppl 1): 82-93
- Danielson, R., Marcy, S., Plunkett, A., Wiest, W. and Greenlick, M.R. (1990). "Reproductive health counselling for young men: what does it do?" *Family Planning Perspectives* 22(3): 115-121.
- Dann, T. (1996). "Teen age sex: tend towards earlier menarche stopped 30 years ago." *British Medical Journal* 312(June 1): 1419.
- Dann, T. and Roberts, D. (1993). "Menarcheal age in University of Warwick young women." *Journal of Biosocial Science* 25: 531-538.
- David, H.P., Morgall, J.M., Osler, M., Rasmussen, N.K., and Jenson, B. 1990). "United States and Denmark: different approaches to health care and family planning." *Studies in Family Planning* 21(1): 1-19.
- Di Salvo, P. (1992). *Intergenerational Patterns of Teenage Fertility in England and Wales. Medical Demography*. London, London School of Hygiene and Tropical Diseases.
- Diamond, I., Clements, D., Stone, N. and Ingham, R. (1999). "Spatial variation in teenage conceptions in south and west England." *J. R. Statistical Society* 162(3): 273-289.
- DiCenso, A. (1995). *Systematic overviews of the prevention and predictors of adolescent pregnancy. Health Studies*. Waterloo, Ontario, University of Waterloo.
- Dicenso, A., Guyat, G., Willan, A., Griffith, L. (2002). "Interventions to reduce unintended pregnancies among adolescents: systematic review of randomised controlled trials." *British Medical Journal* 324(7531): 1426.
- Dickson, R., Fullerton, D., Sheldon, T. and Granville, J. (1997). "Preventing and reducing the adverse outcomes of teenage pregnancy" *Effective Health Care* 3 (1): 1-12.
- DuCette, J.P., Stahler, G.J., and McBride, D. (1989). "Assessing the Quality of Evaluations of Adolescent Pregnancy Care Programs: a methodological review of the evaluations of health services." *Evaluation and the Health Professions* 12(4): 453.
- Drife, J. O. (1993). "Contraceptive problems in the developed world." *British Medical Bulletin* 49(1): 17-26.
- Duggan, A. (2000). *Athlone Institute of Technology Lifestyle Survey*. Midland Health Board.
- Dunne, M., Seery, D., O'Mahoney, E., Grogan, M. et al. (1997). *What on earth are they doing?* Alliance, Cork.
- Earls, F.L., Robins, L.N., Stiffman, A.R. and Powell, J. (1989). "Comprehensive health care for high risk adolescents: an evaluation study." *American Journal of Public Health* 79(1005): 999-1005.
- East, P.L. and Felice, M. (1992). "Pregnancy risk among the younger sisters of pregnant and childbearing adolescents." *Development and Behavioral Paediatrics* 13(2): 128-36.

- Eborall, C. and Garmeson, K. (2000). Research to inform the national media campaign. London, Teenage Pregnancy Unit.
- Edwards, L., Steinman, M., Arnold, K. and Hakanson, E. (1980). "Adolescent pregnancy prevention services in high school clinics." *Family Planning Perspectives* 12(1): 6-14.
- Eisen, M., Zelman, G.L. and McAlister, A.L.(1990). "Evaluating the impact of a theory-based sexuality and contraceptive education program." *Family Planning Perspectives* 22(6): 261-71.
- Ekstrand, M. L., Siegel, D., Nido, V., et al. (1996). Peer-led AIDS prevention delays initiation of sexual behaviors among US junior high school students. Paper presented at 11th International Conference on AIDS, Vancouver, BC.
- Elliott, H. and Beazley, J. (1980). "A medical study of pregnancy in Beazeley, Liverpool." *Journal of Obstetrics and Gynaecology* 1: 139-143.
- Family Planning Association (1993). Sexual health and family planning services in general practice: report of a quantitative research survey in England and Wales. London. Family Planning Association.
- Feldman, S. and Rosenthal, D.A. (2000). "The effect of communication characteristics on family members' perceptions of parents as sex educators." *Journal of Research on Adolescence* 10(2): 119-150.
- Fennell, R. (1993). "A review of evaluations of peer education programs not focused on sex education or pregnancy prevention." *Journal of American College Health* 41(6): 251-3.
- Fleissig, A. (1991). "Unintended pregnancies and the use of contraception: changes from 1984 to 1989." *British Medical Journal* 302: 147.
- Franklin, C. and Corcoran, J. (1999). "Preventing adolescent pregnancy - A review of programs and practices." *Social Work* 45(1): 40-45.
- Fu, H., Darroch, J., Haas, T. and Ranjit, N. (1999). Contraceptive failure rates: new estimates from the 1995 National Survey of Family Growth. *Family Planning Perspectives* 31(2):56-63
- Garlick, R., Ineichen, B. and Hudson, F. (1993) The UPA score and teenage pregnancy. *Public Health* 107:135-139
- Gibson, J.W. (1987) Black and Hispanic teenage contraceptive attitudes and behaviour; a school-based study. Columbia. Columbia University.
- Gordon, D. (1990). "Formal operational thinking, the role of cognitive development processes in adolescent decision making about pregnancy and contraception." *American Journal of Orthopsychiatry* 60: 36-356.
- Grossman, J. and Pepper. (1999). Plain Talk and Adolescent Sexual Behaviour. Philadelphia, Public/Private Ventures.
- Grunseit, A. (1997). "Sexuality education and young people's sexual behaviour - A review of studies." *Journal of Adolescent Research* 12(4): 421-453.

Hall, C. and Milner, P. (1996). "Advertising emergency contraception using local radio: an evaluation." *Health Education Journal* 55: 165-174.

Handler, A. (1987). An evaluation of a school-based education pregnancy prevention program. Chicago:, University of Illinois.

Hanna, K.M. (1990). Effect of nurse-client transaction on female adolescents' contraceptive perceptions and adherence. Unpublished doctoral dissertation, University of Pittsburgh, Pittsburgh.

Harden, A., Oakley, A. and Oliver, S. (2001). "Peer delivered health promotion for young people: a systematic review of different study designs." *Health Education Journal* 60: 339-353.

Hawkins, J., Catalano, R., Kosterman, R., Abbot, R. and Hill, K. (1999). "Preventing adolescent high risk behaviour by strengthening protection during childhood." *Archives of Pediatrics and Adolescent Medicine* 153(3): 226-234.

Hayes, C.D. (Ed.) (1987). *Risking the future: adolescent sexuality, pregnancy, and childbearing*. Washington, DC, National Academy Press.

Health Education Authority, Brook Advisory Centres and The Centre for Sexual Health Research. (1996). *Promoting sexual health services to young people. Guidelines for purchasers and providers* London HEA.

Herceg-Baron, R., Furstenberg, F.F. Jr., Shea, J. and Harris, K. (1986). "Supporting teenagers' use of contraceptives: a comparison of clinic users." *Family Planning Perspectives* 18(2): 61-6.

Herz, E. J., Goldberg, W.A. and Reis, J.S. (1984). "Family life education for young adolescents: A quasi-experiment." *Journal of Youth and Adolescence* 13(27): 309-27.

Herz, E. J., Reis, J.S. and Barbera-Stein, L. (1986). "Family Life education for young teens: An assessment of three interventions." *Health Education Quarterly* 13(3): 201-21.

Hofferth, S. (1988). *Influences on Early Sexual and Fertility Behavior. Risking the Future: Adolescent Sexuality, Pregnancy, and Childbearing*. S. Hofferth and C. Hayes. Washington, DC, National Academy Press.

Hoffman, S. (1998). Teenage Childbearing is not so bad after all...or is it? A review of new literature *Family Planning Perspectives* 30(5)236-239.

Hosie, A. (2002). *Sexual health policy analysis in selected European countries*. Edinburgh, Health Education Board Scotland.

Howard, M. and McCabe, J. B. (1990). "Helping teenagers postpone sexual involvement." *Family Planning Perspectives* 22(1): 21-6.

Howard, M. and McCabe, J. B. (1992). An information and skills approach for younger teens: postponing sexual involvement program. *Preventing Adolescent Pregnancy: Model Programs and Evaluations*. B. Miller, J. Card, R. Paikoff and J. Peterson. Newbury Park, CA, Sage Publications. 109: 83-109.

Hubbard, B.M., Giese, M.L. and Rainey, J. (1998). A replication study of Reducing the Risk, a theory-based sexuality curriculum for adolescents. *Journal of School Health*, 68, 243-247.

Hudson, F. and Ineichen, B. (1991). *Taking it Lying Down: Sexuality and teenage pregnancy*. Basingstoke, MacMillan Publishing.

Hughes, D. and McGuire, A. (1996). "The cost-effectiveness of family planning service provision." *Journal of Public Health Medicine*. 18(2): 189-196.

Hughes, K. (1999). *Young people's experiences of relationships, sex and early parenthood: qualitative research*. London, Health Education Authority.

Hughes, M. and Furstenberg, F. F. J. (1995). "The impact of an increase in family planning services on the teenage population of Philadelphia." *Family Planning Perspectives* 27(2): 60-65,78.

Hunt, W. (1976). "Adolescent fertility: risks and consequences." *Population Reports* 10: 157-175.

Ingham, R. (1997). *Development of an integrated model of sexual conduct amongst young people*. End of award report H52427501495. Economic and Social Research Council, London.

Ingham, R. and R. Partridge (2002). *A review of sexual health policies and trends in the USA, Australia and New Zealand: A report for the Health Education Board Scotland*. Edinburgh, Health Education Board Scotland.

Ingham, R. and van Zessen. (1998). *From cultural contexts to interactional competencies: a European comparative study*. Paper presented at AIDS in Europe, Social and Behavioural Dimensions.

Jay, M.S., DuRant, R.H., Shoffit, T., Linder, C.W. and Litt, I.F. (1984). "Effect of peer counselors on adolescent compliance in use of oral contraceptives." *Paediatrics* 73(2): 126-131.

Jemmott, J.B., Jemmott, L.S. and Fong, G.T. (1998). "Abstinence and safer sex HIV reduction. Interventions for African American adolescents: a randomised controlled trial." *Journal of American Medical Association* 279(19): 1529-1536.

Jemmott, L. S. (1993). "AIDS risk among black male adolescents: implications for nursing interventions." *Journal of Paediatric Health Care* 7(1): 3-11.

Jessor, S. and Jessor, R. (1985). "Transition from virginity to non-virginity among youth: a sociological study over time." *Developmental Psychology* 11: 473-484.

Johnson, A., Wadsworth, J., Wellings, K., Field, J. and Bradsay, S. (1994). *Sexual attitudes and lifestyles, British survey*. London, Blackwell Scientific.

Jones, E., Forrest, J., Henshaw, S., Silverman, J. and Torres, A. (1989). *Pregnancy, Contraception and Family Planning Services in Industrialized Countries - A Study of the Alan Guttmacher Institute*. New York, Yale University Press.

Jorgensen, S. R. (1991). "Project taking charge; an evaluation of an adolescent pregnancy prevention program." *Family Relations* 40(80): 373-80.

Jorgensen, S. R., Potts, V. and Camp, B. (1993). "Project taking charge; 6-month follow-up of pregnancy prevention program for early adolescents." *Family Relations* 42(4): 401-6

Kane, R. and Wellings, K. (1999). *Reducing the rate of teenage conceptions: Data from Europe*. Health Education Authority, London.

Kiernan, K. (1995). *Transition to parenthood: young mothers, young fathers - associated factors and later life experiences*. Welfare State Programme Discussion Paper 113. London:, London School of Economics.

Kirby, D. (1995). *A review of educational programs designed to reduce sexual risk-taking behaviors among school-age youth in the United States*. Washington, D.C.: U.S. Congress Office of Technology Assessment.

Kirby, D. (1999). "Reflections on two decades of research on teenage pregnancy." *Journal of School Health* 69(3): 89-94.

Kirby, D. (2001). *Emerging Answers*. Washington DC, National Campaign to Prevent Teenage Pregnancy.

Kirby, D. (2002). *Do abstinence-only programs delay the initiation of sex among young people and reduce teenage pregnancy?* Washington DC, National Campaign to Prevent Teenage Pregnancy.

Kirby, D. and Coyle, K. (1997). "Youth Development Programs." *Children and Youth Services Review* 19(5/6): 437-454.

Kirby, D., Korpi, M., Barth, R. and Cagampang, H.H. (1997). "The impact of postponing sexual involvement curriculum among youths in California." *Family Planning Perspectives* 29: 100-108.

Kirby, D., Resnick, M., Downes, B., Kocher, T., Gunderson, P., Potthoff, S. et al. (1993). *The Effects of School-Based Health Clinics in St. Paul on School-Wide Birthrates*. *Family Planning Perspectives*, 25(1), 12-16

Kirby, D. (1985). "The effects of selected sexuality education programs: Toward a more realistic view." *Journal of Sex Education and Therapy* 11(37): 28-37.

Kirby, D., Waszak, C. and Ziegler, J. (1991). "School-based clinics: Research results and their implications for future research methods." *Evaluation and Program Planning* 14(48): 35-48.

Kirby, D., Waszak, C. and Ziegler, J. (1991). "Six School-Based Clinics: Their Reproductive Health Services and Impact on Sexual Behavior." *Family Planning Perspectives* 23(1): 6-16.

Kisker, E. and Brown, R. (1996). "Do school-based health centers improve adolescents' access to health care, health status, and risk-taking behavior?" *Journal of Adolescent Health* 18(5): 335-343.

- Kisker, E. E. (1984). "The effectiveness of family planning clinics in serving adolescents." *Family Planning Perspectives* 16: 212-218.
- Kisker, E. E., Brown, R.S. and Hill, J. (1994). *Health Caring: Outcomes of the Robert Wood Johnson Foundation's School-based Adolescent Health Care Program*. Princeton, Robert Wood Johnson Foundation.
- Klaus, H., Bryan, L.M., Bryant, M.L., Fagan, M.U., Harrigan, M.B. and Kearns, F. (1987). Fertility awareness/natural family planning for adolescents and their families: Report of multi-site pilot project. *International Journal of Adolescent Medicine and Health*, 3, 101-19.
- Knox, H. and Kubba, A. (1995). "Radio advertising of family planning services in an inner city district - a pilot study." *British Journal of Family Planning* 20: 130-131.
- Koo, H. P., Dunteman, G.H., George, C., Green, Y. and Vincent, M. (1994). "Reducing adolescent pregnancy through a school- and community-based intervention: Denmark, South Carolina revisited." *Family Planning Perspectives* 26(5): 206-11.
- Ku, L., Sonenstein, F. and Pleck, J.H. (1993). "Factors affecting first intercourse among young men." *Public Health Reports* Nov/Dec.
- Leland, N. and Barth R. P. (1992). "Gender differences in knowledge, intentions, and behaviours concerning pregnancy and sexually transmitted disease prevention among adolescents." *Journal of Adolescent Health* 13(99): 589-99.
- Lonczak, H., Abbot, R., Hawkins, J., Kosterman, R. and Catalano, R. (2002). Effects of the Seattle Social Development Project on Sexual Behaviour, Pregnancy, and sexually transmitted disease outcomes by age 21. *Archives of Pediatrics and Adolescent Medicine* 156:438-447.
- Lundberg, S. and Plotnick, R.D. (1995). "Adolescent premarital childbearing: do economic incentives matter?" *Journal of Labor Economics* 13(2): 177-200.
- MacDowall, W., Gerressu, M., Nanchahal, N. and Wellings, K. (2002). *Analysis of NATSAL 2000 data for Scotland*. Edinburgh, Health Education Board Scotland.
- MacHale, E. and Newell, J. (1997). Sexual behaviour and sex education in Irish school-going teenagers *International Journal of STD & AIDS* 8:196-200.
- Manlove. (1993). *The social reproduction of teenage motherhood in Great Britain*. Durham, Durham Duke University.
- Manlove, J., Terry-Humen, E., Romano Papillo, A., Franzetta, K., Williams, S. and Ryan, S. (2002). *Preventing teenage pregnancy, childbearing and sexually transmitted diseases. What research shows*. Washington DC, Child Trends.
- McGuire, A. and Hughes, D. (1995). *The economics of family planning services. A report prepared for the Contraception Alliance*. London, Family Planning Association.
- McHale, E. and Newell, J. (1997). "Sexual behaviour and sex education in Irish school going teenagers." *International Journal of STD & AIDS* 8: 196-200.
- Mellanby, A. R., Newcombe, R.G., Rees, J. and Tripp, J.H. (2001). "A comparative study of peer-led and adult-led school sex education." *Health Education Research* 16(4): 481-92.

- Miller, B.C., Benson, B. and Galbraith, K. (2001). "Family relationships and adolescent pregnancy risk - A research synthesis." *Developmental Review* 4: 1-38.
- Miller, B.C., Norton, M.C., Jenson, G.O., Lee, T.R., Christopherson, C. and King, P.K. (1993). "Impact evaluation of facts and feelings - a home-based video sex-education curriculum." *Family Relations* 42(4): 392-400.
- Moberg, D. P. and Piper, D. L. (1990). "An outcome evaluation of Project Model Health: A middle school health promotion program." *Health Education Quarterly* 17(1): 37-51.
- Moore, K.A., Miller, B.C., Gleib, D. and Morrison, D.R. (1995a). *Adolescent sex, contraception, and childbearing: a review of recent research*. Washington, DC, Child Trends Inc.
- Moore, K.A. and Wertheimer, R.F. (1984). "Teenage child bearing and welfare: Preventive and ameliorative strategies." *Family Planning Perspectives* 16(9): 285-9.
- Newcomer, S. and Baldwin, W. (1992). "Demographics of adolescent sexual behaviour, contraception, pregnancy, and STDs." *Journal of School Health* 62(7): 265-70.
- NHS Centre for Reviews and Dissemination. (1997). "Preventing and reducing the adverse effects of unintended teenage pregnancies." *Effective Health Care Bulletin*.
- Nicholson, H. J. and Postrado, L. T. (1991). *Girls Incorporated Preventing Adolescent Pregnancy: A Development and Research Project*. New York, Girls Incorporated.
- Nicholson, H. J. and Postrado, L. T. (1992). *A comprehensive age phased approach: Girls Incorporated. Preventing Adolescent Pregnancy: Models Programs and Evaluations*. B. Miller, J. Card, R. Paikoff and J. Peterson. Newbury Park, CA, Sage Publications: 110-138.
- Office for Standards in Education (OFSTED) (2002) *Sex and Relationships* London OFSTED.
- Olausson, P.O., Haglund, B., Weitoft, G. and Cnattingius (2001). *Teenage childbearing and long term socio-economic consequences: A case study in Sweden* *Family Planning Perspectives* 33(2):70-74.
- Olsen, R. J. and Farkas, G. (1991). "Employment opportunity can decrease adolescent childbearing within the underclass." *Evaluation and Program Planning* 14(34): 27-34.
- Peach, E., Harris, J. and Bielby, E. (1994). *Teenage pregnancy - a community issue. A literature review. A Report by the Yorkshire Collaborating Centre for Health Services Research*. Leeds, Nuffield Institute for Health, University of Leeds.
- Pearson, V., Owens, M.R., Philips, D.R., Pereira-Gray, D.J. and Marshall, M.N. (1995). *Teenage Pregnancy: a comparative study of teenagers choosing termination of pregnancy or antenatal care*. *Journal of the Royal Society of Medicine*. 88 (7): 384 - 388.
- Peckham, S., Ingham, R. and Diamond, I. (1996). *Teenage pregnancy: Prevention and programmes*. Southampton:, Institute for Health Policy Studies, University of Southampton.
- Peersman, G., Oakley, A., Oliver, S. and Thomas, J. (1996). *Review of effectiveness of sexual health promotion interventions for young people*. London: Social Science Research Unit, University of London.



- Philliber, S. and Allen, J. P. (1992). Life options and community service: Teen Outreach Program. *Preventing Adolescent Pregnancy: Models Programs and Evaluations*. B. Miller, J. Card, R. Paikoff and J. Peterson. Newbury Park, CA, Sage Publications. 155: 139-155.
- Philliber, S., Williams, K., Herrling, S. and West, E. (2002). "Preventing teenage pregnancy and improving health care access among teenagers: An evaluation of the Children's Aid Society - Carrera Programme." *Perspectives on Sexual and Reproductive Health* 34(5): 244-251.
- Phoenix, A. (1991). *Young mothers*. Oxford, Polity Press.
- Pinkerton, J. and McCrea, R. (1996). *Meeting the Challenge? Young people leaving care of social services and training schools in Northern Ireland*. Centre for Child Care Research, The Queen's University Belfast/DHSS.
- Pitts, M., Burtney, E. and Dobraszczyk, U. (1996). "'There is no shame in it anymore': how providers of sexual health advice view young people's sexuality." *Health Education Research* 11(1): 1-9.
- Ralph, N. and Edgington, A. (1983). "An evaluation of an adolescent family planning program." *Journal of Adolescent Health Care* 4: 158-62.
- Roosa, M.W. and Christopher, F. S. (1990). "Evaluation of an abstinence-only adolescent pregnancy prevention program: A replication." *Family Relations* 39(7): 363-7.
- Rotheram-Borus, M. J., Koopman, C., Haignere, C. and Davies, M. (1994). "Reducing HIV sexual risk behaviors among runaway adolescents." *Journal of the American Medical Association* 266: 1237-1241.
- Santelli, J., Robin, L., Lowry, R. and Brener, N. (2001). "Timing of alcohol and other drug use and sexual risk behaviours among unmarried adolescents and young adults." *Family Planning Perspectives* 33(5): 200-205.
- Scholl, T. O., Hediger, M.L. and Belsky, D.H. (1994). "Prenatal care and maternal health during adolescent pregnancy: a review and meta-analysis." *Journal of Adolescent Health* 15(6): 444-56.
- Sheerin, E. (1998). *Life as it is: Values, Attitudes and Norms from the Perspective of Midland's Youth* Midland Health Board.
- Silva, M. (2002). "The effectiveness of school-based sex education programs in promotion of abstinent behaviour: A meta-analysis." *Health Education Research* 17(4): 471-481.
- Singh, S. and Darroch, J. (2000). "Adolescent pregnancy and childbearing: levels and trends in developed countries." *Family Planning Perspectives* 32(1): 14-23.
- Singh, S., Darroch, J. and Frost, J. (2001). "Socioeconomic disadvantage and adolescent women's sexual and reproductive behaviour: The case of five developed countries." *Family Planning Perspectives* 33(1): 251-158 & 289.

Slade, L.N. (1989). Life-outcome perceptions and adolescent contraceptive use, Emory University.

Smith, G. and Pell, J. (2001). Teenage pregnancy and risk of adverse perinatal outcomes associated with first and second births: population based retrospective cohort study *BMJ* 323:1-5

Smith, M.A. (1994). "Teen incentives program: evaluation of a health promotion model for adolescent pregnancy prevention." *Journal of Health Education* 25(1): 24-29.

Smith, M.A. (1990). *The Teen Incentive Program: A Research and Evaluation Model for Adolescent Pregnancy Prevention*. New York, Columbia University.

Smith, P.B. and Gorry, G. A. (1980). "Evaluating sex education programs." *Journal of Sex Education and Therapy* 6(23): 17-23

Schinke, S.P., Blythe, B.J. and Gilchrist, L.D. (1981). Cognitive behavioral prevention of adolescent pregnancy. *Journal of Counseling Psychology*, 28(5), 451-454.

Social Exclusion Unit. (1999). *Teenage Pregnancy: Report by the Social Exclusion Unit*. London, Stationery Office.

St Lawrence, J. S., Jefferson, K. W., Banks, P.G. and Klein, T.R. (1994). "Cognitive behavioral group intervention to assist substance dependent adolescents in lowering HIV infection risk." *AIDS Education and Prevention* 6(5): 425-435.

St Lawrence, J. S., Jefferson, K. W., Banks, P.G. and Klein, T.R. (1995). "Cognitive behavioral group intervention to reduce Africa American Adolescents; Risk of HIV Infection." *Journal of Consulting and Clinical Psychology* 63(2): 221-237.

St. Pierre, T., Mark, M., Kaltreider, L. and Aiken, K. (1995). "A 27-month evaluation of a sexual activity prevention program in boys and girls clubs across the nation." *Family Relations* 44: 69-77.

Stone, N., Clements, S., Ingham, R. and Diamond, A. (1996). *Modelling the spatial distribution of teenage conception rates within Wessex*. Report for the Regional R & D Sexual Health Programme. Southampton:, Centre for Sexual Health Research, University of Southampton.

Strange, V., Forrest, S., Oakley, A. and the RIPPLE team (2002a). "Peer led education - characteristics of peer educators and their perceptions of the impact of them of participation in a peer education programme." *Health Education Research* 17(3): 327-337.

Strange, V., Forrest, S., Oakley, A. and the RIPPLE team (2002b). "What influences peer led sex education in the class-room? A view from the peer educators." *Health Education Research* 17(3): 339-349.

Stuart-Smith, S. (1996). "Teenage sex: cognitive immaturity increases the risk." *British Medical Journal* 312(1): 390-1.

Swann, C., Bowe, K., Mc Cormick, G, and Kosmin, M. (2003). *Teenage pregnancy and parenthood: A review of Reviews (Evidence Briefing)*. London, Health Development Agency.

- Thomas, B. H., Mitchell, A., Devlin, C., Goldsmith, C., Singer, J. and Watters, D. (1992). The small group sex education at school: The McMasters Team Program. Preventing Adolescent Pregnancy: Models Programs and Evaluations. B. Miller, J. Card, R. Paikoff and J. Peterson. Newbury Park, CA, Sage Publications: 28-52.
- Thompson, E. and Chapple, J. (1993). "Quality contraception or sexual health care? a survey of family planning clinic managers in one health region." *British Journal of Family Planning* 19(5): 232-5.
- Todd, J., Currie, C. and Smith, R. (1999). Health Behaviour of Scottish School Children: Technical Report Sexual Health. Edinburgh, University of Edinburgh.
- Trent, K. and Crowder, K. (1997). Adolescent birth intentions, social disadvantage, and behavioural outcomes *Journal of Marriage and Family* 59(3) 523-535.
- Trussell, J., Leveeque, J.A. and Koenig, J D. et al. (1995). "The economic value of contraception: a comparison of 15 methods." *American Journal of Public Health* 85(4): 494-503.
- Ubido, J. and Ashton, J. (1993). "Small area analysis: abortion statistics." *Journal of Public Health Medicine* 15(2): 137-143.
- Udry, J.R. and Billy, J. (1987). Initiation of coitus in early adolescence. *American Sociology Review* 52 841-855.
- UNICEF (2001). "A League Table of Teenage Births in Rich Nations." *Innocenti Report Card*(3).
- Vincent, M. and Dod, P. (1989). "Community and school based interventions in teen pregnancy prevention." *Theory into Practice* 28(3): 191-7.
- Walker, G. and Vilella-Velez, F. (1992). *Anatomy of a Demonstration*. Philadelphia, Public/Private Ventures.
- Wang, L., Davies, M., Robin, L., Collins, J., Coyle, K. and Baumler, E. (2000). "Economic evaluation of Safer Choices - A school based HIV and other sexually transmitted diseases and pregnancy prevention program." *Archives of Pediatric Medicine* 154: 1017-1024.
- Wareham, V. and Drummond, N. (1994). "Contraception use among teenagers seeking abortion - a survey from Grampian." *British Journal of Family Planning* 20 (3): 76-8.
- Wellings, K., Nanchahal, K., MacDowall, W. et al. (2001). "Sexual behaviour in Britain: early heterosexual experience." *Lancet* 358: 1843-50.
- Wellings, K., Wadsworth, J., Johnson, A. et al. (1996). *Teenage sexuality, fertility and life chances. A report for the Department of Health using data from the National Survey of Sexual Attitudes and Lifestyles*. London:, London School of Hygiene & Tropical Medicine.
- West, J., Hudson, F., Levitas, R. and Guy, W. (1995). *Young people and clinics: Providing for sexual health in Avon*. Bristol:, Department of Sociology, University of Bristol.

- Whitaker, D.J., Miller, E.C., May, D. and Levin, M.L. (1999). "Teenage partners' communication about sexual risk and condom use: The importance of parent teenage discussions." *Family Planning Perspectives*: 117-121.
- Wight, D., Henderson, M., Abraham, C., Buston, K., Scott, S. and Hart, G. (2002). "The limits of teacher delivered sex education: interim behavioural outcomes from a randomised trial." *British Medical Journal* 324: 1430-1433.
- Wight, D., Henderson, M., Raab, G.M., Abraham, C., Buston, K., Scott, S. and Hart, G. (2000). "Extent of regretted sexual intercourse among young teenagers in Scotland: a cross-sectional survey." *British Medical Journal* 320: 1243-1244.
- Williams, J., Achilles, C.M. and Norton, C.P. (1985). *Appalachian Adolescent Health Education Project (AAHEP): A Study of teen pregnancy in East Tennessee (1982-1985)*. Mid South Educational Research Association.
- Wilson, S., Daniel, S., Pearson, J., Hopton, C. and Madeley, R. (1994). "An evaluation of a new teenage clinic and its impact on teenage conceptions in Nottingham from 1986 to 1992." *Contraception* 50(1): 77-86.
- Wilson, S. H. (1994). "Purchasing services to promote the sexual health of young people: contraceptive care for teenagers. A review of the published literature to inform a regional health gain investment." *European Journal of Public Health* 4(3): 207-12.
- Winn, S., Roker, D. and Coleman, J. (1995). "Knowledge about puberty and sexual development in 11-16 year olds: implication for health and sex education in schools." *Educational studies* 21(2): 187-201.
- Winter, L. and Breckenmaker, L. C. (1991). "Tailoring family planning services to the special needs of adolescents." *Family Planning Perspectives* 23(1): 24-30.
- Withnell, S. (1994). *An evaluation of the young people's drop-in at Newport Pagnall Health Centre: the first twelve months*. Aylesbury:, Buckinghamshire Health Authority.
- Young, M., Core-Gebhart, P. and Marx, D. (1992). "Abstinence-oriented sexuality education: Initial field tests of the Living Smart curriculum." *Family Life Educator* 10(4): 4-8.
- Zabin, L.S., Hirsch, M.B., Smith, E.A., Streett, R. and Hardy, J.B. (1986). "Evaluation of a Pregnancy Prevention Program for Urban Teenagers." *Family Planning Perspectives* 18(3): 119-26.
- Zabin, L. S. (1992). *School-linked reproductive health services: The John Hopkins program*. In B. C. Miller, J. J. Card, R. L. Paikoff, & J. L. Peterson (Eds.), *Preventing Adolescent Pregnancy* (pp. 156-184). Newbury Park, CA: Sage.
- Zoritch, B., Roberts, I. and Oakley, A. (2000). *Daycare for preschool children*. Oxford, Cochrane Collaboration.

## Appendix 1 – Inclusion Criteria & Hierachy of Evidence

### Criteria for Inclusion in this Review

#### *(a) systematic reviews (level 1 evidence)*

published since 1997

focus on promoting positive sexual health among young people or reducing teenage pregnancy

clear search strategy

agreed inclusion/exclusion criteria

#### *(b) primary studies (level 1 evidence)*

published since 1997 or not included in identified systematic review

evaluating programmes to prevent teenage pregnancy or promoting positive sexual health among young people

experimental design – randomised controlled trial (rct) study

good follow-up

#### *(c) literature reviews (level 2 evidence)*

published since 1997 or not included in identified systematic review

focus on the effectiveness of programmes to prevent teenage pregnancy or promote sexual health among young people

includes experimental or quasi-experimental design (programme versus control or comparison group) – adjusting for baseline differences

#### *(d) primary studies (level 2 evidence)*

published since 1997 or not included in identified systematic review

evaluating programmes to prevent teenage pregnancy or promoting positive sexual health among young people

includes experimental or quasi-experimental design (programme versus control or comparison group) – adjusting for baseline differences

## Appendix 2

Table A: Summary of evaluations of prevention programmes

Study Programme Country	Design Study population Sample size Follow-up interval	Programme description	Findings 0 = no difference + = difference in positive direction for programme - = difference in negative direction for programme	Comments
<b>Sex Education in Classrooms – Abstinence Programmes – Only</b>				
Aarons et al. (2000)**	RCT Junior Schools n=582 Grade 7 students (mean age 12.8 yrs) Follow-up 3 months	Intervention: 3 reproductive classes of postponing sexual involvement delivered by peers 10th /11th Gradematching	Outcomes: Intercourse & use of contraceptives = +	At baseline there were substantial differences that favoured the PSI programme group. Before and after programme was not possible as the questionnaire was anonymous.
Postponing Sexual Involvement				
Blake et al. 2001 **	RCT 8 classes MPM only 11 classes MPM enhanced School-based	Intervention: 5 1hr sessions led by trained youth leaders. The programme addresses risk of early sexual involvement, social and media pressures to become sexually active, and assertiveness and communication skills. MPH reinforces the message that abstinence until marriage is expected.	Self-efficacy for refusal/avoidance + More frequent communication +	Short follow-up No control group No behavioural outcomes
Managing the Pressures before Marriage (MPM)				

\*Included in EHC Review (1997) \*\*New study published since 1997 RCT: Randomised Controlled Trial CT: Non-Random Controlled Trial

\*\*Not all information is available for all studies

Study Programme Country	Design Study population Sample size Follow-up interval	Programme description	Findings 0 = no difference + = difference in positive direction for programme - = difference in negative direction for programme	Comments
Christopher and Roosa (1990) Success Express (Study 1) USA	CT Females = 61% Hispanic= 69% Mean age 12.8 Low SES Grade 6 and 7 Mean age 12.8 School classes I = 191 C =129 6 wks follow-up	Five homework assignments were designed to increase parents understanding of the pressures on young people, and to facilitate open communication. The assignments did not stress abstinence before marriage.  Intervention: Abstinence, attitudes, skills, behaviours, self-esteem, family values, peer and media pressure, consequences of sex, how to say no, life goals and goal-setting. Control Group: Usual health education	No significant differences in sexual initiation but boys in the programme group were more likely to engage in pre-coital sexual activity 64% follow-up	Short-term follow-up. High attrition (I 41% C 30%) No randomisation. Contamination between classes might have occurred.
Jorgensen et al. (1991, 1993) * Project Taking Charge USA	RCT Females = 53% Mean age 14.4 Low SES School classes I = 52; C= 39 6 week follow-up	Intervention: Students received 30 classroom sessions on biological factors, importance of abstinence, vocational goal setting, family values and family communication. Parents invited to 3 evening sessions of communication exercises, values exploration, adolescent sexuality, pregnancy and STD Control: Usual instruction	Reduced initiation but not statistically significant	Small number of classrooms and students and short-term follow up, so low statistical power. Large proportion of comparison group students started intercourse during the 6-month period (50%).

Study Programme Country	Design Study population Sample size Follow-up interval	Programme description	Findings 0 = no difference + = difference in positive direction for programme - = difference in negative direction for programme	Comments
Kirby et al.** (1997) Postponing Sexual Involvement/ ENABL	RCT California Schools Varied SES n=7753 I=3697 C=4056 Mean age 12.6 7th grade/8th Grade	Setting: classroom in most (community in one design) 5 1-hour sessions Delivered by adults or teens Intervention: Designed to help young people understand social and peer pressure to have sex and to develop and apply resistance skills – emphasis on postponing sexual behaviour Control: Standard curriculum	No measurable impact on initiation of sex, frequency of sex, or the numbers of sexual partners.	Randomisation Large sample size 12-month follow-up
Roosa and Christopher (1990) Success Express Study 2 USA	CT Females = 57% Mean age 12.8 Hispanic=64% Low SES Grade 6 ,7,8 School classes I = 399 C =129 6 wks follow-up	Intervention: Abstinence attitudes, skills, behaviours, self-esteem, family values, peer and media pressure, consequences of sex, how to say no, life goals and goal-setting Control Group: Usual sex education	Sexual initiation: No significant difference but programme group was less likely to have initiated sexual activity.  C: 66% I: 76% followed up	Short-term follow-up. No randomisation. Contamination between classes might have occurred.
St. Pierre et al. (1995)  Stay Smart  USA	CT Urban USA Females = 25% Mean age = 13.6 Low SES Boys and Girls Clubs (N=14) I = 49 I + booster = 50 C = 53 Follow-up at 3, 15 and 27 months	Intervention: 12 sessions with a multi focus: sex, alcohol, tobacco and marijuana. 9 sessions provided lifeskills training, 3 sessions on postponing sexual involvement. Intervention + Booster: At 1 yr and 2 yr additional sessions were presented to reinforce skills and knowledge and to help older youth be positive role models. Delivered by staff members using role play Control: Comparison group did not receive any intervention	Sexual behaviour: Virgins: No differences were observed.  Non Virgins F(4,120)=5.41, p<-.001 Stay smart only : non-virgins reported significantly less sexual behaviour than the control or the booster group at 27 months  42% followed-up	Inconsistent results coupled with lack of random assignment, small sample sizes, very high attrition rates, and failure to adjust for clustering effect at the club level render the results inconsistent



Study Programme Country	Design Study population Sample size Follow-up interval	Programme description	Findings 0 = no difference + = difference in positive direction for programme - = difference in negative direction for programme	Comments
<b>Sex Education in Classrooms – Comprehensive Programmes</b>				
Barth et al. (1992a, 1992b) Evaluation 1988-1989 Published 1991 Reducing the Risk	CT Age 15 years Sex Females 52% White 60% Latino 20% School classes from 13 high schools I=586 (classes n=23) C =447(classes n=23) Follow-up at 6 and 18 months	Intervention: 15 sessions including: information about sexual risk, emphasis on peer norms, modelling, skills aimed at increasing abstinence or avoiding unprotected intercourse. Role play activities include the practice of obtaining contraceptive information from shops and clinics. Participants were encouraged to discuss abstinence and contraceptive use with their parents. Control: Usual sex education	Programme group were more likely to use contraceptives (borderline significance) Sexual initiation 0 Contraceptive use Pregnancy 0  73% follow-up	Study included a clear process evaluation and consumer satisfaction survey. Cross-contamination of classes may have weakened effect. Sample size for some sub-groups was too small for reasonable power
Coyle et al. (1999, 2001)**  Safer Choices  US	RCT  20 High schools randomly assigned to intervention or comparison. n=3677	Intervention: Five components: School health protection council, sex ed curriculum, peer resources, parent education, and school-community links. Emphasizes abstinence as safest choice, condoms as safer than unprotected sex. Skills based and interactive focusing on knowledge, norms, skills and condom use	Use of condoms at last sex=+ Use of contraception at last sex=+ Frequency of sex without contraception =+ Number of sexual partners without condoms=+	This was a strong design with randomisation, large sample size, long-term follow-up of a range of measures.
Ekstrand et al. (1996)**  Healthy Oakland Teens	CT Low Income SES n=250  Grade 7 and follow-up at grade 8 (11 months) I = 107 C =143	Setting: Social science classes at middle school 5 adult- led sessions/8 peer-led sessions Intervention: The 5 adult-led sessions included basic information on anatomy, substance abuse, HIV/STDS, and preventive behaviours. The 8 peer-delivered sessions were more interactive and included perception of risk, values and clarification, costs and benefits of preventive behaviours, peer norms and refusal skills, and condom use	Initiation of sex =+	Non-random assignment  Some problems with parental consent

Study Programme Country	Design Study population Sample size Follow-up interval	Programme description	Findings 0 = no difference + = difference in positive direction for programme - = difference in negative direction for programme	Comments
Frappier (1981)  No Name  Canada	CT Females = 53% Ages 13-17 years Varied SES Schools I = 777 C = 38 Follow-up 10 months	Intervention: Using discussion groups students received weekly instruction on anatomy and physiology, contraception, STDs, attitudes about sexuality and responsible sexual behaviour over a 10-month period. Control: Usual sex education	No statistical differences	Small Control Group
Gibson (1987)  Teen Choice Program  USA	CT Females = 77% Age 12-19 Black and hispanic Schools (students volunteered to programme) I=536 C=122 3-month follow-up	Intervention: 1-2 semesters of small group activities emphasising self-esteem, value clarification, self-reflection and assertiveness. Information on contraceptive methods and individual counselling was provided. Control: Usual sex education	Increased use of contraceptives of borderline statistical significance  68% Follow-up	No randomisation, and short-term follow-up.
Handler (1987)  Peer Power Project  USA	CT Females = 100% Mean age 13.3 years Grades 7 and 3 Black=100% I =26 C=27 12-month follow-up	Intervention: Peer-led weekly meetings. The programme aimed to increase knowledge, improve decision-making skills, goal setting, communication and aimed to establish career goals. Links to clinics and supportive adults were provided Control: Usual sex education	No significant differences  84% followed-up	Small sample size.
Herz et al. (1994)  Family Life Education Programme  USA  School-based	CT USA - Chicago Mean age 13 Lower Income Black 100% Schools (n=2) 2 month follow-up	2 schools were assigned to intervention or control conditions Intervention: Pupils received 15 40-minute sessions once per week. The programme provided information on physiology, contraception, nutrition and hygiene. The programme aimed to improve communication and develop educational and career goals Control: Usual sex education	Contraceptive knowledge + The programme group displayed improved knowledge about contraception and a greater tendency to acknowledge mutual responsibility for contraception.	Small sample size and short follow-up limit the usefulness of this study.

Study Programme Country	Design Study population Sample size Follow-up interval	Programme description	Findings 0 = no difference + = difference in positive direction for programme - = difference in negative direction for programme	Comments
Howard and McCabe (1990) Postponing Sexual Involvement (PSI) & Human Sexuality Programme USA	CT 13-14 year olds Grade 8 Females = 66% Low SES, black Individual I=395 C=141 Follow-up at 12-18 months	Intervention: Class-based programme aimed to help young people understand social and peer pressures and develop and apply resistance skills; emphasis on postponing sexual involvement. Human Sexuality - 5 sessions on human sexuality, decision-making and contraceptives. Delivered by peers and health educators/nurses. Control: Factual and decision making skills	Programme group were less likely to initiate sexual activity than control. Sexual initiation + By the end of ninth grade, programme teens were less likely to have initiated sexual activity than controls (24% v 39% p<0.01) Contraceptive use: Among those initiating sexual activity approx 50% programme group and 33% of comparison group reported using contraceptives. Pregnancy rates Virgins before programme 12.8% C 4.3% (91% follow-up)	No randomisation but no significant differences prior to intervention. Parental consent was necessary to participate.
Hubbard et al. (1998) ** Reducing the Risk	CT Matched control 5 intervention schools 5 comparison schools n=212	School-based programme delivered in health education classes Intervention: Students received 16 sessions on programme based on cognitive behavioural theory, using role play to build skills and self-efficacy. Strong emphasis on avoiding unprotected sex by avoiding sex or using protection. Control: not stated	Initiation of sex = + Condom use: Sexually inexperienced at pretest =+	Non random design but no sign difference at baseline. Attrition was very high (in part due to graduation) Sub group analyses had small numbers

Study Programme Country	Design Study population Sample size Follow-up interval	Programme description	Findings 0 = no difference + = difference in positive direction for programme - = difference in negative direction for programme	Comments
Jemmett et al. (1998) **	RCT Low income Total n=659	Setting: Recruited from high schools for a Saturday programme on school campus Intervention: 8 1hr sessions 2 curricula: 1 abstinence based, 1 safer sex based. Based on cognitive behaviour theories using small group discussions, videos, games, brainstorming, experiential exercises. Delivered by trained adult or peer facilitators	Abstinence Programme Initiation of intercourse at 3 months only =+ Condom use at 12 months only =+ No difference on unprotected sex Safer Sex Programme Frequency of sex 6 months =+ 12 months =+ Condom use At 3, 6, 12 months =+ Frequency of unprotected sex At 3, 6 months =+	The safer sex curriculum had significant effects upon frequency of unprotected sex among youth sexually experienced at baseline, but not all youth.  No difference on peer- or adult-delivered
Be Proud Be Responsible – A Sexual Abstinence Programme  Be Proud Be Responsible – A Safer Sex Programme	2 treatment groups 1 control group  Follow-up for 12 months			
Kirby (1985)	CT 9-12 graders Varied SES 11 programmes/sites	Intervention: Health or sex education classes Length: 5 sessions to full semester Content: Some predominantly knowledge based; a few used role playing  Control: Not stated	Among 11 programmes Sexual Initiation 0  Contraceptive use: No contraception or ineffective method 10 sites: found no differences between group  1 site: the programme group were significantly less likely to use no or ineffective methods than the comparison group Effective contraception  2 sites: the programme groups were more likely to use effective contraceptives than the comparison group.  9 sites found no differences between programme group and comparison Pregnancy: Pregnancy measured in 3 sites: no differences between groups	A study of 11 different sex education programmes.  Sample sizes for individual programmes were often too small for reasonable power; longer term effects were not measured for the five most comprehensive programmes.  Short-term follow-up only.
11 sexuality education programs in the USA  School-based	n = 2589 (individual programs ranged from 53 to 556)  Follow-up 3-5 months			

Study Programme Country	Design Study population Sample size Follow-up interval	Programme description	Findings 0 = no difference + = difference in positive direction for programme - = difference in negative direction for programme	Comments
Klaus (1987) USA	CT Females = 100% Ages 15-17 SES not specified Individual I=200 C=31 Follow-up 12 months	Intervention: Participants taught to chart mucous patterns using the Billings method, and to interpret patterns ovulatory cycles. Discussion of self-concept, relationships with peers, parents, siblings. Comparison: Not stated	Programme group less likely to initiate sexual activity and become pregnant.  Sexual initiation: + Pregnancy +	Not enough details provided on content, and site of programme.  Lack of randomisation and sample size limits the findings. Small control group.
Moberg and Piper (1990) 1990 Project Model Health USA	CT 8th graders 12-14 yr old Female = 55% Middle SES School I = 115 C = 82 In addition to collecting data on intervention and comparison group, data were collected from the preceding cohort of 8th graders.  20- month follow-up	Intervention: 64 half hour sessions on nutrition, marijuana, tobacco, drinking and driving, and sexuality. The programme focused on media influences, peer refusal skills, peer norms, short-term effects, commitment to behaviour change. Delivered by trained college-age instructors using role play and group discussion.  Control: Usual health curriculum	Programme group were less likely to initiate sexual activity.  74% followed -up	Weak design. No randomisation, schools were distant from one another; sample sizes were small; large pre-test differences in ever had sex at pre-test (5.4% vs 13.6%); high attrition; results varied with the type of statistical analysis used.

Study Programme Country	Design Study population Sample size Females 100% Follow-up interval Ages 15-19 Grades 10-12	Programme description	Findings 0 = no difference + = difference in positive direction for programme - = difference in negative direction for programme	Comments
Slade (1989)* Life Outcome Perceptions USA	Pupils I = 48; C = 40 2- month follow up Grades 7 and 8 Females = 51% Mean age 12.7 years Range of income levels Randomised by School	Intervention: 1- hour session focusing on negative impact of early childbearing on vocational goals, desired lifestyle and on unplanned child Control: Usual sex education	Reduction in sexual activity and pregnancy but not statistically significant.	Small sample size and short term follow-up, so low statistical power
Thomas et al. (1992)* McMaster Teen Program Canada	I = 11 schools (2062 students) C = 10 schools (1228 students) 4-year follow up RCT 25 schools in Scotland 13-15 year olds	Intervention: The 10 sessions used role play and films to discuss development, sexuality, and relationships with others. Skills-building sessions included decision-making and problem solving. No information on contraceptive methods was included Control: Conventional sex education curriculum.	Girls more likely to use contraception and be pregnant but of borderline statistical significance.	The content of the treatment intervention did not appear much stronger than that of the control.  Some baseline differences  No impact on those already sexually active
Wight et al. ** (2000, 2002) SHARE UK	Baseline: 7616 Follow-up: 5854 2-Year follow-up	Intervention: the SHARE programme was developed to be delivered by teachers to young people aged 13-15 in 20 sessions over a two-year period Control: Usual SRE education (each school was given money equal to the costs of the SHARE teacher training to be spent on PSHE but not SRE)  (Little nature of the content of the control schools is provided)	At 6 months post programme  Sexual knowledge: (conception, contraception, STIs)= + Regret at last intercourse =+  Sexual initiation=0	Compares SHARE with traditional sex education rather than no sex education.  Purely classroom-based – no link with parents or evidence of links with contraceptive services  Only one third of participants were sexually active so full impact of programme may not have been captured

Study Programme Country	Design Study population Sample size Follow-up interval	Programme description	Findings 0 = no difference + = difference in positive direction for programme - = difference in negative direction for programme	Comments
Williams et al. (1985) Appalachian Adolescent Health and Education Project School-based	CT USA - Tennessee Females 100% Ages 11-18 County I=11327 C= 4292 12- month follow-up	Intervention: At least 1 50-minute lecture/discussion session covering male/female puberty, male/female reproduction, contraception, foetal development, STDs, decision-making skills and values Control: Usual sex education	Programme group were less likely than the control to become pregnant at follow-up  Pregnancy prevention +	The review provides no details on the quality of the study.
Young et al. (1992) Living Smart USA	CT Age, sex and SES not reported School classes I = 83 C = 126 Follow-up at 1 week post curriculum	Intervention: 24 sessions focused on abstinence Three units: Knowing myself, Relating to others, Planning my future  Control 1: Normal health education Control 2: No health education	Sexual behaviour: Fewer of the programme group reported having sex in the previous month.  100% followed-up	Small sample size and extremely short-term follow-up. Post programme measurement followed the curriculum; behaviour changes were modest; no data presented on the comparability of the groups
<b>Programmes involving Parents</b>				
Blake et al. 2001 **  Managing the Pressures before Marriage-Enhanced	RCT  8 classes MPM only 11 classes MPM enhanced  Follow-up at 7 weeks	Intervention: 5 1hr sessions led by trained youth leaders. The programme addresses risk of early sexual involvement, social and media pressures to become sexually active, and assertiveness and communication skills. MPH reinforces the message that abstinence until marriage is expected.  Five homework assignments were designed to increase parents' understanding of the pressures on young people, and to facilitate open communication. The assignments did not stress abstinence before marriage.	Self-efficacy for refusal/avoidance +  More frequent communication +	Short follow-up  No behavioural outcomes

Study Programme Country	Design Study population Sample size Follow-up interval	Programme description	Findings 0 = no difference + = difference in positive direction for programme - = difference in negative direction for programme	Comments
Miller et al. (1993)* Facts and Feelings USA – Utah	RCT Ages 12-14 Upper-middle SES mainly Mormons Families randomised I (1) = 126; I (2) = 132; C = 290 3- & 12-month follow up	Intervention 1: Home-based video and mailed newsletters Intervention 2: Home-based videos only Control: No intervention  The written material suggested questions and topics for discussion. Phone calls were made bi-weekly to encourage use of the materials	Sexual behaviour: Changes over time for all groups. No statistically significant difference between the groups (p = 0.66) as measured by group x time repeated measures analysis of variance. Improved parent communication among programme group.	Only 3-5% of the youths in any group initiated intercourse during follow-up. Thus, it was difficult to assess impact. The only significant effect was on the quality of communication with parents about sex.
Nicholson and Postrado (1991, 1992) Growing together USA	CT Female = 100% Mean age 12.4 Low SES Individuals (volunteers) I = 84 C = 117 24-month follow-up	Intervention: 5 2-hr sessions set in Girls Clubs designed to help parents communicate with their daughters. Included facts about adolescent sexuality, values about dating and relationships Methods: Interactive exercises; practice communicating with their own daughters and others Control: No programme	Programme group less likely (borderline significance) to initiate sexual activity.	The strength of the design was reduced by the lack of random assignment, and relatively small sample sizes.
<b>Programmes involving Parents</b>				
Allen and Philliber 1997 ** Teen Outreach Program	RCT 25 sites in US 695 pupils 9th-12th grade Mean age 15.8 Randomised by pupil 9-months follow-up	Intervention: Min 20 hr/year of supervised community voluntary experience, classroom-based discussions for 1hr per week throughout academic year about service experiences, future life options, developmental tasks of adolescence and sex. Delivered by trained facilitator Control: Usual curriculum	Pregnancy =+ (Young women)	At baseline some of the control groups had higher levels of previous course failure, school suspension and teenage pregnancy. However, the authors excluded 3 of the 25 sites where differences were most problematic, and still found a significant difference in pregnancy rate.



Study Programme Country	Design Study population Sample size Follow-up interval	Programme description	Findings 0 = no difference + = difference in positive direction for programme - = difference in negative direction for programme	Comments
Becker & Barth (2000) Power Through Choices	Before & After study Young people in Public Care 14-18 year olds n=66	Setting: Part of independent living programme Delivered in a range of settings in group homes, residential treatment centres and independent living centres over a period of a month  Intervention: Impact of choices on individual's future Role play & scenarios Reinforcement empowerment Aim: To enable participants to <ul style="list-style-type: none"> <li>• recognise and make choices related to sexual behaviour</li> <li>• build contraceptive knowledge and skills</li> <li>• develop effective communication skills</li> <li>• learn and practice locating and using local resources.</li> </ul>	Knowledge = +  Positive feedback from participants and facilitators	Small-scale evaluation Weak design  Programme has strong theoretical basis  Authors comment for the need for long-term evaluation using more rigorous methods.
Eisen et al. (1990)* Teen Talk (Health Beliefs Model-HBM) USA	RCT 6 family planning service agencies and 1 school district Female = 54% Low income Classes I = 722; C= 722 pupils 1- year follow-up	Intervention: Participants received 12-15 hours of training designed to increase teenagers' awareness of the probability of pregnancy; the consequences of pregnancy; the benefits of delayed sexual activity and consistent effective use of contraception. Control: Usual sex education programmes which varied between sites	Reduction in contraceptive use and pregnancy but not statistically significant	

Study Programme Country	Design Study population Sample size Follow-up interval	Programme description	Findings 0 = no difference + = difference in positive direction for programme - = difference in negative direction for programme	Comments
Nicholson and Postrado (1992)	CT Females = 100% Low SES Majority black Individuals volunteers attending youth clubs I = 257 C = 155 24-month follow-up	Intervention: The programme consisted of 9 2-hour sessions focusing on the futures of women, career planning, goal setting, decision-making, assertiveness, postponing sex and contraception. Methods: interactive exercises, role-playing Control: Non-volunteers	Sexual initiation:  High participation was associated with less initiation but a U curve with a little participation leading to more initiation than no participation.	No randomisation, small sample size.
Will Power; Won't Power  USA				
Nicholson and Postrado (1991,1992) 1991 Taking Care of Business USA	CT USA- 4 states Females = 100% Low SES Individuals volunteers attending youth clubs I = 165 C = 178 24-month follow-up	Girls who volunteered participated in programmes within the four Girls Clubs. Intervention: The programme consisted of 9 2-hour sessions providing group-building exercises, relationships, assertiveness skills, pressures to have sex, reasons to abstain. Methods: interactive exercises, role-playing Control: Non-volunteers	No difference in sexual initiation or pregnancy, but programme girls more likely to use contraception than comparison girls.  Sexual initiation 0 Contraceptive use + Pregnancy 0	No randomisation. Self-selection may limit the generalisability of the programme. No baseline data presented on demographic characteristics. No attrition rates.
Philliber & Allen (Philliber and Allen 1992; Allen et al. 1994)*  1992  Teen Outreach Program  USA	Females = 70%, 40% blacks, 13% Hispanics Ages 11-21 years  I = 79; C = 89 9- & 12-month follow-up	Intervention: Weekly sessions (during and after school) delivered by mentor covering self understanding and values, human development, communication skills, issues related to parenthood, family relationships, and community resources. Combined with voluntary community service. Control: Usual sex education	Pregnancy rates: RCT showed no significant effect on pregnancy.  However, larger controlled trial showed significant reduction (see Allen et al. 1997)	Small sample, so low statistical power.  RCT part of a larger (n>5,000) non-randomised controlled trial which shows more dramatic results but which is less rigorous.

Study Programme Country	Design Study population Sample size Follow-up interval	Programme description	Findings 0 = no difference + = difference in positive direction for programme - = difference in negative direction for programme	Comments
Philliber et al. (Philliber, Williams et al. 2002)** CAS -Carrera Program	Disadvantaged youth High Risk Youth I=242 C=242 New York 3-year follow-up (79% still involved after 3 years)	After school programme Intervention: Work-related intervention called the Job Club (stipends, help with bank accounts, graduated employment experiences and career awareness) An academic component (assessment, tutoring and homework help, PSAT and SAT preparation, and assistance with college admissions process) Comprehensive family life and sexuality education Arts & Sports components Mental Health Care & Medical Care: Medical care was provided in the Mt Sinai Hospital. Programme staff scheduled appointments and accompanied young people to clinic. Reproductive care was provided by the centre	Sexuality related knowledge + (males and females) Sexual initiation =+ Lower Coercion = + Condom/contraceptive use at last intercourse =+ (males and females) Teenage pregnancy =+ (females)	Young people in the Carrera programme were more likely to report accessing health care at a place other than an A&E dept. The proportion of males who received a social assessment at their last doctor visit was twice as high among the programme group. Programme participants were significantly more likely to receive a Hepatitis B Vaccination.  Not clear which components are most important.  Full implementation of the programme may be a challenge
Rotheram-Borus et al. (1994)** Runaway youth Programme	CT Low SES n=145	Setting: Shelter for runaway youth Sessions: Designed as 20 but 3-30 were delivered (median 13 sessions) Intervention: General knowledge about HIV/AIDS, training in coping skills, access to health care and other resources, methods of dealing with individual barriers (covered during private counselling.) Activities were interactive  Control: No programme	At 3 months Abstained from sex = 0 Consistent condom use =+ Avoidance of high risk situation =+  At 6 months Abstained from sex = 0 Consistent condom use =+ Avoidance of high risk situation =+	Non-random assignment Small sample size But no differences between characteristics of groups at baseline The magnitude of effect appeared large

Study Programme Country	Design Study population Sample size Follow-up interval	Programme description	Findings 0 = no difference + = difference in positive direction for programme - = difference in negative direction for programme	Comments
Schinke et al. (1981)* USA	RCT All nulliparous females Low SES	Intervention: 14 1-hour sessions on problem solving, rehearsing / implementing decisions, written agreements  Control: Not clearly stated	Reduction in unprotected intercourse and non-statistically significant increase in contraceptive use.  Incidence of unprotected intercourse (12 months) + Habitual contraceptive use (12 months)	Small sample size so low statistical power. The magnitude of the results was large and consistent over the three time periods.
Smith 1990; Smith 1994*	Individuals I = 44; C = 49 6 - 12 month follow-up			
Teen Incentive Model USA	Females = 74% Mean age 15.1 Grade 9 Low SES Individuals I = 60; C = 60 6-months follow-up	Intervention: Phase 1: 8 weekly small group sessions focusing on self-esteem and general skills and sexuality topics. Phase 2: A 6-week career mentorship programme. Phase 3: Role-playing to rehearse skills.  Free condoms  Monthly parental skills for parents  Control: Written information on contraception and decision making	Intercourse = + Use of contraceptive = +	Small sample size and short follow-up, so low statistical power.

Study Programme Country	Design Study population Sample size Follow-up interval	Programme description	Findings 0 = no difference + = difference in positive direction for programme - = difference in negative direction for programme	Comments
Vincent and Dodd 1989; Koo et al. 1994	CT USA - rural South Carolina	Intervention: Classroom instruction designed to increase knowledge, decision-making skills, communication skills, increase self-esteem and align values with those of the community. Delivered by teachers and peers. School nurse provided consultation, condoms and transportation to family-planning clinic. Community groups and churches implemented classes and special events  Comparison: Usual sex education	At one-year follow-up programme communities had a significantly lower rate of teenage pregnancy than comparison communities but the rate returned to pre-programme levels after the discontinuation of programme components.	After the program was implemented pregnancy rates declined; after parts of the program ended, pregnancy rates returned to their previous level.
Evaluation 1983, 1984-1988	Females = 100% 14-17 years, 58% black Low SES, Rural community			The very small population and the geographical isolation of the county limit its external validity.
Publication 1987, 1994	Community			It is not clear what parts of the program were most important.
School/Community Program for Sexual Risk Reduction Among Teens	Target county I = 292 C = 358  Eastern part of county C=680, 2880, 630			This study highlights the importance of process evaluation together with outcome evaluation
USA	Similar countries C=940,740, 1200 Annual pregnancy rates were estimated for the years 1977-1988, for (1) the western part of the country surrounding the program community, (2) the eastern part of the country serving as a comparison group, and (3) three similar counties serving as comparison groups  1 - and 5- year follow up			

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Walker and Vilella-Velez 1992*  Summer Training and Education Program (STEP)  USA	RCT  5 cities Females = 53% Age 14- 15 years Low SES Academically behind  Individuals  n = 4800 5-year follow-up	Intervention: 36 sessions covering life skills education on sexual behaviour, drug use, careers and community involvement. Focus on decision-making and responsible behaviour: 90 hours of work at minimum wage, 90 hours of academic instruction and 5-15 hours of support during the school years  Control: Summer jobs	Pregnancy: No statistically significant difference	Despite large sample sizes, and long-term follow-up no differences found. Effect may be diluted due to control group receiving a sex education programme.
<b>Studies of one-to-one education and counselling programs in community health clinics and family planning clinics</b>				
Baker 1990 *  USA	RCT  Unmarried sexually active female first time attenders at a family planning clinic. Aged 15-18 Minority racial groups living in female-headed households  Individuals  I = 23; C = 24 6-months follow-up	Intervention: One 5.5 hour session providing factual information, building and rehearsing problem-solving and communication skills  Control: Usual care	More likely to use contraception and non-statistically significant reduction in sexual activity and pregnancy	Small sample, so low statistical power.  Intensive programme requiring young women to agree to five hour programme.

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Berger et al. (1987) Family Planning Counselling USA	Pre-post USA - New York City Females = 61% 11-19 years Low SES n= 383	Intervention: During visit to adolescent health clinic participants received and education programme from clinic personnel who covered establishing sexual values, right to say no, contraceptives methods and their advantages and disadvantages No comparison group	Sexual initiation: Of the participants who were sexually inexperienced at baseline, only 3% initiated intercourse during the study period Contraceptive use: Participants increased use of contraceptives at last intercourse. (22% to 70% for females and 34% to 85% for males) at last intercourse	Weak design with no comparison group and self-selection effects.
Danielson et al (1990)* Health Counselling for Males USA/Canada	12-month follow-up RCT Males = 100% 15-18 years Middle SES Individuals I = 541; C = 526 12-month follow-up	Intervention: A slide show on anatomy, STDs, and contraception with a visit with a health care practitioner focused upon contraception, reproductive goals, health risks, and the patient's interests Control: Usual care	More likely to use contraceptives Contraceptive use +	The results indicated greater use occurred mostly among those who initiated sex after study began.
Hanna (1988) * USA	RCT Single female first time attenders at contraceptive clinic Ages 16-18 Individuals I = 17; C = 21 3-months follow-up	Intervention: Nurse-client intervention to identify anticipated perceived contraceptive benefits and barriers and to develop a contraceptive adherence regimen Control: Information on contraception using written and video information	Contraceptive use: Increased use of contraceptives of borderline statistical significance.	Very small sample and short-term follow-up, so low statistical power.

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Herceg-Baron et al (1986) * USA	RCT Females under 16 years (31%) to 17 years SES not reported Individuals I (1) = 93; I (2) = 61; C = 198 6 & 15 month follow up	First intervention: Participants were asked to attend 6 weekly counselling sessions with family member. Second intervention: Participants received 2-6 telephone calls from clinic staff during the 4-6 weeks following the initial clinic visit First control: No intervention 3 interviews Second control: No intervention 1 interview	No statistically significant difference in contraceptive use or pregnancy	The proportion of patients in the family support group that actually brought a family member was very low (30%). Participants received only 2.3 sessions each.
Jay et al. (1984) * Adolescent Gynaecology clinic USA	RCT Females Ages 14-19 Lower SES Individuals I = 26; C = 31 4-months follow-up	Intervention: Peer contraceptive counselling Control: Nurse contraceptive counselling	Pregnancy: Reduction in pregnancy but not statistically significant.	Small sample and short-term follow-up, so low statistical power.
St Lawrence et al. (1995) Becoming a responsible Teen	Low SES n=225 Youth Follow-up at 2, 6, 12 months	Setting: Conference room in health centre Sessions: 8 90-120 min weekly meetings Small group discussions led by adult facilitator. Sessions with HIV+ Youth Intervention: Based on social learning theory Covered AIDS information, sexual decisions & pressures, use of condoms, "lines", effective social skills and situations that would be difficult to handle	Initiation of intercourse=+ Sexual intercourse during previous 2 months = + Number of sex partners = + Frequency of unprotected vaginal intercourse Males+ Females0 Frequency of unprotected anal intercourse=+ Frequency of unprotected oral intercourse=+ Frequency of condom protected anal intercourse=+ Percent of acts of intercourse protected by condoms:+	



Study Programme Country	Design Study population Sample size Follow-up interval	Programme description	Findings 0 = no difference + = difference in positive direction for programme - = difference in negative direction for programme	Comments
Winter and Brechenmaker (1991) Education and Counselling Family planning clinic USA	CT Female = 100% 15-17 years Sexually active Majority white Clinics I = 518 C= 738 12-month follow-up	Intervention: Improved patient protocols: a tailored programme which included one-to-one counselling with a greater focus upon non-medical needs of adolescents: more information, more concrete instruction, more counselling, more comfort during exam, more involvement of male partners, more recognition of peer pressure, more parental involvement. Encourage parental involvement. Staff training, more time allocated to education session, and medical exam. Comparison: Standard protocol which provided group education	Use of contraception: Programme group were more likely to be using any method of contraceptive than comparison group (borderline significance)  Pregnancy: Fewer women in the programme group became pregnant at follow-up. When broken down by age, the different was only found among the over 15 yrs age group.	The validity of the design was reduced by the inability to compare contraceptive use at baseline, the failure to demonstrate equivalence between the two groups in other ways, and failure to control for clustering effect.  Other data supported the positive impact of the expanded program.
<b>School-based clinics/ Adolescent clinics</b>				
*Ralph and Edgington (1983)  Youth Clinics	CT/Time series Individuals  Females = 100% Low SES, 13-18 year olds I= 1099 C=2322  4-years follow-up	Intervention: Adolescent care clinics (ACC) located on high school campus, provided comprehensive teen health care during school hours.  Comparison: Matched community without clinics  Data were collected in both communities for 4 years before and 4 years after the clinic was offered	Pregnancy: The two groups did not differ during the pre-intervention period but the clinic community had a lower birth rate during the follow-up period  Adjusting for age and race, the rate for the programme community was significantly lower	

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Earls et al. (1989) Evaluation 1984-1985 Comprehensive Primary Care Clinics USA	CT Females=78% Age 13-18 Black= 71% Low SES Clinics (7 clinics 3 school-based)	Intervention: Inner city clinics funded to provide comprehensive services to youth at high risk. Clinics linked to medical school training programmes in adolescent medicine with multi-disciplinary staff including social workers, psychologists, midwives, physicians, and nurses. Comparison: Clinics that did not offer special services	Contraceptive use: No differences between groups in non-use of effective contraceptives. Pregnancy: Pregnancy was less likely to the reason for visit to funded clinic compared to comparison clinic. Frequency of having a second or third pregnancy was not reduced in funded clinics compared to non-funded. (no figures provided).	Evaluation consisted of baseline and follow-up surveys of young people attending clinics. The sample was non-representative, and no attempt was made to control for possible socio-economic or demographic differences between the two groups. Short follow-up.
Edwards et al. (1980) Evaluation 1973-1979 Publication 1980 St Paul Maternal and Health Care Programme USA	CT (before and after) Individuals USA - St Paul Females = 100% Grades 9-12 Low-middle SES I = 1465 C = 1762	Interventions: School-based clinics - providing comprehensive health services; reproductive health care provided in the clinic; contraceptives picked up at special hospital clinic; day care for infants provided (SBC) Comparison: Young people receiving health care from hospital-based clinic (HBC)	Pregnancy: The authors report a reduction in fertility rates by 56% between 1973-1976 No comparisons are made with HBC group.	The validity of these results were limited by the small number of baseline years, incomplete knowledge of pregnancies and births, lack of comparison schools and lack of tests of significance

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Kirby et al. (1991)  1991  School-based clinics  USA	CT  USA Females = 54% Grades 9-12 Low SES  n = 7214 6 school-based clinics  Follow-up at 2 years	Schools matched for baseline characteristics  Interventions: comprehensive health services; 2 clinics referred for contraception; 1 clinic prescribed contraception 3 clinics dispensed contraception  Comparison schools: no clinics	Initiation of intercourse: Males: 1 site + Females: 1 site + 1 site - Use of Contraceptives: Condoms All students: 2 sites + Pill Females 1 site +	This was a weak design; school and community differences may have affected the clinic school/comparison school comparisons in unknown ways. Only school-wide effects were measured, even though not all students used the clinics for contraceptives. The clustering effect of students in schools was not controlled statistically
Kirby et al. (1993)  1993  St. Paul school-based clinics  USA  School-based	PP  USA - St. Paul  Females = 100% Grades 9-12 SES not specified  5 schools	Interventions: Comprehensive health services; reproductive health care provided in the clinic; contraceptives picked up at special hospital clinic; day care for infants provided  Comparison: Birth rates before and after clinics opened.  4 schools: data from 5 years before and 6 years after  1 school: data from 2 years before and 3 years after	There were no comparison schools in the study. There were large year-to-year fluctuations in birth rates that may have obscured a small clinic impact. St. Paul students had access to relatively good health care and had relatively low birth rates before the clinics opened.  Only school-wide effects were measured, even though not all students used the clinics for contraception.	

Study Programme Country	Design Study population Sample size Follow-up interval	Programme description	Findings 0 = no difference + = difference in positive direction for programme - = difference in negative direction for programme	Comments
Kisker et al. (Kisker, Brown et al. 1994; Kisker and Brown 1996) Evaluation 1989-1992 Publication 1994  School-based clinics  USA	CT 17-19 years Sex - no data provided 9th and 10th grade Low SES  Schools (24 Junior and senior high schools)  I = 3050 C = 859	Intervention: Clinics provided a wide range of primary health care services. Some clinics only referred students for contraception; other provided contraception  Comparison: National sample of students in urban schools  Evaluation compared clinic users with non-users at school, and students from no-programme schools.	Sexual initiation 0  Contraceptive use: Slight increase in contraceptive use but not statistically higher than comparison  Pregnancy: No effect on pregnancy	Basic design was weak. Baseline data were not collected from the students in the clinic schools before the students could have received services, the comparison group was not always equivalent, and the design did not control for the clustering of students in schools. The evaluation measured the impact upon all students in the schools, not just upon those using the clinic for reproductive health services.
Zabin et al. (1992) Evaluation 1981-1984  Publication 1992  Self Centre  USA	CT Schools (matched for SES)  Females 55% Grades 7-12 Low SES Majority 100%  I = 1700 C = 1946  28-months follow-up	Intervention: Off-site clinic available in afternoons. Case management approach, emphasis on group work. Clinic staff made presentations to each homeroom at least once per year, provided individual consultation in the school health suite during the school day, and provided a full range of reproductive health services.  Comparison: No clinic  Cross sectional surveys rather than longitudinal.	Sexual initiation + Postponement of sexual initiation among those who received full programme. Contraceptive Use + Increased use in clinics from programme group. Significant increase in pill use. Pregnancy+ Rate of pregnancies decreased in programme group and increased in comparison group.  Average cost per pupil was calculated at \$122.	The validity of the results were limited by several factors: some higher risk students dropped out between the first fall survey and three subsequent spring school surveys; the program schools may have differed from the comparison schools; an additional middle school opened nearby; some sample sizes were small; and the study failed to control for clustering effects of students in schools.  Early Childhood/Elementary School Programmes
<b>Early Childhood/Elementary School Programmes</b>				
Hawkins et al. 1999)**  Seattle Social Development Project	CT 18 schools	Intervention: Teaching training and parenting classes in elementary schools to increase children's sense of attachment to their school and family while also increasing social skills	By age 18, young people from the program schools were less likely to have had sexually intercourse and had lower teenage pregnancy rates than control schools	Full details not available