# Teenagers' knowledge of emergency contraception: questionnaire survey in south east Scotland

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**Abstract**

***Objective*—To determine the level of knowledge of emergency contraception among 14 and 15 year olds.**

***Design*—Confidential questionnaire survey.**

***Setting*—10 secondary schools in Lothian, south east Scotland.**

***Subjects*—1206 pupils predominantly (98.7%) aged 14 and 15 in the fourth year of secondary school.**

***Main outcome measures*—Knowledge of the existence of emergency contraception; of its safety, efficacy, and time limits; and of where to obtain it.**

***Results*—1121 (93.0%) fourth year pupils aged 14-16 had heard of emergency contraception. 194 girls (32.7%) and 168 boys (27.5%) had experienced sexual intercourse. Of girls who had experienced sexual intercourse, 61 (31.4%) had used emergency contraception. Knowledge of correct time limits was poor, sexually active girls being the most knowledgeable. Pupils attending schools ranked lower than the national average for academic attainment were less likely to have heard of emergency contraception and more likely to have been sexually active. 861 (76.8%) pupils knew they could obtain emergency contraception from their doctor. 925 (82.5%) pupils believed emergency contraception to be effective but 398 (35.5%) thought it more dangerous than the oral contraceptive pill.**

***Conclusions*—One third of sexually active girls aged under 16 in Lothian have used emergency contraception. This may help explain the fairly constant teenage pregnancy rates despite increasing sexual activity. Scottish teenagers are well informed about the existence of emergency contraception. However, many do not know when and how to access it properly. Health education initiatives should target teenagers from less academic schools as they are more likely to be sexually active at a young age and are less well informed about emergency contraception.**

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## Introduction

In 1989 the rate of conceptions among girls aged under 16 in England and Wales was 9.5 per 1000—the highest in western Europe. In 1991 the government declared its aim to reduce these conceptions by at least 50% by the year 2000.[1] In 1993 the rate in England and Wales had fallen to 8.1 per 1000. Johnson *et al* have reported that age at first intercourse has fallen in Britain over the past four decades.[2] A total of 18.7% of women aged 16-19 interviewed in 1990-1 had been sexually active before the age of 16 as compared with less than 1% of a cohort of women aged 55-59 at the time of interview.

If teenagers have sexual intercourse before the age of 16 they are less likely to use contraception than if first intercourse occurs at a later age.[3] Emergency contraception can prevent pregnancy if unprotected intercourse occurs but potential users must know about it and where to obtain it. Knowledge of emergency contraception has improved over the past decade but previous studies were among adults or teenagers who were already pregnant.[4-6] We report a questionnaire survey of the knowledge of emergency contraception among pupils in 10 secondary schools in south east Scotland.

## Subjects and methods

The survey was done in late 1995 among fourth year pupils in eight state schools and two private schools in the Lothian region of Scotland. The head teachers of 14 out of a total of 47 state secondary schools (all mixed sex and ability) in the region were approached about the survey. Schools were selected by the local education department (which agreed to the study) on the basis that they had participated in little research recently. Six schools refused. All 14 private secondary schools in the region were invited to participate. Eight refused and one failed to reply. The first two private schools to agree to the study (one mixed, one girls only) were enrolled.

The questionnaire was developed with the help of teenagers attending the Edinburgh Brook Advisory Centre and the mode of administration piloted among fourth year pupils attending a secondary school not included in the study.

Seven of the 10 schools sought parental consent for the survey and five pupils were withdrawn. All fourth year pupils at school on the day of the questionnaire took part. Questionnaires were administered by AG and LG under examination conditions without allowing discussion. In order to encourage honest answers the anonymity and confidentiality of the questionnaire were emphasised at the start of each session and pupils put the completed questionnaire in an unmarked envelope before placing it in a collecting box. Pupils who were reluctant to participate were free to spoil the questionnaire, but only two did so. At the end of each session the correct use of emergency contraception was discussed.

## Results

Of the 1206 pupils (612 boys, 594 girls) who completed the questionnaire, 257 (21.3%) were 14 years of age and 933 (77.4%) were aged 15; only 16 (1.3%) were 16 years of age. All were included in the analysis. A total of 1121 (93.0%) pupils had heard of emergency contraception. Girls (584; 98.0%) were more likely to have heard of it than boys (536; 87.0%). A history of sexual activity was not associated with a greater likelihood of having heard of emergency contraception.

Table 1 summarises the results by academic attainment. Pupils attending schools ranked higher than the national average for academic attainment at standard grade (the O level equivalent in Scotland) in the Scottish Office league tables[7] were more likely to have heard of emergency contraception than those attending schools below average for academic attainment.

Girls were more likely than boys to have had sexual intercourse (194 (32.7%) *v* 168 (27.5%)), though 101 (16.5%) boys and 61 (10.1%) girls preferred not to say whether they had been sexually active. Of the 258 pupils aged 14, 29 (22.0%) boys and 33 (26%) girls said they had experienced sexual intercourse. Pupils from less academic schools were more likely to have had sexual

**Table 1**—*Survey results according to academic attainment of school*

| | Schools above national average† | Schools below national average† | Total |
|---|---|---|---|
| No of questionnaires completed | 613 | 593 | 1206 |
| No of boys | 308 | 304 | 612 |
| No of girls | 305 | 289 | 594 |
| No (%) heard of emergency contraception | 583 (95.1) | 538 (90.7) | 1121 (93.0) |
| No (%) of sexually active girls | 74 (24.3) | 120 (41.5) | 194 (32.7) |
| No (%) of sexually active boys | 66 (21.4) | 102 (33.6) | 168 (27.5) |
| No (%) knowing correct time limit | 176 (28.7) | 142 (23.9) | 318 (26.4) |

† National average is 26% of pupils gaining five or more standard grade examination (O level) passes at grade 1 or 2.

**Table 2**—*Sources of knowledge about emergency contraception (1121 pupils)*

| Source | No (%) of pupils |
|---|---|
| School | 437 (39.0) |
| Magazines | 425 (37.9) |
| Friend | 253 (22.6) |
| Family member | 197 (17.6) |
| Leaflet or poster | 186 (16.6) |
| General practitioner, family planning clinic, or Brook Advisory Centre | 103 (9.2) |
| TV and radio | 52 (4.6) |
| Cannot recall | 242 (21.6) |

intercourse before the age of 16. Sixty one (31.4%) girls who admitted to sexual intercourse said they had used emergency contraception and 46 boys (27.4%) said their girlfriend had used it.

Knowledge of the correct time limit for emergency contraception (72 hours) was poor and unrelated to the academic standard of the pupil's school. Given a choice of time limits, only 318 (26.4%) pupils gave the correct answer; 271 (22.4%) did not know, 173 (14.3%) thought emergency contraception had to be used within 48 hours after intercourse, and 332 (27.3%) thought it had to be used within 24 hours. Girls who had been sexually active were most likely to know the correct time limit (108; 56.2%). Only 20 (11.9%) sexually active boys gave the correct answer.

Asked where they had learnt about emergency contraception, pupils gave school (437 pupils; 39.0%) and magazines (425; 37.9%) as the commonest sources (table 2). Most pupils (861; 76.8%) knew that emergency contraception was available from general practitioners. Family planning clinics (776 pupils; 69.0%), Brook Advisory Centres (345; 31.0%), and accident and emergency departments (130; 11.6%) were given as other sources.

Three quarters of pupils agreed with the statement, "If a girl under 16 is given emergency contraception by her doctor, the doctor should not tell her parents without her permission." Most pupils (925; 82.5%) believed that emergency contraception would prevent pregnancy on all or nearly all occasions. However, 398 pupils (35.5%) agreed with a statement that using emergency contraception twice a year is more risky to a woman's health than taking the oral contraceptive pill. Only 151 pupils (13.5%) thought it was safer to use emergency contraception twice in one year than to take the pill. When asked about side effects of emergency contraception 91 (8.0%) pupils believed infertility to be a potential risk.

## Discussion

We believe this to be the first survey of the knowledge of emergency contraception among teenagers not seeking contraceptive advice and including both boys and girls. The sample selected was likely to be representative of teenagers in the area, as it included urban and semirural schools with a range of academic attainment. Of the schools refusing to participate, three objected on moral grounds, one gave no reason, and 10 said they were too busy. One other school failed to reply. Though it is possible that schools that particularly prided their sex education programme agreed to participate, we do not think this was so. In seven schools over 80% of pupils were present when the questionnaire was administered and in two over three quarters were present. In one school 45% of the pupils were absent. That school had the lowest level of academic attainment and the highest prevalence of teenage sex. Refusal of schools to participate and absence or truancy among pupils may have contributed to a sample bias.

The proportion of sexually active teenagers was greater in our survey than in the sexual attitudes and lifestyles survey covering England, Wales, and Scotland in 1990-1[2]; 18.7% of girls in that survey as compared with 32.7% in our local survey were sexually active. Interestingly, the figures for boys in the two surveys were similar (26.7% and 27.5%). Our figure for all sexually active teenagers may be an underestimate because of the large proportion (particularly boys) who preferred not to say whether they had been sexually active. Differences between the studies may reflect the different methodologies used. Alternatively more teenagers may now become sexually active at a younger age.

The number of pupils who had heard of emergency contraception was reassuringly higher than in previous studies. George *et al* studied a general practice based population of 1290 women aged 16-50, of whom 78.6% had heard of emergency contraception.[8] Pearson *et al* interviewed 167 pregnant teenagers, of whom 81% had heard of it.[9] In our study knowledge of where to obtain emergency contraception was good. In rural areas general practitioners may be the only source.

Our study reaffirms the findings of others showing poor knowledge of the correct time limit for using emergency contraception. Pearson *et al* quoted a figure of 22%[9] and George *et al* a figure of 13.6% for pregnant teenagers and women able to give the correct time limit.[8] It is encouraging, however, that 56% of sexually active girls in our survey gave the correct answer and that 31% had used emergency contraception. This may help to explain the constant abortion rates in the face of increasing sexual activity in the under 16s. In Scotland during 1989-93 the rate remained steady at 8.4 per 1000 girls aged 13-15.

We were not surprised to find that only 13.5% of pupils thought emergency contraception safer than regular use of the oral contraceptive pill. Many health professionals lack sufficient knowledge about emergency contraception[10] and may be unsure of the correct time limits and confused about safety, especially if it is used more than once. It is crucial that the under 16s believe that confidentiality exists between a doctor and patient when the patient requires contraceptive advice. In this study most of the pupils, including most of the girls, accepted this.

Sex education in schools is often criticised. However, in our study, school was the most commonly cited source of information about emergency contraception. Knowledge of details was poor, reflecting a view that generalities rather than specifics are provided by schools. The crucial part played by schools was shown recently in a structured school sex education programme which increased knowledge and reduced sexual activity.[11]

Health professionals were not a prominent source of information in this survey. Teenagers, however, attend their general practitioners two or three times a year,[12] which may be seen as a missed opportunity for promoting sexual health. An evaluation of the provision of contraceptive services in the United Kingdom showed the

**Key messages**

- More under 16s are sexually active than previously reported, especially those who are low achievers academically
- Under 16s have better awareness of the existence of emergency contraception than previously reported
- Despite good awareness of emergency contraception, teenagers have poor knowledge of specific details—particularly time limits and safety
- One third of sexually active girls aged under 16 have used emergency contraception
- Health education initiatives should concentrate on the practicalities of emergency contraception and target teenagers at particular risk

lowest pregnancy rates in areas where family planning clinics were available in addition to services provided in primary care, and this was especially noticeable in the under 16s.[13]

Health education initiatives should be directed towards teenagers who are at high risk of becoming sexually active at a young age and less well informed about emergency contraception. Smith suggested that areas of socioeconomic deprivation should be targeted.[14] Our study suggests that schools with lower academic attainment should also be included in this type of initiative.

## Conclusion

Emergency contraception has the potential to prevent unwanted pregnancies.[15] Most teenagers in Lothian are aware that emergency contraception exists. Use, however, will increase only when potential users believe it to be safe and know where to obtain it and when to use it. These aspects need to be tackled now. Schools and the media could be used more effectively to maximise the potential benefits of emergency contraception in the under 16s.

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# Lifetime exposure to environmental lead and children's intelligence at 11-13 years: the Port Pirie cohort study

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## Abstract

***Objective*—To examine the association between environmental exposure to lead and children's intelligence at age 11-13 years, and to assess the implications of exposure in the first seven years of life for later childhood development.**

***Design*—Prospective cohort study.**

***Subjects*—375 children born in or around the lead smelting town of Port Pirie, Australia, between 1979 and 1982.**

***Main outcome measure*—Children's intelligence quotient (IQ) measured at 11-13 years of age.**

***Results*—IQ was inversely associated with both antenatal and postnatal blood lead concentrations. Verbal, performance, and full scale IQ were inversely related to blood lead concentration with no apparent threshold. Multivariate analyses indicated that after adjustment for a wide range of confounders, the postnatal blood lead concentrations (particularly within the age range 15 months to 7 years) exhibited inverse associations with IQ. Strong associations with IQ were observed for lifetime average blood lead concentrations at various ages. The expected mean full scale IQ declined by 3.0 points (95% confidence interval 0.07 to 5.93) for an increase in lifetime average blood lead concentration from 0.48 to 0.96 μmol/l (10 to 20 μg/dl).**

***Conclusions*—Exposure to environmental lead during the first seven years of life is associated with cognitive deficits that seem to persist into later childhood.**

## Introduction

Many studies have reported inverse associations between low level lead exposure and neuropsychological development, particularly cognitive function.[1-17] The accumulation of this evidence has prompted public health authorities in several countries progressively to lower the blood lead concentrations at which environmental intervention and medical evaluation is warranted.[18 19] Since both Australian and American data indicate that the high childhood blood lead concentrations of 13-15 years ago are definitely decreasing,[19 20] a contemporary question of great interest is whether the effects of early exposure to lead still persist into later life when lead exposure is generally much lower.

The Port Pirie cohort study started in 1979. Within this cohort, the geometric mean blood lead concentration in the children increased from 8.3 μg/dl (0.40 mmol/l) at birth (umbilical cord blood) to 21.2 μg/dl (1.02 mmol/l) at age 2 years, and had decreased to 11.6