The Adoption of a New Contraceptive Method – Surveys and Interventions Regarding Emergency Contraception

BY
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ACTA UNIVERSITATIS UPSALIENSIS
UPPSALA 2004
Dissertation presented at Uppsala University to be publicly examined in Rosénalen, Kvinno-
och barnkliniken, Akademiska sjukhuset, Uppsala, Tuesday, May 25, 2004 at 13:15 for the
degree of Doctor of Philosophy (Faculty of Medicine). The examination will be conducted in
Swedish.

Abstract
Larsson, M. 2004. The Adoption of a New Contraceptive Method – Surveys and Interventions
Summaries of Uppsala Dissertations from the Faculty of Medicine 1345. 62 pp. Uppsala.
ISBN 91-554-5949-8

The overall aim of this thesis was to examine the adoption of emergency contraceptive pills
(ECP) in Sweden. Two cross-sectional surveys and two quasi-experimental studies were used.
Reasons for induced abortion, contraceptive practices and contraceptive failure were
examined in a group of abortion applicants with a waiting-room questionnaire (I) and
knowledge, use and practices of ECP were assessed with a postal questionnaire in a
population-based sample of young women (II). One community-based information campaign
was evaluated with a repeated postal questionnaire (III) and a school-based education
intervention was evaluated with repeated class-room questionnaires (IV). Abortion applicants
had inadequate contraceptive practices and a low use of ECP. One year after the deregulation
of ECP women were highly aware of the method and preferred the pharmacy for the purchase
of ECP. Correct knowledge and positive attitudes influenced the willingness to use ECP in the
future. The information campaign was noticed by two-thirds of the women and there was an
overall trend towards better knowledge, improved attitudes and increased use among all
women at follow-up. The school-based intervention improved the students’ knowledge of, and
attitudes to, ECP without jeopardizing condom use. The adoption of ECP in Sweden seems to
have gone through the first stages of diffusion of an innovation, i.e., development, dissemination,
and adoption, and has reached the stage of implementation since the studies indicated a general awareness of more than 90%, an intention to use in case of need of more than
70%, and women's own experience of use of around 30%. The most cited information
channels were media, friends and the local Youth Clinic. ECP is gradually becoming a more
widely known, accepted and used contraceptive method in Sweden, but must be considered as
being only one of many tools in the prevention of unintended pregnancies.

Keywords: Abortion applicants, adolescents, induced abortion, contraception, emergency
contraception, over-the-counter, knowledge, attitudes, practices, sexual health,
community-based, intervention

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ISSN 0282-7476
ISBN 91-554-5949-8
urn:nbn:se:uu:diva-4237 (http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-4237)
In memory of my mother Ella
List of Papers

This thesis is based on the following papers, which will be referred to in the text by their roman numerals:


III Larsson M, Eurenius K, Westerling R & Tydén T. Emergency Contraceptive Pills in Sweden – Evaluation of an information campaign. Accepted for publication in BJO


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### Abbreviations and definitions

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<th>Acronym</th>
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<tr>
<td>AIDS</td>
<td>Acquired Immunodeficiency Syndrome</td>
</tr>
<tr>
<td>CG</td>
<td>Comparison group</td>
</tr>
<tr>
<td>COC</td>
<td>Combined oral contraceptive pills</td>
</tr>
<tr>
<td>DI</td>
<td>Diffusion of Innovations</td>
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<tr>
<td>ECP</td>
<td>Emergency contraceptive pills</td>
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<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>HBM</td>
<td>Health Belief Model</td>
</tr>
<tr>
<td>IG</td>
<td>Intervention group</td>
</tr>
<tr>
<td>IFMSA</td>
<td>International Federation of Medical Student’s Association</td>
</tr>
<tr>
<td>IUD</td>
<td>Intrauterine device</td>
</tr>
<tr>
<td>OC</td>
<td>Oral contraceptives</td>
</tr>
<tr>
<td>OTC</td>
<td>Over-the-counter</td>
</tr>
<tr>
<td>STI</td>
<td>Sexually transmitted infections</td>
</tr>
<tr>
<td>RFSU</td>
<td>Swedish Association for Sexual Education</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>

**Sexual health** is a state of physical, emotional, mental and social well-being related to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence (WHO).

**Attitude** is a disposition to respond favorably or unfavorably to an object, person, institution or event.
INTRODUCTION

The every-day work of a Swedish nurse-midwife comprises issues concerning sexuality and childbirth, often called reproductive health. The UN-conference on Population and Development in Cairo 1994 defined reproductive health as:

...complete physical, mental, and social well-being in all matters related to the reproductive system. This implies that people are able to have satisfying and safe sex lives and that they have the capacity to have children and the freedom to decide if, when, and how often to do so.

Pregnancies are important events in life, a time of joy and expectation if the pregnancy is desired, but a period of great pain and distress if it is unwanted. Sexuality is a strong power, not easy to control. All over the world unintended pregnancies therefore occur, influenced by many different factors such as legislation, cultural and religious perceptions on reproduction, the role of the woman in society, knowledge about sexuality and reproduction, availability and acceptance of contraceptive methods as well as the socio-economic situation and personal traits of the woman and her partner. As a consequence of the development of different contraceptive techniques it has become possible, even if not everywhere accepted and accessible, for women and men to choose when in a lifetime they want to have children and the mean age for giving birth to the first child has steadily increased in Sweden (Figure 1). This means that most Swedes spend more years trying to avoid a pregnancy, than trying to conceive, being pregnant or giving birth and nurse-midwives in different settings are the main care-givers and counsellors in these efforts to prevent unintended pregnancies.
Abortions in Sweden

The first legislation allowing induced abortions appeared in 1938 and accepted induced abortion strictly for severe medical reasons. Not until 1975 did the Swedish Parliament adopt a law on free abortion, which gives the right to the woman alone to decide about termination of a pregnancy up to the 18th week of gestation. Beyond the 18th week permission to have a pregnancy termination can be obtained after special evaluation by a committee at the Swedish National Board of Health and Welfare. Such permission is only granted if there are extreme circumstances and is never granted if the foetus is considered viable. Therefore, no pregnancy is terminated after the end of the 21st week of gestation.

Every year around 30,000 induced abortions are performed in Sweden, which means that approximately every fourth pregnancy ends with an induced abortion. Almost all, 95%, of those abortions are performed in the first trimester of pregnancy and 0.6% are performed after the 18th week of gestation. The national abortion rate in 2002 was 20/1000 (for the age span of 15-45) and the abortion rate among teenagers has increased by 50% during the last seven years and was 25.5/1000 women in 2002 (Figure 2).
Concern has been raised as to why abortion rates among teenagers keep increasing\(^{51, 99}\). The birth rate among teenagers in Sweden has declined and is currently among the lowest in the world\(^ {36, 133}\). Sexual behaviour changes have been reported in some studies\(^ {71, 100}\), but one study has shown an improvement over time regarding contraceptive use at first intercourse\(^ {77}\). Young men involved in teenage abortion have been found to have other health-compromising behaviours\(^ {73}\).

The abortion decision seems to be both complex and difficult and ambivalent feelings about the pregnancy have been found among both women and men\(^ {74, 84-86, 154, 155}\). Many studies have investigated the reasons for induced abortion; relational aspects, socioeconomic reasons and bad timing of the pregnancy have been found to be the most common reasons in Sweden as well as in other countries\(^ {11, 75, 96, 114, 154, 155}\). Medical reasons do not seem to be of any great significance in any of the studies.

Contraceptive use and non-use among abortion applicants

Several studies have investigated contraceptive habits among women requesting induced abortion\(^ {12, 25, 32, 75, 78, 92, 96, 110, 123, 134, 138, 166}\). Most women in these studies seem to have acquired some knowledge about contraception both from sexual education at school and from professional counsellors,
even though specific and detailed knowledge may be lacking. Most abortion applicants had previous experience of contraceptive use and even at the time of conception a significant number, varying from 16% to 61% of women, claimed to have practiced contraception. Not surprisingly some studies indicate that adolescents had used contraception less often than older women in relation to the conception. Even if many women requesting induced abortion had some knowledge of emergency contraception (ECP), very few had actually used the method in order to prevent the undesired pregnancy. A few studies indicate that an induced abortion could be the incentive for an improvement of contraceptive use.

Prevention of unintended pregnancies

The Swedish National Institute for Public Health (FHI) presented in 2001 a programme of action for prevention of unwanted pregnancies. The main goal for this work was:

…to strive towards a society where as many pregnancies as possible should be desired, and ways of achieving this goal should include knowledge-raising and behavioural-influencing efforts as well as the availability of contraception and counselling.

Sexual education and sexual politics in Sweden

Sexual education has a long tradition in Sweden and both women and men were actively involved in public discussions and publications from the 18th century onwards. The subject was controversial and in 1910 Hinke Berggren was prosecuted for promoting family-planning, and between 1911 and 1938 a law prohibited public speeches about contraception. That did not stop another pioneer; Elise Ottesen-Jensen, who for many years travelled around the country advocating family-planning and legal abortions. She was the founder of the Swedish Association for Sexual Education (RFSU). In 1942 sexual education in schools started to be discussed and in 1962 it became a compulsory part of the Swedish school curriculum. It is today the responsibility of every principal to provide education on sexual and reproductive matters. In 2000 an evaluation of sexual education in primary and secondary schools was performed, revealing large quality differences and an improvement was recommended.

In 2001, Sandström presented an investigation of Swedish sexual policies of the 1970s as it was presented in official texts. She claims that a shift occurred during this period in shifting the responsibility for sexuality from the authorities onto the individual. Men were pictured as unmanageable and unreliable, whereas women were pictured as exposed and in need of support.
and assistance, sometimes allowed to be open, sometimes needing to restrain their sexuality. This might be one explanation of why contraceptive methods, counselling and education mainly focus on women.

Contraceptive methods

Throughout history and all over the world a wide variety of contraceptive methods and practices have been used. The first condoms were made of the gut from a sheep and different kinds of “diaphragms” like lemon-halves and sponges soaked in various solutions have been described. New methods are constantly being developed and big steps in this development were the introduction of intrauterine devices (IUD) in the 1950s and the oral contraceptive pill (OC) in the 1960s. Globally, more than two-thirds of men and women rely on the condom in their first intercourse, but when growing older both men and women are more likely to rely on female contraceptive methods. By their late 30s, 15 – 20% of women and men rely on vasectomy and 24 – 31% on female sterilization. In Sweden too, the condom is most often reported in relation to the first intercourse, but already at an age of 19 years OC use was the most often used contraception reported by 44%/35% in two cohorts of women born 1962 and 1972. With increasing age, women tend to shift to IUDs, but still at the age of 29 years, 22% of women in a longitudinal study used OCs compared with 19% who used IUDs. In order to promote contraception among adolescents, many county councils subsidise contraceptives to the youngest women and condoms are often subsidised or free of charge in Youth Clinics.

Emergency contraception

Emergency contraception comprises methods aimed to prevent an unintended pregnancy after an unprotected act of intercourse. There are hormonal methods and intrauterine devices. The most known hormonal method, the “Yuzpe-method”, was described as early as 1974 and consists of levonorgestrel 250µg + ethinylestradiol 50 µg given in two separate doses. It was approved by the Medical Products Agency in Sweden in 1994. Another ECP method using a progestogen-only preparation (750 µg levonorgestrel) was introduced in Sweden in May 2000 and was approved as an over-the-counter (OTC) product in April 2001 at a cost of 13 Euros. This preparation was shown to have milder side-effects and can be administered as a single dose. Early treatment improves the efficacy. The exact mode of action is still undetermined, but studies indicate that the effect primarily is due to inhibition of ovulation and no teratogenic effects have been observed. Trussel and co-workers attempted to estimate the cost effectiveness of ECP and concluded that greater use of ECP might reduce medical and social costs of unintended pregnancies.
Several surveys have shown that younger women are better informed, have more favourable attitudes, and are also more frequent users of the method, Positive attitudes towards OTC-availability have been found in some studies, but doubtful attitudes among both users and providers have also been reported. A few studies indicate that advance provision of ECP does not have a negative effect on sexual behaviour or regular contraceptive use but other studies indicate that ECP-users may be a group with a more risk-taking behaviour. Concerns have been voiced both by the public and by providers and counsellors regarding teenagers’ ability to incorporate this new method as an emergency solution and not as a first-choice alternative.

Sale statistics show that sales of the progestogen-only preparation in Sweden increased rapidly after the introduction but seem to be levelling out (Figure 3).

**Figure 3.** Sale statistics of the progestogen-only ECP-preparation in Sweden (Source: Sale statistics from Nycomed)

**Midwives role in contraceptive counselling**

The Swedish Association for Midwives was founded in 1886 as the first female professional association in Sweden. In an international perspective, Swedish midwives have a unique and strong position. Milton investigated the background to this relative success and suggests that the state and the midwives legitimised each other in the development of the welfare state. Midwives were already from the 19th century organised in local networks, and, from the 1930s, were also working with antenatal care. In 1934 Alva and Gunnar Myrdal started a national debate about the decreasing birth rates in the country, and as a consequence the government initiated several social reforms that also affected midwives, such as expanded maternity care and genetic-hygienic education. Sterilisation was practiced for birth-control among “unfit elements” but Milton claims that a more open attitude towards
contraception as an alternative to sterilisation cleared the way for midwives’ later roles as contraception counsellors.

Subsequent to the abortion legislation in 1975, great efforts were made in order to provide easily available contraceptive counselling free of charge for any woman requesting it. Midwives were then authorized to prescribe OCs and to insert IUDs and family planning became an integral part of the midwifery education curriculum. Youth Clinics were introduced all over the country. At present, midwives provide more than 80% of the contraceptive counselling in Sweden and there are more than 200 Youth Clinics offering information, counselling, testing for sexually transmitted infections (STI), treatment and therapy in the field of sexuality. A Youth Clinic is typically staffed by midwives, physicians and social workers and serves adolescents up to the age of 20 – 23 years.

It is a common recommendation that the counsellor should provide information about different contraceptive methods and then assist individuals to make an informed choice of a suitable contraceptive method and finally support this choice. Some studies suggest that the youngest women request short waiting-times, confidentiality, sufficient time with a kind counsellor, and reduced costs. A recent review regarding evidence on the effectiveness, benefits and harms of counselling in a clinical setting did not find any clear answers to those questions, either about the costs or the cost-effectiveness of different approaches to counselling about unintended conceptions in primary care settings. The study ended up in posing a set of new questions:

- What factors move women from one category of contraceptive use to another, including non-use?
- What is the current content of routine patient and clinician interaction?
- What is the role of feelings, attitudes, and motivation in contraceptive use?
- Should men be involved and if so, how?
- How can randomized controlled trials be performed to test various approaches for providing assessment, education, and counselling about contraception?

Health education and campaigns

The major causes of death and illness are closely linked to behavioural factors and there has been a dramatic increase in interest in prevention through life-style changes. Health education’s main concern is behavioural change, and could be defined as:

Health education attempts to close the gap between what is known about optimum health practice and what is actually practiced.
Health education can be found in many different settings, schools, communities, worksites, health care settings, homes and the consumer marketplace. Effective health education must be designed with an understanding of the targeted individuals; health professionals, clients, patients, students or community members.

The HIV/AIDS epidemic challenges global society in the search for effective strategies to impact knowledge, attitudes and practices within the reproductive field and there is currently a large body of research that can be useful also in efforts to prevent unwanted pregnancies. For midwives working within the field of reproductive health, health education is an important task. The Swedish National Board of Health and Welfare states:

Midwives working within antenatal care and family planning services have an important task in the prevention of abortions; by contraceptive counseling; and by out-reach activities about sexuality and relations.

These educational activities are made in cooperation with sexual education in schools. The National Board of Health and Welfare also stipulates that teachers, military leaders, youth and sport leaders should be addressed in order to improve their ability to handle discussions about these sensitive and delicate matters in their professional lives.

Evaluations of sexual health interventions are difficult and it has been suggested that both process evaluation and outcome evaluation may be needed. Interventions could be targeting special groups or approach the whole community. It has been suggested that community-based programmes should include different strategies in order to achieve population-level change; one-to-one interventions for high-risk individuals, interventions of messages reaching across an entire community, and policy-level efforts to help modify the social and political environment. Several reviews have tried to sum up what is known about the effectiveness of sexual health interventions. Some interventions were found to be effective, others had no effect and some were even considered to be harmful. There is not yet any “golden standard” for the best tailored sexual health intervention. Knowledge and attitudes have generally been more affected than sexual and contraceptive practices; often referred to as the KAB-gap. Many factors seem to influence the effects of an intervention and a programme that showed good effect in the United States regarding gay men’s sexual risk-taking did not have any effect when transferred to London or Glasgow. A Swedish study among university students showed that a combination of a mass media campaign and peer-led lessons improved the students’ knowledge of STIs. Some interventions regarding ECP have also been shown to improve awareness and knowledge of this new method.
Robin et al. (2004) suggest that programme duration and intensity, focus on specific skills, training of facilitators and clearness about the given programme may be important factors in tailoring an effective sexual health intervention. Others have suggested that the interventions should be theory-based and include peers. Some of the stages in the development of an intervention are:

- Theoretical phase; when a theoretical basis is ascertained, the targeted populations are defined and suitable intervention-strategies are examined
- Modelling; of the intervention, the recruitment process and suitable outcomes
- Exploratory trial; pilot study to test the intervention, the instruments and the procedure
- Definitive trial; when the intervention is performed and all the data are collected

Theoretical framework

There are a number of theories developed in order to explain and predict human behaviour. Many of them have been used in connection with sexual and reproductive health. One of the most widely used conceptual frameworks is The Health Belief Model (HBM). It was developed in the 1950s as an attempt to understand why people decided to participate in different Health Service programmes, for instance tuberculosis screening, or not. It is a value-expectancy theory which means that mental processes such as thinking, reasoning, hypothesizing, and expecting are critical components. Some of the main concepts in the model are the perceived susceptibility to, and the severity of, disease, which could explain why the model was considered appropriate for investigations about sexual behaviour in HIV/AIDS research. Later versions of HBM have suggested the inclusion of the concept self-efficacy, developed by Bandura (1977). The original HBM model focused on very simple behaviours like saying yes or no to tuberculosis screening and it was presumed that all individuals were able to reach this decision. The situation differs when it comes to more complicated and long-lasting behaviours. A person must then feel “the conviction that he/she can successfully execute the behaviour required to produce the outcomes” in order to engage in behavioural change (Figure 4).

One global orientation to view life situations as comprehensible, manageable and meaningful is the Sense of Coherence (SOC) developed in 1979 by Antonovsky. If a person feels high comprehensibility, manageability and meaningfulness in life, it reflects a higher degree of SOC. This improves the ability to cope with demands and stressful events in life and contributes to better health. Although fully developed at the age of 30 there is currently some evidence that SOC is relatively stable also in adolescence. It has
been used in many populations but no study has investigated SOC in relation to contraceptive use.

**Figure 4.** The main concepts of the Health Belief Model

Another theoretical model well suited for investigations about the introduction of new methods is The Theory of Diffusion of Innovations (DI)\textsuperscript{126}. It was initially developed in order to understand why and how new agricultural methods spread in a given population. It has since then been used in many different areas, such as agriculture, marketing, education, and health promotion.

An innovation is defined as;

An idea, practice or object that is perceived as new by an individual or other unit of adoption.

Diffusion is defined as;

The process by which an innovation is communicated through certain channels over time among the members of a social system.

The process involves five stages:
- innovation development
- dissemination
- adoption
- implementation
- maintenance

It normally follows an S-shaped curve, starts off at a slow rate, then speeds up when the large majority becomes involved, and finally levels out. The characteristics of the innovation determine the rate of adoption, and these attributes are; relative advantage, compatibility, complexity, trialability and observability. An innovation that is considered to have big advantages, not being too complex, easy to test and to observe, will most likely be rapidly adopted. Among the communication channels, mass media are stipulated to be the most effective in raising knowledge about a new innovation, but interpersonal channels are probably more effective in forming and changing attitudes toward the idea and thereby influencing the decision whether to adopt the innovation or not. A change agent is an individual who influences another person’s innovation decision in a direction desired by a change agency.

The innovation-decision process involves time and is a five step process from:
- first knowledge
- persuasion
- decision
- implementation
- confirmation

The decision stage leads to adoption or rejection; a decision not to adopt an innovation. Knowledge proceeds at a more rapid rate than adoption, and some individuals adopt an innovation more rapidly than others. The first persons to adopt a new idea are called innovators, followed by early adopters, early majority, late majority, and laggards. Research has shown differences in socioeconomic status, personality and communication behaviour between early and late adopters. Finally, the consequences of an innovation should be considered. Are they desirable or undesirable, direct or indirect, anticipated or unanticipated?

In summary; unintended pregnancies are considered to be both a personal problem and a concern for the community. Adolescents and women applying for induced abortion are groups of special interest, since they have been shown to have inadequate contraceptive practices and may be at risk for induced pregnancy terminations. A new contraceptive method, ECP - the only hormonal contraception possible to use after an unprotected act of intercourse - is now easily available in Sweden. Introducing a new contraceptive method takes time and may provoke ambivalent feelings which could impact the adoption of the method.
AIMS OF THE STUDIES

The overall aim was to examine the adoption of ECP as a tool in the prevention of unintended pregnancies; this included the knowledge, attitudes and use of the method and if different interventions could have an impact on these variables.

The specific aims were:

1. To investigate the reasons for induced abortion among a group of Swedish women requesting early pregnancy termination, as well as their contraceptive habits, their reasons for not using contraception, the reasons for contraceptive failure and planned contraceptive methods after the abortion.
2. To investigate the knowledge, attitudes and experiences of ECP in a population-based sample of young Swedish women.
3. To evaluate a community-based information campaign about ECP in a region in mid-Sweden.
4. To evaluate a school-based education intervention about ECP and condoms among a group of vocational high school students in mid-Sweden.
METHODS

An overview of the studies is presented in Table 1.

Table 1. Design, methods and participants of the included studies

<table>
<thead>
<tr>
<th>Paper</th>
<th>Design</th>
<th>Data collection</th>
<th>Study groups</th>
<th>Response rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Cross sectional survey</td>
<td>Waiting room questionnaire</td>
<td>591 consecutive abortion applicants in Uppsala, Västerås and Örebro</td>
<td>88%</td>
</tr>
<tr>
<td>II</td>
<td>Cross sectional survey</td>
<td>Postal questionnaire</td>
<td>A random sample of 800 women 16 – 30 years in Uppsala and Västerås</td>
<td>71%</td>
</tr>
<tr>
<td>III</td>
<td>Quasi experiment</td>
<td>Postal questionnaires pre- and post intervention</td>
<td>800 women, 400 in Uppsala (intervention group) and 400 in Västerås (comparison group)</td>
<td>71% pre-test 83% post-test 58% over all response rate</td>
</tr>
<tr>
<td>IV</td>
<td>Quasi experiment</td>
<td>Class room questionnaires pre- and post intervention</td>
<td>461 high school students (253 females, 208 males), 282 in the intervention group and 179 in the comparison group</td>
<td>85% pre-test 89% post-test 71% over all response rate</td>
</tr>
</tbody>
</table>

Study setting

All studies in this thesis were performed in a region of mid-Sweden containing four medium-sized cities, Uppsala, Västerås, Gävle and Örebro. These cities are all county-centres and have regional hospitals. The region, close to the capital Stockholm, contains some smaller towns and surrounding semi-urban and rural areas, has good infrastructure, and is an expanding part of the country with respect to the number of inhabitants and economic growth.

Population and data collection

Paper I

The study was carried out among women requesting an early pregnancy termination at three family planning clinics at three large hospitals in the cities of Uppsala, Västerås and Örebro. In 1999, 2 634 induced abortions were performed in these cities. The survey was conducted between February
and May of 2000. A total of 638 women requested an early termination of their pregnancy during this period.

The questionnaire (Appendix) covered demographic information as to age, education, country of birth, parity, previous terminations, smoking habits, and information about the relationship. Most of the questions were multiple-choice questions, some with the possibility of making additional comments. Two open-ended questions, one regarding reasons for contraceptive failure and one about why emergency contraception had not been used, were included. Most of the questions in the form had been used in earlier studies, but some were constructed by the authors. The formulations of all questions in the form were discussed with professionals from the three participating clinics, and then tested on a small number of women in different ages that were asked to comment on the questions. Finally, the procedure and the questionnaire were tested in a pilot study in one of the clinics on fifteen women. This resulted in two minor changes to two of the demographic questions.

Before visiting the doctor, the women received oral and written information about the study from a nurse. If the woman agreed to participate, she had the opportunity to complete the questionnaire in privacy before the consultation with the gynaecologist. She then placed the completed questionnaire in a non-identifiable envelope, sealed it and put it into a sealed letter box in the waiting-room.

Papers II and III
A questionnaire and an invitation letter were sent in January 2002 to a random sample of 800 women aged 16 to 30 from the tax register in two counties in mid-Sweden, stratified for postcode area. For Paper III the respondents from one county were assigned to the intervention group and respondents from the second county to the comparison group. The questionnaires were coded, so that non-respondents could be identified. Non-respondents received three reminders at three-week intervals.

The questionnaire (Appendix) consisted of 24 questions, of which ten had been used in a previous study. The rest of the questions were formulated specifically for this study. Five multiple-choice questions regarded demography (age, ethnicity, co-habiting status, occupation, and education). One dichotomous question (yes/no) explored whether the women had received any contraceptive counselling during the previous year. Six multiple-choice questions concerned knowledge of ECP; awareness of ECP, source of information, knowledge of mechanism of action, effectiveness if taken on the first or third day after intercourse, and side-effects. Seven verbal rating scale questions explored attitudes regarding ECP and the OTC-availability, potential side effects, impact on regular contraceptive use, need for individual counselling, and whether or not ECP could be considered to be an abortion.
The verbal rating scale questions had five response alternatives ranging from “totally agree” to “totally disagree”. Three multiple-choice questions investigated the women’s previous use and estimated future use of ECP. One dichotomous question explored if they favoured a pharmacy or a clinic for future purchase of ECP. Two open-ended questions about the motives for their choice and their general opinion of ECP ended the questionnaire.

Before the final version, the questionnaire was tested on 37 student nurses with a test-retest. The students filled in the questionnaire in a classroom setting on two occasions, separated by one week. All questions regarding knowledge, previous use and estimated future use showed good correlations on both occasions (Spearman’s rho>0.70). Attitude questions that showed a correlation below 0.70 were removed, and questions showing a correlation above 0.70 were retained.

At follow-up we used the same multiple choice questions and added another two multiple choice questions with four and six response alternatives in order to investigate whether or not the women had noticed the campaign about ECP during the previous year. Two reminders were sent. The distribution of respondents in the two groups is shown in Table 2.

<table>
<thead>
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<th>Total sample N= 800</th>
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<td>IG N=400</td>
</tr>
<tr>
<td>Returned pre-test N= 307</td>
</tr>
<tr>
<td>Returned post-test N= 261</td>
</tr>
<tr>
<td>CG N=400</td>
</tr>
<tr>
<td>Returned pre-test N= 257</td>
</tr>
<tr>
<td>Returned post-test N= 206</td>
</tr>
</tbody>
</table>

Table 2. Response rates in the intervention group (IG) and comparison group (CG)

Paper IV

The participants were chosen among second grade students, 17 years of age, from two of the vocational programmes in the Swedish high school system, Hotel and Restaurant and Media, because they had an equal gender distribution and similar investigations had been performed in the same age group. All the participating high schools are situated in a region in mid-Sweden containing three medium-sized cities, two smaller towns and surrounding semi-urban and rural areas. The high schools in two of the medium-sized cities were assigned to the intervention group whereas the other high schools were assigned to the comparison group. Altogether 25 classes participated in the study, 18 classes with a total of 282 students in the intervention group and 7 classes with 179 students in the comparison group (Figure 5).
In June 2002 the headmasters and the school nurses of the concerned schools were contacted. They were all positive and gave their permission to the project. The pre-test was conducted during October and November 2002 when all classes were visited and the students received oral and written information about the study and the VIP-cards and the pre-test questionnaires were handed out. The time required to fill in the questionnaire was 15 minutes. When each student had completed his or her questionnaire, it was put in an envelope, which was then sealed. Each questionnaire had a code number that the students were asked to note on a name-list. When all the students had signed the list it was put in an envelope and sealed. The project leader kept these envelopes in a locked drawer at the department and the envelopes were not reopened until the post-test one year later. Then the students could check their code number and note it on the post-test questionnaire. Students who had not been present at the pre-test were given new code numbers. When the students had completed the post-test questionnaire and put it in an envelope and sealed it the name-lists were destroyed in order to assure the students’ confidentiality.

The questionnaire consisted of 50 multiple-choice questions (Appendix) and was based on a selection of questions from IFMSA’s “Condom Survey”\textsuperscript{19}, on earlier investigations of sexual habits among high school students\textsuperscript{15, 40, 77}, on an earlier study in Sweden about ECP\textsuperscript{15} as well as on questions used for Paper II and III. Before the final version the questionnaire was tested on 25 students. Some minor changes were made. The first five questions were demographic. The next six questions dealt with the students’ experiences of sexual intercourse and use of contraceptives, followed by seven questions about condoms and nine questions about ECP. Ten questions with verbal rating scales examined the students’ attitudes towards condoms and ECP. The rating scale had four alternatives rating from \textit{totally agree} - \textit{totally disagree}. Finally, Antonovsky’s Orientation to Life Questionnaire, short form (SOC-13), ended the questionnaire\textsuperscript{19}. The post-test questionnaire was similar, but the thirteen SOC-questions were removed and four new multiple-choice questions to explore the exposure of the intervention were added.
Interventions regarding ECP

Interventions designed to change components in relation to sexual health are typically complex and could be directed at patients, health professionals, the community, and health services\textsuperscript{140}. We chose two different intervention models, the KAPPA-project, a community-based media campaign, based on the finding that the majority of the women in Study I had not visited any family-planning clinic for more than one year and were thus not reachable via these services. We also included a strategy aimed at reaching individuals with face-to-face information, since this has been considered to be more effective\textsuperscript{104, 126}. The school-based intervention, the VIP-project, combined some of the components suggested by Kim et al. (1997); theoretic base and skill building\textsuperscript{90}, with some of the findings from previous studies regarding needs among adolescents, namely reduced costs of contraceptives and easily available counselling\textsuperscript{94, 115}.

The KAPPA-project

The intervention, guided by the Health Belief Model and the Theory of Diffusion of Innovations\textsuperscript{72, 126}, took place during one year from April 1, 2002 – March 31, 2003 and was designed to combine different strategies:

- A media campaign with the main message that ECP is a good emergency solution and a specially designed brochure containing basic facts about ECP. This information was spread via different channels, local newspapers, posters and information on the rear of local buses.
- Nurse-midwives working in family planning clinics were asked to provide oral and written information about ECP to women coming for contraceptive counselling or for follow-up after child birth.
- Information about ECP on a website.
- Women requesting induced abortion were offered one package of ECP to keep at home.

The VIP-project

The intervention, guided by the Health Belief Model\textsuperscript{22, 72}, took place during one year from October 2002 to December 2003 and combined different strategies:

- One lesson with basic facts about ECP from an experienced nurse-midwife.
One session of three lessons by peer educators from the IFMSA’s initiative “Love Emergency” shortly after the first visit in the classes. The lessons were held by one male and one female medical student and mainly focused on attitudes and values towards different contraceptive methods, also including rehearsal of condom skills.

- A VIP-card entitling the students to free condoms on request.
- A telephone number for individual contraceptive counselling from a nurse-midwife.

**Ethical considerations**

All studies were approved by the local Medical Ethics Committee in Uppsala. The heads of the three clinics approved of the first study (Paper I) and the headmasters of the chosen schools approved of study four (Paper IV). Women applying for induced abortion are in an extremely vulnerable situation. We therefore carefully considered the formulation of all questions, so that they would not evoke or strengthen feelings of shame or guilt. The women were guaranteed strict confidentiality and sufficient time and privacy to complete the questionnaire. Questions about reproduction and sexuality are intimate and may evoke ambivalent feelings among respondents and it is very important that the formulation of the questions does not convey “hidden messages” of what is considered to be “good” or “bad” answers. The classroom setting entails a certain degree of group pressure; students may find it difficult to deny participation. We included response alternatives also for the students without coital experience so they did not have to skip a whole set of questions. Each questionnaire ended with an invitation to make additional comments on the topic of investigation.

**Data analysis and statistical methods**

The data were entered and analyzed in the Statistical Package of the Social Sciences (SPSS 11.0) for Windows. The respondents were divided into age groups; 14-19 years, 20-29 years and 30 years or older (Paper I), 16-24 years and 25-30 years (Paper II). The answers to the questions regarding knowledge were categorized in two categories, correct answer = 1 and wrong answer/don’t know = 0. The answers to the question regarding side-effects with ECP was considered to be correct if one or more of the three alternatives nausea, bleeding disturbances and tender breasts were chosen but was considered to be incorrect if one or more of the four alternatives blood clot, foetal malformation, sterility or no side-effects were chosen. The answers to the questions regarding knowledge were added to form an index of knowledge, which could add up to a maximum of 4 points if all answers were en-
tirely correct (Paper III) or 6 points (Paper IV). The SOC scores in Paper IV were divided into low, moderate or high SOC.

The mean age of respondents in Papers II and III was compared with that of non-respondents using the t-test. Differences between groups were tested with Fischer’s exact test and the Pearson Chi square test for nominal scaled variables, and with the Mann Whitney test for ordinal-scaled variables.

In the analysis of differences between the intervention groups and the comparison groups (Papers III and IV), only data from the respondents who answered both questionnaires were used. The differences in the knowledge index were tested with the t-test. Differences between the groups (at baseline and follow-up) and differences in change between the intervention groups and the comparison groups were tested with Fischer’s exact test and the Pearson Chi square test for two independent samples on nominal-scaled variables and with the Mann Whitney method for ordinal-scaled variables. Differences within the groups from baseline to follow-up were tested using the McNemar test for two related samples on nominal-scaled variables and the Wilcoxon sign-rank test for ordinal-scaled variables. Differences were considered significant if \( p < 0.05 \).

To examine the main predictors for the dependant variable estimated future use of ECP in Papers II and III, multiple logistic regression models were fitted for each of the dependant variables, respectively. In order to control for potential confounders in Paper IV, a multiple logistic regression model was fitted for each of the two dependant outcome variables ever use of condoms and estimated future use of ECP.

The answers to the open-ended questions in Papers I and II were analyzed with content analysis\(^\text{157}\), following four steps: 1/ All answers were read several times looking for themes and patterns, 2/ Preliminary categories were created, 3/ Boundaries and content of the categories were examined, some were rewritten and thereafter all statements were referred to a category, and 4/ The categories were organized into major themes. For Paper II, an additional assessor was given access to all statements and the description of the central characteristics of the categories and categorized 20 % of the statements. A comparison between the author’s and the additional assessor’s assessments using the Kappa method\(^\text{28}\) showed a good agreement, Kappa value = 0.91.
RESULTS

The results are presented as summaries of the papers also including some additional results.

Paper I

The mean age of the women was 28 years (range 14 – 46) and the age distribution is shown in Figure 6.

![Age distribution of the participating women](image)

*Figure 6. Age distribution of the participating women*

The majority of the women found it difficult or very difficult to decide about the abortion, and most women (97%) had discussed the abortion decision with someone. There were many reasons for pregnancy termination, and almost three-quarters of the women had chosen more than one response alternative. Poor economy was the most common reason. Other important reasons were bad timing of the pregnancy, having completed the family, and problems in relation to the partner.

Less than one-third of the women had received contraceptive counselling during the previous year, but most women had used several different contraceptive methods, the condom (48%) and the combined oral contraceptive pill
(COC) (35%) being the most common. Many had relied on less effective methods such as withdrawal (30%) and the calendar method (18%) and 33 women (7%) had used emergency contraception (the Yuzpe-method) during the previous year. The percentage of ECP-use among the teenagers was 18% and the age distribution of all ECP-users is shown in Figure 7.

Figure 7. Use of ECP during the previous year by age-group

At the time of the conception, 36% had not used any contraceptive method and among teenagers, the percentage was even higher (49%). Fifteen women (3%) had tried to prevent the pregnancy by using emergency contraception. The main reasons for not having used contraception were that the women did not believe they could become pregnant at that time (34%) or that they took the risk (27%). To further examine the role of age in comparison with other possible predictors for contraceptive use at the time of conception we performed a logistic regression model which showed that the only significant predictor among the included explanatory variables (age, ethnicity, relational status, occupation, education level, parity, and previous abortion) was if the woman had a steady relationship or not. Women in stable relationships were more likely to have used contraception at the time of conception (OR=1.74, CI=1.09-2.77) (Data not shown in the paper).

The majority of the women (91%), planned to use contraception after the abortion and most of them planned to use effective methods.
Paper II

The mean age of the women was 24 years and the age distribution is shown in figure 8.

![Age distribution of the participating women](image)

*Figure 8. Age distribution of the participating women*

Almost all women had heard of ECP, mainly from the media and friends, and there was a difference between age groups, as shown in Figure 9.

![Main source of information about ECP by age-groups](image)

*Figure 9. Main source of information about ECP by age-groups*
Half of the women (54%) had received contraceptive counselling during the previous year and these women had better knowledge of ECP than women who had not requested counselling (Figure 10).

![Knowledge index in relation to contraceptive counselling](image)

**Figure 10.** Knowledge index in relation to contraceptive counselling

Only half of the women (57%) knew the mechanism of action and 53% gave wrong answers or were unaware of side-effects. Attitudes to ECP were mostly positive, but one-fourth (24%) had worries about side-effects and one-third (33%) considered ECP to be a kind of abortion. One fourth of the women (27%) had used ECP, most of them (67%) once and 10% had used ECP during the previous year, after the deregulation.

The majority of women, 65%, would prefer to purchase ECP over the counter in a pharmacy; easier access and anonymity being the most important motives. The rest, 35%, favoured visiting a clinic, the main motives being a need for personal counselling and information. Logistic regression showed that correct knowledge of, and positive attitudes to, ECP contributed to estimated future use of ECP.

The last open-ended question invited the women to give additional comments about ECP. Many respondents (n=208) did so, and the answers were categorized in four categories; positive comments, negative comments, both positive and negative comments and neutral comments. Some examples are shown below:

**Positive comments (n=83)**

*Very good, saves many women from unwanted pregnancy. Positive development for women and a possibility to choose. More information to schools and young people.*
Negative comments (n=67)
It’s an emergency solution, not a contraceptive. OTC sale is not good – counselling is necessary. Many young people could neglect using condoms. Gives false safety - more STIs.

Both positive and negative comments (n=34)
Good that they exist, but too easy to access. May reduce abortions but can be used instead of regular contraceptive pills.

Neutral comments (n=24)
I don’t know enough. Good to have information about all contraceptives. Pharmacy staff should inform about side-effects.

Paper III
Two-thirds (64%) of the targeted women had noticed the information campaign. One out of six who had visited a family planning clinic during the intervention year recalled being given information about ECP. Specific knowledge and attitudes improved over time in both groups, but there was no difference in change between the groups. The proportion of women who had used ECP increased from 27% to 31% over time. Intention to use ECP in case of need was reported by 74% of the women and remained stable over time, but logistic regression showed that information during the previous year contributed to willingness to use the method in the intervention group.

Paper IV
The mean age of the students was 17.3 years, range 16-20 years. There was an equal gender distribution and the two groups were similar except for study programme. Respondents did not differ from non-respondents regarding any of the background characteristics (Table 3).
Table 3. Analysis of respondents (R) vs. non-respondents (NR) at baseline and at follow-up

<table>
<thead>
<tr>
<th></th>
<th>R/NR at baseline</th>
<th>P-value</th>
<th>R/NR at follow-up</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=390/71</td>
<td></td>
<td>N=323/67</td>
<td></td>
</tr>
<tr>
<td></td>
<td>percentage</td>
<td></td>
<td>percentage</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>53/66</td>
<td>0.038</td>
<td>54/43</td>
<td>0.107</td>
</tr>
<tr>
<td>Male</td>
<td>47/34</td>
<td></td>
<td>46/57</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Born in Sweden</td>
<td>-</td>
<td></td>
<td>91/90</td>
<td>0.648</td>
</tr>
<tr>
<td>Born in another country</td>
<td>-</td>
<td></td>
<td>9/10</td>
<td></td>
</tr>
<tr>
<td>Study programme</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Media</td>
<td>40/37</td>
<td>0.600</td>
<td>39/48</td>
<td>0.174</td>
</tr>
<tr>
<td>Hotel &amp; restaurant</td>
<td>60/63</td>
<td></td>
<td>61/52</td>
<td></td>
</tr>
<tr>
<td>Sense of coherence score</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>-</td>
<td></td>
<td>3/6</td>
<td>0.415</td>
</tr>
<tr>
<td>Moderate</td>
<td>-</td>
<td></td>
<td>36/34</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>-</td>
<td></td>
<td>61/60</td>
<td></td>
</tr>
<tr>
<td>Relational and sexual status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has a steady boy- or girlfriend</td>
<td>-</td>
<td></td>
<td>35/42</td>
<td>0.328</td>
</tr>
<tr>
<td>Had sexual intercourse</td>
<td>-</td>
<td></td>
<td>75/86</td>
<td>0.053</td>
</tr>
</tbody>
</table>

The girls scored lower on the SOC score than the boys (Figure 11). There were no significant correlations between the SOC score and sexual and contraceptive practices and only one of the attitudes showed a significant association with the SOC score; students with a higher score found it easier to talk to their partner about condoms (Figure 12). The SOC score was not found to be influencing either condom use or willingness to use ECP in the future.

![Figure 11. The students’ sense of coherence in relation to gender (p=0.014)](image-url)
Three out of four (77%) had experienced sexual intercourse. The majority (76%) had used contraception, mostly condoms at first intercourse. The students already had good knowledge of condoms, with no change after the intervention - some attitudes improved and condom use increased. Knowledge and attitudes towards ECP improved but the use remained stable (29%). The most important source of information about ECP changed from “friends” to “school” after the intervention. More than one out of four (28%) had opted for free condoms but only 3% had requested telephone counseling.
DISCUSSION

Methodological considerations

Sampling procedures are crucial for all investigations. Random sampling is considered to be the golden standard and was therefore used in the studies where we found it to be possible (Papers II, III). The register we used was the national tax register, stratified for postcode area. The response rate of 71% after three reminders was similar to what has been found in other postal surveys. According to the regulations of the register we only had access to the names, addresses and year of birth for the sampled women, which made it difficult to analyse differences between respondents and non-respondents. The only comparison possible, age, did not reveal any differences between the groups. However, since we used the same sample of women one year later at follow-up (Paper III) we then were able to compare those responding to the second questionnaire with the drop-outs. This comparison showed that the groups differed with respect to ethnicity and occupation. Non-respondents were to a higher extent born in a non-Nordic country and unemployed. It is reasonable to believe that this pattern existed already in the initial survey. This was supported when comparing the percentage of immigrant women in the whole population in the two sampled counties, 15% and 17% respectively, with the percentage among the respondents (12%). Language barriers may have made it impossible for some of the sampled women to participate since we did not provide any translated versions of the questionnaire. All results with respect to ethnicity must therefore be interpreted with caution.

If the only aim of the study in Paper II had been to assess the general situation regarding ECP in the entire country, it would have been better to use a nation-wide sample. However, since we intended to perform an intervention and use the survey as the baseline measurement, we chose two counties in mid-Sweden. This, of course, limits the possibility to generalize the findings, but the two counties contain medium-sized cities as well as semi-urban and rural areas. None of the three metropolitan areas was included in the sample, so we think that with the exception of those three areas our results may reflect the situation for the Swedish population as a whole.

Reaching abortion applicants is difficult because no national register exists in Sweden. For the first study we therefore used a consecutive sampling and all women who requested induced abortion at the three clinics during a
certain time-period were invited to participate. In spite of the delicate subject of investigation and a quite extensive questionnaire, we obtained a high response rate, 88%. The staff at the clinics carefully filled in a research protocol regarding if women were asked to participate or not and, if so, if they accepted or not. This research protocol does not imply that the drop-outs should have been systematic in any way. The main reason for not asking the women to participate was that the staff were over-loaded and had no time to give the information. They were also asked to fill in if the women gave any reason for their denial to participate. No special reasons beyond "do not want to" or "do not have time to” were given by the women, and the staff were asked not to pressure women about their reasons, since it was considered unethical.

We have no information about the 12% of non-respondents, but there may have been more teenagers than older women in the group. According to official statistics, the proportion of teenagers requesting induced abortion in the three cities was 17% during the period of investigation, compared with 14% in our sample. The women represented 20% of the total number of women who had induced abortion during a one-year period in the participating clinics offering services to three county councils, including women from both rural and urban areas. One of the cities is a university city with a large population of university students and one of the other cities is a major industrial centre in Sweden. It is therefore reasonable to believe that the population in this area reflects the population in Sweden as a whole, the metropolitan areas excluded, and that the results can be generalized to women who speak and understand Swedish in similar settings.

In Study IV we used a purposive sample because we wanted to examine the effects of education intervention on a group of students attending vocational high school programmes, since earlier investigations had shown these students to be more at risk for unintended pregnancies\textsuperscript{41, 77, 91}. We wanted an even gender distribution among participants. We therefore chose two of the national vocational study programmes and contacted all the schools offering these programmes in an area within reasonable travelling distance. We chose second-grade high school students, partly because earlier Swedish studies had been performed in the same age group\textsuperscript{40-42}, but we also wanted the classes to be well established. This is not always the case during the first year in high school, when many students shift from one programme to another. We also needed the students to be eligible for follow-up one year after the intervention and therefore could not include third-year students. The response rate was similar to what has been found in other class-room surveys\textsuperscript{40-42, 77, 91} and almost all students who were present in the classes filled in the questionnaire. However, students with high absenteeism in school are more likely to have risk behaviour\textsuperscript{40-42}, so we do not know to what extent the intervention had an impact on them. Since the sample was strategic, the results can not be generalized to students in all study programmes, but we
think that the results could be generalized to vocational study programmes and it is reasonable to believe that most groups of high school students could benefit from a similar education programme.

For the two intervention studies (Papers III and IV) a main challenge was the non-random assignment to intervention group or control group. The nature of the interventions, a mass media campaign and a school-based education programme, made it impossible to randomly allocate the intervention to individual subjects. We therefore compared the two groups regarding background variables and in both interventions the groups were found to have few differences at baseline and the differences were examined in relation to some of the outcome variables via logistic regression models.

For Paper I and Paper IV we used anonymous, self-completion waiting-room and class-room questionnaires. Neither the waiting-room nor the class-room is an ideal setting for answering intimate questions. In the clinic lack of privacy, accompanying persons, anxiety about meeting the gynaecologist, as well as the gynaecological examination, are all disturbing factors. In a class-room, students may feel group pressure to participate and instead of refusing to fill in the form they could give unreliable and untrue answers. It cannot be ruled out that some individuals in both settings may have felt a pressure to give socially acceptable responses. However, many of our findings are consistent with other studies, which increases credibility although it must be assumed that most surveys suffer from the same short-comings.

All questionnaires were study-specific and constructed by the authors but many questions had previously been used and the questions about ECP were developed on the basis of findings from an explorative focus-group study. The reliability of an instrument is the degree of consistency with which it measures the targeted attribute. Different techniques exist to assess these criteria and three aspects that can be measured are stability, internal consistency and equivalence. For Papers II and III we did a test-retest on 37 student nurses to test the stability of the instrument and in Paper II equivalence regarding the content analysis was examined with the Kappa method.

The validity of an instrument refers to the degree to which it measures what it is supposed to be measuring and is more difficult to establish. Face validity refers to whether or not the instrument looks as if it is measuring the topic of investigation. More important are other aspects of validity; content, criterion-related and construct validity. In order to ensure the content validity, the questionnaire for Paper I was constructed in collaboration with experts within the field, discussed with representatives from the target group, with staff from the participating clinics and finally pilot-tested on a small group of women in one of the clinics. These women first answered the questionnaire and were then asked to comment on the formulation of the questions. In the development of the questionnaire for Paper IV almost all questions were chosen from instruments used in previous studies in order to cover different domains targeted by the intervention. One important criterion
for the items was that they should be sensitive to changes. Items that showed
floor- or roof-effects in the pilot-test on 25 students were therefore elimi-
nated. For the attitude questions, we used verbal rating scales with four- and
five-step scales. Studies have shown that reliability drops when fewer steps
are used, but people may have difficulties in discriminating too many cate-
gories\textsuperscript{141}. Five to seven steps are often recommended. In Paper IV we wanted
the students to take a stand-point and eliminated the neutral alternative.

One possible explanation of the finding in Paper III of changes over time
in both groups could be the so-called Hawthorne effect, which is a kind of
placebo effect\textsuperscript{117}. The inclusion in a study is enough to cause people to
change. Another explanation might be that by answering questions about this
new method, women’s curiosity was alerted so that they later tried to find
out more about the topic. To further examine this, it would have been inter-
esting to send questionnaires to a new sample of women who had not an-
swered the first questionnaire.

The fact that the two interventions were undertaken during the same pe-
riod in Uppsala might, of course, have contaminated the results. On the other
hand, it gave us the possibility to examine if the two interventions could
have had a synergetic effect, which was not supported by the results.

We used two theoretical models as a guiding framework for the interven-
tion studies, the Health Belief Model and the Diffusion of Innovation The-
ory. Combining different theories is not an unusual procedure but there may
be important differences that need to be considered. A main difference be-
tween these two theories is that the DI is a stage theory postulating that be-
havioural change moves through a sequence of discrete stages, whereas
HBM is a non-stage theory where links between concepts can move in dif-
ferent directions. We did not intend to test the theories and all concepts were
not taken into account. For instance, we did not examine the extent to which
the respondents perceived the severity of an unintended pregnancy, nor did
we explore the perception of their own susceptibility. It is possible that a
more rigorous use of, and investigation according to, the theories might have
been valuable, but we did not want the questionnaires to become too exten-
sive, fearing a low response rate.

In statistical analyses it is generally recommended that variables should
be measured on as high a measurement scale as possible\textsuperscript{107, 117}. In both Pa-
pers I and II the continuous variable \textit{age} was divided into different age-
groups for analytical purposes. In Paper II, the statistical tests were per-
formed on the original five-step verbal rating scales but the five steps were
collapsed into three steps in the presentation in the paper. In all the regres-
sion models we collapsed nominal variables into dichotomous variables, but
for ordinal variables the original scales have been retained. We have consid-
ered the limits for use of the Chi square test and have not presented values if
more than 20\% of the cells had an expected count of <5, or if any of the cells
had an expected count of <1.
Reflections on results
Deciding about abortion

The majority of the women who requested an early pregnancy termination in Paper I found it to be a difficult decision and most of them had consulted their partner, other family-members or friends prior to consultations at the clinics. This is in agreement with other studies \(^\text{11, 75, 86, 154, 155}\). The investigation by Kero (2002) among women and men involved in an abortion decision found predominant feelings of anxiety and that the pregnancy was something unrealistic among both genders \(^\text{84-86}\). She also found that mixed feelings and ambivalence were common. One year after the abortion, feelings like responsibility, maturity and grief were most often mentioned and very few regretted the decision \(^\text{87}\). Trost (1982) found in her thesis that emotional disturbances after an induced abortion were uncommon \(^\text{145}\).

One surprising finding was that so many of the women gave poor economy as one of the main reasons for requesting an induced abortion. Although this has been shown to be an important reason in other countries \(^\text{11, 54}\), only 12% reported the economy to be a main reason in a Swedish study from 1989, compared with 32% in our study \(^\text{154}\). This finding highlights that the socioeconomic situation of some disadvantaged groups, such as female students and unemployed women in contemporary Swedish society, needs to be improved. After publication of Paper I in 2002 a public debate started and the minimum parental benefit has been adjusted from 60 SEK to 180 SEK a day. We believe that this is one important first step that may help young women facing an unplanned pregnancy to choose not to have an abortion.

Special attention should also be given to immigrant women, since a recent Swedish study showed that they were over-represented among women applying for induced abortion \(^\text{70}\). They had the same motives for requesting an early pregnancy termination but had lower education and were more often unemployed than women born in Sweden. They had less experience of contraceptive use but more pregnancies and more induced abortions than women born in Sweden. The authors concluded that the most probable cause of the higher rates of unintended pregnancies in the immigrant group was the association with low education, poverty, unemployment, weak social network and being unfamiliar with common pathways to health care.

Many of the reasons given by the women could be referred to the “bad timing of the pregnancy”. The large age-gap between first intercourse at the age of 16-17 years of age and the birth of the first child is an enormous and increasing challenge for family-planning services and for individuals. It was somewhat disappointing that only one-third of the women in Paper I had requested contraceptive counselling during the previous year although the large majority, 81%, had a stable relationship and must be presumed to be sexually active. As a comparison, 54% of the young women in the popula-
tion-based sample in Paper II had received contraceptive counselling during the previous 12 months. This difference implies that some women may be more hesitant than others to seek professional advice. A large part (43%) of the women in Paper I were daily smokers. It is well established among nurse-midwives that smoking is a risk-factor in combination with OC-use, and advice about smoking-cessation is often offered. It is possible that smokers who are not yet prepared to take this step try to avoid counselling sessions where they presume that their smoking habits will be questioned.

We can only agree with the suggestions posed by Moos and co-workers that many questions around effective contraceptive counselling still remain unsolved and need to be addressed in future investigations. In Sweden, there is a long tradition of preventive health care and education within child health, school health, dental care, and antenatal care. When invited to these Health services for routine check-ups and counselling, most Swedes choose to participate. Could issues related to sexual health and contraception be included in these services? School-nurses are in an excellent position to reach all adolescents within the school health system and in some areas projects have started in order to incorporate routine sexual health assessments.

Shortcomings in contraceptive use

Both Study I and Study IV showed important shortcomings in contraceptive use. Among the high school students (Paper IV), contraceptive use at first and at latest intercourse was only slightly better than previously shown among students on vocational study programmes in Sweden and in line with what previously has been reported among a national sample of 17-year-old boys and girls from 1990 and from a sample of 408 students 16 years of age in 1999. Contraceptive use at first intercourse was lower than in a large survey among 11,000 British men and women performed in 1999-2001. The investigators found that only a minority of the participants had unprotected first intercourse and the proportion of teenagers with a sexual debut before the age of 16 seemed to have stabilized around 30% after an increasing tendency up to the mid-1990s. Four in five among 16-24 year-olds reported condom use at first intercourse and one in five of the young women reported OC-use at first intercourse. School was the main source of information about sexual matters and there was an association between school education and risk reduction. The authors concluded that education efforts and social services could be ways of reducing early teenage pregnancy.

Condom failure and problems in the use of OCs were the most commonly reported contraceptive failures in Paper I. This is in accordance with other studies and shows that a back-up-method like ECP is something that any woman could be in need of, which was also pointed out by the respon-
dents in a previous study\textsuperscript{14}. The number of women who had actually tried to prevent the current pregnancy by using ECP was very limited, 3%.

In a second part of the questionnaire to the women in Paper I, the reasons for this were explored\textsuperscript{15}. Among the 75 women with previous experience of ECP, 27% were unaware of pregnancy risk and 23% took the risk. An obvious limitation to the use of ECP in order to prevent unplanned pregnancy is, of course, the fact that the pregnancy risk is unknown. This was also found to be the main reason for the non-use of contraception in the whole group and is in accordance with previous studies\textsuperscript{119, 134, 166}. Many women seem to be unaware that an investigation regarding the “fertile-window” has shown that a pregnancy can occur almost any day in the menstrual cycle\textsuperscript{160}. An important message to both men and women should, thus, be that every act of unprotected intercourse carries a risk for pregnancy and a need for ECP.

The finding in Paper I that the women were motivated to use more effective contraceptive methods after the abortion is an important message and great emphasis should be placed on the provision of follow-up visits. The possibility of an improvement in contraceptive practices has been supported in earlier studies\textsuperscript{25, 35} and even if a large proportion, 43%, of the women had previous induced abortions the majority applied for their first abortion. It is likely that the period in connection with this stressful life-event is a period well suited for behavioural change.

Falk et al. (2001) showed that earlier users of ECP had a four-fold higher risk for an unwanted pregnancy than the national rate for women of corresponding age\textsuperscript{47}. Their finding and our finding that 43% came for a repeat abortion, supports the idea that advance provision of ECP to these groups could prevent further unintended pregnancies. So far no study has been able to show any major negative effects of routine provision\textsuperscript{45, 56, 120, 130}, but more investigations in different settings are needed before this can be completely ruled out.

Current knowledge, attitudes and use of ECP in Sweden

Study II was the first population-based study in Sweden regarding ECP, but it confirmed many of the findings in earlier surveys\textsuperscript{15, 76, 151}. Awareness of the method was very high and it was impressive to note that 98% of the women had heard about the method. We believe that this could be due to the recent deregulation in 2001, when there was extensive media-coverage about the method and also some debate regarding pharmacists who refused to expose the product. When media-attention decreases it is possible that this high awareness could be affected, so repeated measures are needed also in the future.

Earlier studies had shown that specific knowledge about ECP was lacking and this was also found in the present study\textsuperscript{14, 15, 76}. One could, of course, argue that specific knowledge about the method is not a prerequisite for cor-
rect use, because it is possible to acquire more knowledge in case of need. But we think that confusion with abortion methods may be an important obstacle for use. This was particularly clearly shown in a focus-group discussion among Swedish teenage-girls regarding ECP, when the participants stated worries about a preparation; “so strong that it could kill a baby”14. The exact mechanism of action is not yet fully understood, but one simple message possible to communicate to men and women is that ECP is a contraceptive method and not an abortion method.

During our period of investigation the method of choice for ECP changed from the Yuzpe-method to the levonorgestrel method. This may be one explanation why women overestimated the risk of side-effects with ECP. All women with previous experience of ECP in Paper I had used the Yuzpe-method and some of the women in Papers II–IV with previous experience of ECP-use may also have used the Yuzpe-method, whereas use during the previous year in Papers II-IV refers to the levonorgestrel method.

One main motive for the investigation was the previous deregulation of ECP which in many ways was an important landmark in the history of contraception in Sweden. Not only was this the first time for any hormonal contraceptive pill to be sold without a prescription, but it also involved a new group of professionals, pharmacists, in the group of providers. Earlier studies in different countries have shown ambivalent feelings toward ECP among different provider-groups23, 66, 136, 169, but a Swedish study among nurse-midwives and pharmacists showed mostly favourable attitudes in both groups17. They were also positive towards a mutual future collaboration within the field of counselling about sexual health, and guide-lines for such a co-operation are needed. The women in the study had expectations of relevant information from the pharmacists but many also pointed out the importance of anonymity and easy access as important advantages with the pharmacy.

In contrast to what was found in some studies before deregulation14, 15, 76, when many women had worries about OTC-sale of ECP, most women in study II favoured this new means of access and would prefer to visit a pharmacy in case of need. This was also confirmed in a multi-centre qualitative study among women who had purchased ECP without a prescription52. The majority of women appreciated the rapid access to the method and knew how to use it properly. Many participants described that the ECP-experience had led to more consistent use of regular methods. This has been demonstrated in other studies108, 129, but there are also studies indicating a more risky sexual behaviour among ECP-users47, 88, 118, 127, 135.

For some women in Study II, on the other hand, it was obvious that pharmacies were not their first choice, so family planning services, and especially Youth Clinics, need to continue to have open doors for this group of clients. In the present study (Paper II), it was obvious that ECP-users had better knowledge of, and a more positive attitude towards, the method, but
we found no sign of “overuse”. The majority had only used the method once and only 10% of the women had used it during the previous year, after the deregulation. A recent review about the OTC availability of ECP concluded that there seems to be minimal risks for unintended health consequences31.

The mass-media campaign
The evaluation of the KAPPA-project showed a very limited impact of the intervention although a majority of the targeted woman had noticed the campaign. This was a more disappointing finding than the two previous media-campaigns about ECP from the U.S.A and from Mexico69, 147. Many factors could contribute to this difference. Our intervention included a comparison group, which was not the case in the other studies. If we only had used a pre- and post-design we would have found changes over time, but the inclusion of a comparison group revealed that this change occurred also in that group, indicating a secular trend or an effect of the pre-test questionnaire.

One possible explanation of the limited effect could be lack of resources. If more money had been put in to the campaign we could have used more information channels, for example local television, and also exposed the message during a longer period. This would have increased both duration and intensity, factors suggested to be important for successful interventions156.

Unfortunately, our efforts to include nurse-midwives as a face-to-face information channel did not succeed. This was a surprise, since an earlier investigation had shown favourable attitudes towards ECP in this group17. The nurse-midwives had also reported that they often engaged in routine information about ECP. We can not fully explain this gap between self-reported practices and the out-come measure regarding information received from the respondents in our study. Again, lack of resources could be an explanatory factor, but we also have to admit that routine information may have very limited effects. However, in contrast to our finding, Little and co-workers (1998) showed that delivering a brochure and posing some simple questions regarding contraception had a positive impact on contraceptive knowledge101. It is possible that a more rigorous research protocol with pre-formulated questions could have helped the nurse-midwives to do better in this part of the intervention. This may need to be evaluated in future research.

Both the intervention group and the comparison group in Paper III had changed over time, indicating a secular trend of gradually increased knowledge, improved attitudes and increased use of ECP. This trend is promising and shows that the method is becoming more accepted and used. In spite of this increased use, also shown in the sale figures in Figure 3, there is no sign of an impact on abortion rates in Sweden.
Many authors have claimed that increased use of ECP might have dramatic effects on abortion rates\textsuperscript{49, 57, 61, 62, 68, 146}. This has not yet been proved and has to be questioned until more evidence can be demonstrated. The question still remains in Sweden; if more than 150 000 doses of ECP were sold and administered during the year 2002, how many extra abortions were avoided? A total of 33 365 (19.6/1000 women) induced abortions were performed during the same year, an increase over 2001 when 31 772 (18.7/1000 women) abortions were performed\textsuperscript{8}. We must admit that ECP does not seem to be a simple solution to the problem of undesired pregnancies but must be considered as being only one of many tools in the strategies for preventive work.

The school-based campaign

The period of adolescence is a significant period in personal and sexual development\textsuperscript{24}, and sexual health education programmes are often directed towards teenagers. When designing the VIP-project (Paper IV) we took into account the concerns found in previous investigations that ECP may pose a threat to regular contraceptive use among the youngest\textsuperscript{14, 16}. We therefore included promotion of, and easy access to, condoms alongside the information campaign about ECP as an emergency solution and a back-up method if regular contraception fails.

Going through the literature we found a wide variety of intervention designs, ranging from one single lesson to extensive programmes of 40 sessions\textsuperscript{64, 90, 110}. An important guideline for tailoring the project was that it should be possible to implement in any Swedish secondary school with the resources available for regular sexual education.

The students’ sexual and contraceptive experiences included some of the factors that previously have been shown to be associated with a more risky sexual life-style; a large proportion of individuals with early coitarche and high incidence of first-date intercourse\textsuperscript{40-42, 91}. They were therefore well suited for the intervention.

The students in Study IV had good knowledge of how to use a condom already at baseline, but attitudes were shown to be quite negative. This was also found in a recent study among Youth Clinic attendees in Sweden, although three out of four acknowledged the benefits of condom use\textsuperscript{35}. The most cited advantages were \textit{protection against infections} and \textit{protection against pregnancy}. Another study from Hungary among 3 486 secondary school students showed that positive opinions about condoms were associated with higher condom use\textsuperscript{65}. Most negative attitudes towards condoms among the students in Paper IV remained unchanged after the intervention but both groups considered it less embarrassing to buy condoms at follow-up.
The effect of the intervention regarding ECP had another pattern. Knowledge increased and attitudes improved but the use remained stable. Our study confirmed the result of a previous trial in the U.K with a teacher-led lesson showing a significant improvement in knowledge of ECP at 6 months follow-up among both boys and girls aged 14-15 years\textsuperscript{60}. The trial had no impact on sexual behaviour among these young teenagers.

In spite of the increased knowledge of ECP, there was no significant increase in the use of ECP in either group and few considered that their own contraceptive use should be influenced. On the other hand, more than half of the students feared that unprotected sex could increase as a result of the introduction of ECP. This is a somewhat contradictory finding but is possibly explained by the fact that people tend to believe that other people behave more irresponsibly than they do themselves. The study did not support the idea that adolescents would shift from regular contraceptives into the use of ECP. One multi-centre study investigated what would happen if women were to use ECP as their only contraceptive method\textsuperscript{163}. Nine women out of 295 became pregnant showing a Pearl-index failure rate of 6.8 pregnancies per 100 woman-years of use and one third of the women interrupted participation in the study mainly for bleeding disturbances. The authors concluded that ECP is unsuitable for regular use and should be kept as an emergency solution. This opinion was supported by the women in Paper II who, in their comments about the method, repeatedly argued that ECP only should be used as a last resort.

One positive finding in the school intervention (Paper IV) was the difference over time regarding the opinion that ECP is a kind of abortion. This attitude was found among a third of the women in Paper II and the media campaign (Paper III) was not powerful enough to have an effect on it. We think that this confusion with abortion methods is due to the introduction of medical abortions in Sweden during the same time-period as the introduction of ECP. It could also be caused by the belief that conception occurs during sexual intercourse and that any method applied \textit{after} an unprotected intercourse interrupts a possible pregnancy. The class-room situation with the possibility of personal communication between sender and receiver of the message seemed to be more suitable for a discussion about this rather complex issue. We think that face-to-face communication between a counsellor and a client at a family-planning service also could have this effect, even though we did not manage to show it in Paper III.

The telephone counselling was not useful for the students. We can only speculate about the reasons, but hopefully it indicates well-functioning services for adolescents in Sweden. Many students already had good knowledge of contraceptives and it is possible that they did not feel any need for additional information. School-nurses were available for everybody and the 28% of the students who requested free condoms contacted the school-nurse. The most common contraceptive method at latest intercourse was the OC and in
connection with obtaining a prescription these students established contact with a family-planning unit. Adolescents are also using other sources of information, for example the Internet. Some recent investigations have found that young people find it a valuable resource that crosses barriers. 

Theoretical applications

We did not find any evidence for the usefulness of the SOC scale in relation to contraceptive issues (Paper IV), but this may need to be further investigated. It was a bit alarming that the girls scored lower than the boys, a finding consistent with a Swiss study but in contrast to a Danish investigation. It is, however, important to note that since our sample was not randomly selected we do not know if teenage girls in general score lower than teenage boys.

The awareness of ECP was high already at baseline in both intervention studies, and the main sources of information about ECP were friends and media. Other studies of ECP in Sweden have revealed that in 1999 the main source of information in a group of adolescents was the local Youth Clinic, which must be considered as an important change agent having played a key role in the first stage of the innovation process. They interacted with the presumptive adopters in order to convince them about the benefits of the new innovation. Another important concept in the Diffusion of Innovation Theory is the information channel. The women in Paper II stated that the media was the most important source of information (Figure 9) and in a study from 1998 friends were most often cited, followed by the Youth Clinic.

Mass media, the most effective channel for raising awareness, have successfully contributed to the current high awareness about ECP in Sweden. The interpersonal communication channels between early adopters and later adopters, friends talking to their friends, have also shown to be an important channel. It is considered to be most effective in the persuasion phase when favourable attitudes and a decision to adopt the innovation are formed. Friends have a higher degree of homophily which leads to more effective communication, but both friends and the media may have inadequate knowledge, leading to the spread of misconceptions. Professionals, on the other hand, are presumably more knowledgeable but have the disadvantage of a greater degree of heterophily. This difference between individuals might lead to problems in securing effective communication and might be one explanation of the limited effect of the information delivered by nurse-midwives in Study III.

In light of the Diffusion of Innovation Theory, we think that another important reason for the limited effect in Study III was that the adoption of ECP in Sweden already had passed the stage when media campaigns are most useful - for raising awareness. The campaigns in the U.S.A. and Mex-
ico had the advantage of starting from lower levels of awareness \cite{69, 147}. We also aimed at improving rather detailed knowledge about ECP since our previous studies had found it to be lacking \cite{14, 15}. Mass-media campaigns with short one-way messages can not provide the same possibility of reflection as interpersonal communication and interaction, and may be unsuitable for this kind of more complex information.

The willingness to use ECP in case of need was not affected by any of the interventions, but in both samples it was shown to be high, 74\% and 81\%, already at baseline, clearly higher than the 57\% of the abortion applicants in Study I who, in the additional study by Aneblom (2002), declared that they would have used ECP if it had been available at home \cite{15}. These findings support that the innovation-decision process has moved through the first three stages, knowledge, forming an attitude, decision to adopt or reject and is currently in the stage of implementation, since almost a third of the women in Papers III and IV had used the method at follow-up.

One of the reasons for the choice of the Health Belief Model \cite{22, 72} as a guiding frame-work was the concept of likelihood of taking action which was transferred into one of the main outcome variables, intention to use ECP in case of need. Other important and useful concepts for the intervention studies were the concepts of self-efficacy and perceived barriers and perceived benefits. Fear of side-effects with ECP was shown to be one of the barriers to use, since 24\% of the women in Paper II stated that they would hesitate to use ECP because of side-effects.

It was a promising finding in Study IV that although attitudes towards condoms still remained doubtful, more students had actually used condoms after the intervention. We believe that the reduced costs and easier access to condoms during the intervention year may have contributed to this finding. This implies that even if it is not possible to reduce all barriers for condom use according to the Health Belief Model, improved self-efficacy by the practice of skills and/or increased availability could be enough for the benefits to outweigh the barriers for a number of individuals.

Implications for the future

There are indications that sexual health is currently moving in an unfavourable direction in Sweden; the increasing numbers of induced abortions, especially among teenagers \cite{8}, as well as the increasing incidence of STIs in Sweden \cite{10} are worrying and call for action. The area of sexual health is complex and includes many different issues, like biological and psychological development, health and disease, culture and religion, social interaction, ethics, legislation, and political and economic considerations.

Sexual health is also a multi-professional challenge. Politicians, policymakers, researchers, physicians, social workers, teachers, nurses, midwives, journalists… we all need to collaborate and contribute in the promotion of a
healthy sexual life style, preventing undesired consequences of sexuality, counseling and treating individuals at risk or with various problems related to sexual health.

More research is needed in connection with contraceptive counseling to improve both quality and cost-effectiveness. Special attention should be given to more vulnerable groups in society like adolescents and immigrants. The question of male involvement is crucial. Post-abortion counseling constitutes an important challenge and different models should be tested, preferably with randomized controlled trials.

Out-reach activities, for example sexual education in school, are important and a mutual responsibility for health workers and school-leaders. There is currently some evidence of beneficial effects, but more investigations in different settings are needed because individuals and environment are constantly changing. Sexual education should be included in the curriculum for teacher-training and guidelines for the content of sexual education programmes should be established.

New contraceptive methods, acceptable to both women and men, should be developed and introduced for prevention of unintended pregnancies. Methods proven to be effective should then be widely disseminated and promoted. Emergency contraception seems to be a valuable and safe method and should be available to everybody. Advance provision has not been proven to have negative consequences and could be considered for some groups.

Even in the best of worlds - unintended pregnancies will continue to occur. Every country in the world must deal with this reality and discuss how, where and when to offer safe abortions and good-quality care in relation to them for both women and men.

No one has expressed the vision for reproductive health better than one of the pioneers, the founder of The Swedish Association for Sexual Education in Sweden, Elise Ottesen-Jensen:

I dream of the day when every child that is born is welcome, when men and women are equal, and sexuality is an expression of intimacy, joy and tenderness.
CONCLUSIONS

The abortion decision is complex and difficult and women seek advice and support among family and friends. Socioeconomic reasons as well as family planning and relational aspects seem to be the most important reasons for an early termination of the pregnancy.

Many abortion applicants had a history of previous induced abortions. Inadequate contraceptive practices and insufficient knowledge about the fertile window may contribute to unintended pregnancies. Good counselling, including information and advance provision of ECP together with a close follow-up, could be ways of reducing the risk for repeat abortion.

Emergency contraception is gradually becoming a more known, accepted and used contraceptive method in Sweden. Almost all women were aware of the method but detailed knowledge was lacking and attitudes were unfavourable in some respects. One-fourth to one-third of the women had used the method, but there was no sign of overuse, only a minority had used it repeatedly.

The OTC-availability was appreciated by most women because it is fast, easily accessible and guarantees anonymity. Pharmacy staff were considered to be able to provide sufficient information. Some women pointed out the need for counselling and favoured requesting ECP in a clinic. Both options should therefore be available.

Repeated measures indicated that knowledge, attitudes and practices of ECP changed over time, a result that limited the effect of an information campaign. Mass media campaigns may work better in raising general awareness about ECP in settings where the method is little known.

In spite of high motivation among nurse-midwives the effort of including routine information about ECP in contraceptive counselling was unsuccessful. Engaging personnel in a health promotion campaign is a demanding task and requires skill training as well as allocation of time and resources.

The sexual and contraceptive practices among the students on the two cho-
sen vocational high school programmes were in line with earlier investiga-
tions, and showed some indicators for a risky sexual life-style; high propor-
tion of early coitarche and a high rate of first-date intercourse. Special atten-
tion should therefore be given to sexual education for students on vocational
study programmes.

The intervention reached one important goal; to improve knowledge and
attitudes towards ECP without jeopardizing condom use. In fact, condom
use increased, possibly as a result of decreased barriers for use in the form of
expanded availability, focused discussions and skill-training in relation to
condom use.

The diffusion of ECP in Sweden seem to have gone through the stages of
innovation development, dissemination, and adoption and has reached the
stage of implementation since the studies indicated a general awareness of
more than 90%, an intention to use in case of need of more than 70%, and
own experience of use of around 30%.

The presumed effect of ECP on abortion rates may be over-estimated. Easy
access to ECP is important and should be implemented all over the world,
but it is only one of the tools in the prevention of unintended pregnancies.

Nurse-midwives and students within the health care sector could be useful
resources in out-reach activities, for example sexual education in schools.
School nurses are well suited to incorporate issues about sexual health in
their every-day work among adolescents.
ACKNOWLEDGEMENTS

This thesis is the result of many different people’s efforts and it would have been impossible to complete it without the contributions and support from you all. I wish to express my warmest thanks to:

Tanja Tydén, my main supervisor for encouraging me to engage in the new and sometimes frustrating world of scientific research. Your expertise and genuine interest in sexual health has inspired me over the years, and your mentorship has included an excellent balance of cooperation and independence. Thank you for always being accessible, for enormous amount of encouragement and support, for valuable criticism and gentle guidance through the erring paths of the academic world.

Ragnar Westerling, my co-supervisor for sharing your impressive scientific knowledge and your public health perspective. Your contribution through the intervention studies has been invaluable and I especially want to thank you for fruitful discussions in the analysis of the data.

Karin Eurenius, my co-supervisor for your excellent advice and valuable contributions throughout the work. Despite your own workload you have always managed to find opportunities for meetings which I have at all times left encouraged and enriched.

Ove Axelsson for accepting me as a PhD student at the Department of Women’s and Children's Health and for encouraging support

Torsten Tuvelmo, for welcoming me as a doctoral student, for financial contribution from the department, and for a kind interest in my work.

Viveca Odlind for your contribution to the first Paper, for sharing your excellent knowledge about abortions and contraception, for your confidence in midwives and for your friendly attitude.

Gunilla Lindmark for welcoming me to the unit of IMCH and your research group where I have enjoyed working in a friendly and stimulating atmosphere. I have appreciated your scientific advice and support as well as our chats in the coffee room.

Gunilla Aneblom, my dear friend, colleague and co-researcher. This would really not have been possible without you. We have shared so many events, journeys and hard work during these years and experienced both joy and distress. You are and will always be my dear “soul-mate”.

Elisabeth Häggström-Nordin, Agneta Skoog-Svanberg, Kristina Stenson, Christine Rubertsson, Karin Gottvall and Pia Olsson, colleagues and friends.
You are all very important people to me and it has been a fantastic experience to travel along the scientific road together with you all, thank you for friendship, fruitful help and constructive criticism.

Karin Törnblom for encouraging interest and support in all matters related to finances and administration, not to mention the layout of the summary for the thesis.

Kristine Eklund for always being available when I needed your help with both the “hard” and the “soft” wares.

Karin Wennquist, Vera Holmgren and Inga Andersson for gently guiding me through the administrative academic jungle.

All my friends at IMCH and especially my room-mates Thuba, Ilze, Iryna and David. I have been sharing every-day-life and many unforgettable moments with you for two years. This work would not have been half as fun without you.

Nigel Rollison for careful linguistic revisions of the papers and the summary. Nobody would have understood what this book is all about without your contribution. Thank you!

Patrik Öberg and Sylvia Olofsson for statistical advice. Your help and support in the statistical procedures have been invaluable.

Charlotte Stenermark and your “colleagues” in the IFMSA in Uppsala. It was very stimulating to collaborate with you in the VIP-project and I am sure you will all be excellent physicians.

Eva Furuland, Karin Arvidsson, Emma Bodén, Marja Schuldt, Anna Fredriksson, Linnea Ryttander, and Frida Silén for valuable help with the data collection.

Margaretha Rehnberg, Els-Britt Karlsson and all my friends and colleagues in the Women’s Health Care for support and encouragement and allowing me time-off for this work. I look forward to work with you again.

Birgitta Fasth for your kind interest and contribution especially in the information campaign when you provided and distributed posters and brochures all over the county.

All the staff at the clinics in Uppsala, Västerås and Örebro. Without your help the data-collection would have been impossible.

All the principals and teachers at the eight high-schools who generously helped me with the data-collection in the class-rooms.

My friends and relatives all over and especially my father Nils Bådagård. I promise you more telephone calls and dinner invitations from now on. Thank you for being so patient with me!

My husband Lars-Anders, my children Ina, Hanna, Ylva and Emil. You will always be my most important people and I really want to thank you for your loving support during this work. When envelopes have been floating all over the house, when computers did not work, when data needed to be entered, when the house needed cleaning; you were always there and took care of it all.
And, finally, thanks to all 1545 individual women and men who have taken time to participate in the different studies.

The studies were supported by financial grants from: The Swedish National Institute for Public Health, The Family Planning Fund in Uppsala, The County Council of Uppsala, The Swedish Federation of County Councils, The Faculty of Medicine and the Departments of Women’s and Children’s Health and Public Health and Caring Sciences at Uppsala University.
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A doctoral dissertation from the Faculty of Medicine, Uppsala University, is usually a summary of a number of papers. A few copies of the complete dissertation are kept at major Swedish research libraries, while the summary alone is distributed internationally through the series Comprehensive Summaries of Uppsala Dissertations from the Faculty of Medicine. (Prior to October, 1985, the series was published under the title “Abstracts of Uppsala Dissertations from the Faculty of Medicine”.)