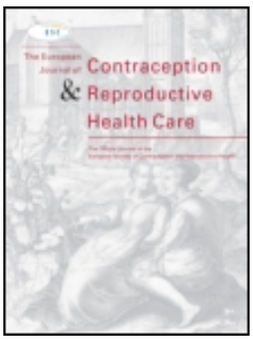

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REVIEW

Contraception for adolescents after abortion

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ABSTRACT **Introduction** Preventing repeated unplanned pregnancy among adolescents is still a challenge because many of them fail to use effective contraception after abortion.

Objective To review currently recommended options of methods and counselling for effective prevention of repeat pregnancies in adolescents.

Methods Review of the literature that was identified through the Medline, ScienceDirect, Google and Popline databases and relevant expert opinions.

Results Counselling needs to be adapted to the needs, values and lifestyle of adolescents. The best results are achieved with nondirective or active contraceptive counselling, followed by regular check-ups and cautious and attentive approach in the management of doubts, prejudices and side effects related to the contraceptive chosen. Adolescents should initiate contraception immediately after abortion: the motivation for choosing an efficacious method is highest at that time; resumption of ovulation following induced abortion occurs on average after three weeks; more than half of these girls will resume sexual activity within two weeks after pregnancy termination. Long-acting reversible contraception use during adolescence is safe and most effective. However, achieving a high long-term continuation rate is especially challenging in adolescents; this is due to developmental and environmental characteristics that influence their contraceptive behaviour.

Conclusion Adolescents should immediately after abortion initiate a reliable contraceptive method, preferably one whose efficacy is not user-dependent. Providing an appropriate health care would contribute to achieving continuity in the prevention of repeat pregnancy.

KEYWORDS Adolescent pregnancy, Induced abortion, Adolescent girls, Contraception after abortion

INTRODUCTION

The rise in sexual activity during adolescence started at different times in various regions of Europe since the 1960s and was followed by a gradual increase in the use of contraception at first sexual intercourse[1]. However, the consistency of contraceptive use later on is a matter of concern as youths tend to have irregular sexual encounters and overlook pregnancy prevention in the long term[2]. In the study from Ukraine, 52% of adolescent girls requesting abortion previously used no contraception or natural family planning, and 38% relied on a condom, while only 10% used highly effective methods[3]. According to the data from the respective national registers, low prevalence of modern contraception use before termination of pregnancy (TOP) was evidenced also in Finish teenagers, as 6% to 9% of them used combined oral contraception (COC) between 1987 and 2009[4]. Condoms are the most popular contraceptive among adolescents across

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Europe. In Finland, that method was utilised by about half of youngsters prior to TOP[4]. In a study from France that analysed data from the national survey of abortion patients that was conducted in 2007, 31% of girls who underwent TOP used condom and 21% COC in the month of conception. However, due to contraceptive failure unplanned pregnancy happened to 84% of condom users and 93% of COC users[5]. In Spanish biannual representative surveys on contraceptive behaviour of fertile women, a steady increase in contraceptive use was observed among girls aged 15 to 19 years from 1997 to 2007. The rate of condom use rose from 14% in 1997 to 42% in 2007, and the COC use from 5% to 12%. Although a similar trend in contraceptive utilization was apparent in all age groups of Spanish women, total abortion rate in same period increased from 5.5 to 11.5 per 1000 women 15 to 49 years[6].

Many adolescents experience unplanned pregnancy because they don't use contraception. According to several studies, the respective shares of these girls in 2007 were 40% in Spain, 34% in France and 39% in Finland[4–6]. Reasons for not using contraception were explored in a qualitative interview study that included 24 teenage girls who underwent abortion in England. It was revealed that these young women got pregnant because they failed to take contraception regularly, didn't think about the consequences, couldn't control sexual drive, had intercourse under the influence of alcohol, or were unable to cope with partner's resistance towards condom use[7].

In countries which have reliable statistics on teenage pregnancies a considerable proportion of these appear to end in an abortion[8]. A study that investigated cross-country and regional variations and trends in reported adolescent pregnancies in the European Union (EU) revealed that no data were available on abortions for Austria, Cyprus and Luxembourg, while countries with restrictive legislation, like Ireland, Malta and Poland, reported no teenage abortions[4]. In the remaining 21 countries of the EU the mean teenage abortion rate amounted to 12.2 (per 1000 girls aged 15 to 19 years) in 2009. However, abortions were incompletely reported in Latvia, Lithuania, Romania and Greece, so that the teenage abortion rate in that year was possibly higher than calculated. Approximately two thirds of adolescent pregnancies end in abortions in Sweden, Denmark, France, Finland, the Netherlands, and about one third in Lithuania, Bulgaria, Slovakia and Greece. In another study that explored the incidence of abortion worldwide, a significant decrease in teenage abortion rates was observed during the last two decades in the Eastern European countries. In the Russian Federation, among women younger than 20 years of age, it dropped from 44 per 1000 in 1996 to 25 per 1000 in 2003[9].

Nevertheless, many adolescents still have to cope with induced abortion. Unplanned and unwanted pregnancy is a stressful experience, especially in adolescents. Even in countries with liberal abortion laws, that enable teenagers to obtain a safe abortion without parental consent, they are more likely to experience short-term psychological distress such as anxiety, sadness, guilt and regret, than older women[10].

Unfortunately, some adolescent girls will face another unwanted pregnancy. In Finland, according to secondary analysis of the data derived from the national registry on induced abortion, the incidence of repeat abortion in adolescents steadily increased from 9% in 1993–1995, to 14% in 2007–2009[4].

The aim of this paper is to review currently recommended options of methods and counselling for effective prevention of repeat abortions in women younger than 20 years.

METHODS

The literature review included articles written in English, published between January 2000 and June 2015, that investigated different aspects of contraceptive use and counselling before and after abortion in adolescents. These articles were identified through the Medline, ScienceDirect, Google and Popline databases. Reference lists of these articles were searched for additional literature. Expert opinions on relevant issues were also included.

RESULTS

There are several important special characteristics with respect to contraceptive counselling and care in the context of abortion, namely: (i) timing of contraceptive initiation after abortion; (ii) contraceptive counselling; (iii) eligibility of contraceptive methods; and (iv) efficacy with respect to prevention of repeat abortion.

Timing of contraceptive initiation after abortion

It seems that the first-trimester surgical abortion has no negative impact on the resumption of ovulation, as ovulation usually takes place before the end of the third week[11]. Similar are the findings regarding medical abortion, as the antiprogestogen mifepristone, used orally in a dose of 200 mg, has no lasting effect on ovarian function. This was established in a multicentre randomised trial from the United States that included women who had had a successful abortion by means of 200 mg mifepristone followed immediately or 24 h later by misoprostol 800 μg administered vaginally. All subjects used nonhormonal contraception after abortion, until study completion. Baseline serum progesterone levels were determined on day 8 ± 1 after mifepristone administration and then twice weekly, until the increase in progesterone level indicated ovulation. Resumption of ovulation following medical abortion occurs on average after three weeks although it may happen as soon as eight days after[12].

Women resume sexual activity soon after TOP, especially if they are young, as confirmed in a study from Denmark that included about 1000 women who underwent first-trimester abortion. Within two weeks, 61% of women younger than 24 years had had sex, compared to 48% and 42% of women aged 25 to 34 and 35 to 45 years, respectively. However, a lower resumption frequency after two weeks was observed in women with a long duration of bleeding, those who needed additional surgery retained products of conception (POCs) after their medical abortion, but at the eight weeks follow-up no lasting effect of these factors was observed[13].

Women are particularly motivated to start using a highly effective contraceptive immediately after induced abortion. That was confirmed in the secondary analysis of the study on contraceptive preferences of three groups of women from the United States. The first group did not have an abortion recently, whereas the other two groups had but differed in the timing of contraception provision after TOP. Women from the second group, who received immediate post-abortion contraception, were more than three times as likely to choose the intrauterine device (IUD), and 50% more likely to opt for an implant, compared to both women without a recent abortion or those from the third group that were offered a delayed initiation of their contraceptive method. Regarding long-acting reversible contraceptives (LARCs), respondents younger than 21 years had a preference for implants, rather than IUDs[14].

Contraceptive counselling after induced abortion

Teenagers undergoing medical abortion should receive contraceptive counselling not later than on the day of misoprostol treatment. If they have selected a contraceptive, the latter should be prescribed immediately. Those who are hesitant about their contraceptive intentions should be advised to abstain from having sex until they return for the confirmation that abortion is complete in two weeks. If still reluctant to choose a contraceptive method, these adolescent girls need additional counselling[15].

In general, teenage girls may use all reversible contraceptive methods, as age alone is not a contraindication for any of these[16]. Their contraceptive choice should be supported by evidence-based counselling. It is necessary to present relevant information about the methods which they consider appropriate, assess whether they are medically eligible to use these, and assist them to make an informed choice. Special attention must be paid to the promotion of dual protection, or use of methods that prevent both pregnancy and sexually transmitted infections (STIs)[17].

Adolescents expect the counsellor to be a good practitioner, whom they can trust and speak to when needed. Of special importance for them are the issues of privacy and confidentiality, and the involvement of parents in the decision-making process if they agree, only. It is essential to assess the readiness of adolescents for change, their motivation, personal facilitators and barriers, their knowledge and myths that could influence contraceptive choice[15,18].

Youths will be most satisfied by nondirective counselling that provides relevant information and an overview of the options, and assists them in freely making a decision. Particularly appealing for adolescents is active counselling that would help them to understand how a particular method of contraception would correspond to their needs, values, preferences, aspirations, and lifestyle[15,19].

To prevent information overload during counselling, it may be useful to prioritise more effective methods. The adolescent is successively taken through three categories of methods, until the good choice is made. *Category A methods* are those that are highly effective and adherence-forgiving, with low typical use failure rates. This category includes intrauterine contraception, progestogen implants and depot-injectables. *Category B methods* are those which are effective but depend on compliance, like the COC, the patch, the vaginal ring, and progestogen-only pills (POPs). The characteristic of these methods is the significant difference between perfect and typical failure rates, with the latter being much higher than the former. *Category C* includes methods that are less effective but also very adherence-demanding, like condoms, diaphragm, sponge, fertility awareness, withdrawal and spermicides[15].

Even when making a good contraceptive choice, teenage girls may face a repeat unplanned pregnancy due to discontinuation of contraception or change to another method. Reasons for stopping the use of contraception or for switching to another method, as well as characteristics of women who are prone to such changes, were explored in a prospective cohort study called Contessa. A sample of 1091 women of reproductive age was drawn from a random probability survey that was held in England in 2006. The baseline investigation was conducted in 2008, and included 893 women who were at that time both fertile and sexually active. Their contraceptive behaviour in the year that preceded investigation was explored by a specially designed questionnaire. One third of the study group (35%) had not used the same method continuously throughout the year. These 'stoppers' and 'switchers' were younger, better educated and more likely to be single. The main reasons for discontinuation or change of the contraceptive method were ease of use, reliability, side effects, partner's pressure or concerns over adverse health effects[20].

Eligibility of contraceptive methods

Although the evidence on record indicates that LARCs are the most effective, adolescent girls will decide which method of contraception best meets their beliefs, needs and lifestyle. In what follows, efficacious methods will be discussed, whereas fertility awareness methods and those rarely used by adolescents, like spermicides, diaphragms, cervical caps, and voluntary sterilisation, will be omitted.

Combined and progestogen-only oral contraception, combined patch and vaginal ring

Oral contraceptives, both COCs and POPs, as well as the contraceptive transdermal patch (CTP) and the vaginal ring (CVR) can be started on the day the abortion took place[21]. Exceptionally, the use of the CVR may be delayed for two or three days in women with heavy bleeding, although it is unknown whether heavy bleeding after medical abortion reduces its contraceptive efficacy[22]. If not started in the first five days after misoprostol treatment, additional contraceptive protection is necessary during seven days of use with any of the aforementioned combined hormonal contraceptives, and two days with a POP[16,23,24].

Initiation of COC use immediately after abortion has no impact on complete abortion rates, blood loss, duration of bleeding, and incidence of side effects, according to a systematic review that evaluated results of three randomised controlled trials (RCTs)[25]. The first one investigated whether treatment with COC or methotrexate at the time of a successful medical abortion would have an impact on the duration of bleeding thereafter. With respect to COC use, the findings indicate no differences between women who were randomised to receive 30 μg ethinylestradiol (EE) and 150 μg levonorgestrel (LNG) daily starting either immediately after abortion or on the first day of their next period, as the number of bleeding days in both groups varied in a wide range (9 to 45 vs. 6 to 34 days, respectively). Still, the next bleeding occurred sooner and was more predictable in the group that initiated COC immediately after abortion than in the other group[26]. Two other double-blind placebo-controlled randomised studies, conducted in Hong Kong, used a similar design to evaluate the bleeding pattern after medical abortion following immediate initiation of intake of either a COC containing 30 μg EE and 150 μg LNG or a placebo[27,28]. In neither study were differences in the rates of complete abortion, incidence of side effects, number of self-reported bleeding days and self-reported volume of blood loss observed between the two groups. In one

of those studies, in addition blood loss was measured; no difference was found between the groups[27]. Median blood loss was 70 ml in the COC group and 73 ml in the placebo group with two women, one in each group, who lost more than 400 ml. However, in both studies a transitory decrease in mean haemoglobin levels was found in the group of COC users; the authors hypothesised that this could have been caused by the increase in plasma volume due to fluid retention.

Although the immediate post-abortion period is an ideal time to initiate combined hormonal contraception because most women then are highly motivated, not pregnant, and have access to a HCP, clinicians could have concerns about a possible increased risk of thrombosis. In a systematic review of relevant literature[25], one cohort study was identified that compared changes in coagulation parameters in women who started taking a COC containing 30 μg EE and 150 μg LNG immediately after a first trimester surgical abortion and continued treatment for three cycles, with women who were fitted with a copper-bearing IUD (Cu-IUD). At the end of the first week, the levels of the coagulant Factor VIII activity and plasminogen were significantly higher, while activated partial thromoboplastin time and the concentration of antithrombin III were significantly lower in COCs users than among women wearing a Cu-IUD. No differences were found in fibrinogen, Factor VIII-related antigen or prothrombin complex between the two groups. After three months only plasminogen concentrations were significantly elevated among COC users compared with their baseline values. At six months, no significant differences were found for any of the coagulation parameters. From a clinical point of view, it is important that no thrombotic events were reported in the group of COC users[29].

Progestogen-only injectables

Progestogen-only injectables can be started immediately after first-trimester surgical abortion, as well as after mifepristone administration for medical abortion. If initiated in the first five days, no additional contraceptive precautions are necessary[21,30]. The satisfaction with timing after medical abortion and continuation rates of depot-medroxyprogesterone acetate (DMPA) were evaluated in a pilot study that included 20 women who – 15 minutes after ingestion of 200 mg of mifepristone – received an intramuscular injection of 150 mg DMPA, followed by the buccal administration of 800 μg misoprostol. As many as 95% of the women at the one year follow-up stated they were very satisfied with the timing of the initial DMPA administration. According to the 14 (out of 20) bleeding diaries that were available, the mean number of bleeding days after medical abortion was 19 (range: 8 to 29 days). However, 16 participants discontinued DMPA before the end of the first year, and one woman was lost to follow-up. The most frequently cited reasons for DMPA discontinuation were forgetting to come for the next injection and personal obstacles to attend health care in time for the next DMPA injection[31].

Implants

The contraceptive implant is a LARC particularly appropriate for young women, as DMPA can diminish bone mineral density, and IUD insertion can be painful in adolescents[21,32]. Insertion of the implant in the first days post-abortum will provide immediate pregnancy prevention[33]. The question was raised whether insertion may take place on the day of mifepristone administration for the first trimester medical abortion. That regimen may be convenient, especially if the woman will administer herself the misoprostol at home. Still, as progestogen and mifepristone compete in binding to progesterone receptors, one should take into account that the implant might reduce the efficacy of medical abortion. This concern was tested in a prospective observational study which measured the efficacy of medical abortion, as well as the related adverse events, in two groups of 39 women each. In the first group, the contraceptive implant was inserted at the time of mifepristone treatment, whereas women from the second group were provided with an alternative contraceptive method after abortion was complete. The efficacy of medical abortion was insignificantly ($p = 0.3584$) lower in the implant group (90%) compared to controls (97%). Furthermore, more women fitted with an implant required additional doses of misoprostol to terminate pregnancy than controls (59% vs. 50% respectively), although these differences were not statistically significant ($p = 0.6177$). The occurrence of complications, like

bleeding or retained products of conception, did not differ significantly between the groups[34].

Copper-bearing intrauterine device and levonorgestrel releasing-intrauterine system

The World Health Organization (WHO) documented that Cu-IUDs and the levonorgestrel releasing-intrauterine system (LNG-IUS) can be inserted after confirmation of complete abortion[21,35]. Initiation of either of these methods close to the time of abortion is effective and safe, according to a systematic review that compared (i) immediate IUD insertion after induced abortion with no IUD insertion; (ii) immediate with delayed IUD insertion after abortion; and (iii) insertion post-abortion of Cu-IUD or LNG-IUS[36]. Adverse events, like pain, bleeding, pelvic inflammatory disease (PID) or removals were not more common following insertion of either a Cu-IUD or the LNG-IUS immediately after abortion.

A team of investigators compared the expulsion rates and other adverse events six months after insertion of either a Cu-IUD or a LNG-IUS after medical abortion. Women aged 18 to 44 years were randomly allocated to early insertion (5 to 9 days after mifepristone treatment) or delayed insertion (3 to 4 weeks after mifepristone treatment). Significantly more women from the latter than from the former group (11% vs. 1.5%) did not attend the return visit during which insertion was to take place. Among women belonging to the delayed insertion group, 41% had unprotected sex before the device was fitted. The expulsion rate at six months in the early insertion group (10%) was similar to that in the delayed group (7%). Eight (13%) of 61 women fitted with a LNG-IUS and two (4%) of 55 who had a Cu-IUD inserted, with in both cases immediate and delayed insertions being combined, expelled the device. Ultrasound measurements of endometrial thickness at insertion could not predict expulsions; indeed, in the women concerned, it varied from 8 to 25 mm. Women fitted with a LNG-IUS immediately after abortion reported more bleeding days during the first four weeks, but at six months follow-up the number of days with heavy bleeding was significantly reduced. No differences in expulsion rates, bleeding pattern and discontinuation rates between young, nulliparous- and older, parous women were found[37].

Still, practitioners might be reluctant to use intrauterine contraceptives in adolescents. One may fear that these girls will poorly tolerate side effects, like bleeding and pain, compared with adults, and experience more complications, such as expulsions or PID, due to the increased risk of STIs. This dilemma was addressed in a retrospective cohort study from the United States, that compared 182 adolescent with 502 adult users of an intrauterine contraceptive (IUC) during the first six months following insertion. No significant differences were found between adolescents and adults in expulsions (9% and 6%, respectively) and removal rates (17% in both groups). Most common reasons for removal were pain and bleeding, while no significant differences were observed in the STI rates, specifically for chlamydia (4% in adolescents and 5% in adults) and gonorrhoea (no cases in either group). However, adolescent IUC users initiated more contacts with a HCP that were related to the contraceptive than adult users did (median of 2 vs. 1, respectively). Changes in bleeding patterns, pelvic or abdominal pain, string check and requests for removal of the device were the most common reasons in both groups[38].

Condoms

Condoms are considered less reliable contraceptives as 18 out of 100 women will experience an unplanned pregnancy during the first year of typical use[39]. If an adolescent girl decides to use this barrier method after an induced abortion, emergency hormonal contraception should be prescribed at once for situations of increased risk of repeat unplanned pregnancy due to condom failure[21,40].

Efficacy of contraceptive counselling for prevention of repeat pregnancies among adolescents

There is no evidence that contraceptive counselling and provision of an efficacious contraceptive method after abortion prevents repeat pregnancy in adolescent girls. No studies specifically focused on this age group, but in the systematic review of the effectiveness of contraceptive counselling provided to adult women in relation to an induced abortion, three RCTs of good quality were identified[41]. One of these, which

evaluated contraceptive use after four and six months, showed no difference between women from the intervention group who were interviewed at the time of the abortion by a specially trained family-planning nurse, and women from the control group who received standard care[42]. The second RCT investigated the impact of specialist counselling and provision of COCs, DMPA, implants, IUD/IUS and condoms, with a supply for at least three months, on their use after 16 weeks and the incidence of repeat unplanned pregnancies within two years after the index abortion. In the intervention group significantly more women used implants 16 weeks after abortion (19% vs. 5% in the control group), but also more experienced at least one unplanned pregnancy during the two years following the TOP (15% vs. 10%), although the difference was not statistically significant[43]. The third RCT explored whether subjecting women after an induced abortion to patient-centred counselling improves their contraceptive knowledge, attitudes and behaviour. With restraint in drawing conclusions because the sample used in this study was small, such intervention significantly improved knowledge and attitudes of women, and increased their use of contraception compared to controls who were encouraged to use a contraceptive method in the community health centres[44]. The authors of the aforementioned systematic review carried out a meta-analysis of these three RCTs which demonstrated no significant impact of counselling on post-abortion contraceptive use[41].

It was estimated that to prevent teenage pregnancies comprehensive interventions would be needed. The impact of preconception care for adolescents, women and couples of reproductive age on the maternal, newborn and child health outcomes was investigated in a systematic review. Regarding prevention of pregnancy in adolescence, 33 studies were identified. A meta-analysis was performed that included all RCTs addressing relevant interventions. The findings indicate that *neither* abstinence-based sex education *nor* comprehensive sex-education provided by adults; school and health centre-based interventions to promote contraceptive use, including free provision; easier access to LARCs or peer counselling, had a significant effect on reducing the risk of pregnancy in adolescence! On the contrary, good results were achieved with (i) comprehensive interventions that were community-based and integrated educational and vocational education, sports and arts; (ii) health care with free STI testing and provision of condoms, and (iii) youth education and development. The pooled analysis for all interventions directed towards reducing the incidence of first adolescent pregnancies showed a decrease of 15%, only[45].

DISCUSSION

Findings and interpretation

Adolescent girls should initiate contraception immediately post-abortum. Their recent negative experience with unwanted pregnancy and TOP may motivate them to objectively weigh up flaws in their previous contraceptive behaviour and to opt for a more reliable method. The longer the time that has elapsed since the abortion the less motivated the youth will have become to amend her contraceptive practice. Moreover, girls can get pregnant again while awaiting menstruation to initiate contraception[40].

The risk of repeat abortion is highest among women younger than 20 years of age. In a prospective cohort study of 1269 Finnish women who underwent medical abortion between August 2000 and December 2002, 174 (14%) had a repeat abortion before the end of December 2005. Among adolescents, the percentage amounted to 21%. Immediate initiation of any contraceptive method reduced the risk of repeat abortion as opposed to postponing the choice of contraception[46].

However, the quality of contraceptive counselling within abortion care and the attitudes of relevant healthcare professionals (HCPs) towards eligibility of different methods for minors of age can have a significant impact on the contraceptive choice of teenage girls who had an unwanted pregnancy. In the secondary analysis of the data from the French National Survey of Abortion Patients that included more than 1500 adolescent girls having an elective abortion, 20% of them were not provided with either a recommendation or a prescription for contraception. Most girls (66%) got a prescription for a COC, while LARCs were prescribed to 12%, only[5].

Effective contraceptive counselling of adolescents is especially demanding and complex, due to developmental characteristics of adolescents that may influence the contraceptive behaviour and counselling context. The counsellor may unintentionally affect

the contraceptive choice of the youth. In the Contraceptive Health Research of Informed Choice Experience (CHOICE) study from Switzerland 1032 adolescent girls were included. They were provided standardised information about three different types of combined hormonal contraception (pill, transdermal patch, and vaginal ring) and counselling that was neutral, i.e. did not reveal the HCP's relevant views. Before and after counselling the adolescents specified which contraceptive method they were keen on using. Among those who were undecided before the counselling, a vast majority after counselling selected the method that their HCP favoured, although a professional opinion was not openly disclosed[47].

Additionally, striking differences in contraceptive choices made after the end of pregnancy may be observed according to the adolescent's decision on pregnancy outcome, as found in a retrospective study from Portugal. Adolescent females who had an abortion preferred the COC (58%), and to a lesser extent the contraceptive implant (39%). On the contrary, those whose pregnancy continued until delivery favoured the contraceptive implant more (71%) than COCs (18%), while IUDs were chosen by a few (6%)[48].

Strengths and weaknesses of the study

In order to prevent unplanned pregnancy, the majority of adolescent girls would be given combined hormonal contraception. It seems to be the method preferred by a large number of health care professionals, as it is considered to be both efficient and safe. Adolescents like COCs, because of related non-contraceptive benefits, like improvement of cycle control, alleviating menstrual-related morbidity, and reducing acne and other signs of hyperandrogenism. This paper, though, indicates that LARCs are more efficient in pregnancy prevention. In a prospective cohort study of women from Finland with a history of induced abortion it was demonstrated that LARCs, like Cu-IUDs and LNG-IUS, are more effective than other contraceptive methods in preventing repeat abortion. In the multivariate analysis, compared to COCs, the hazard ratio of repeat abortion was 0.33 among Cu-IUD users and 0.39 among LNG-IUS users. Of different methods of contraception initiated within two months after the index abortion, the LNG-IUS had the lowest cumulative risk of repeat abortion at five years[46].

In this paper we have specified the elements of post-abortion contraceptive counselling of adolescent girls that can increase good satisfaction and compliance with the chosen method. Young women need wide-ranging health care strategies that are tailored to their developmental and environmental needs. A cohort study which investigated patient-provider interaction during family planning visits of 67 women aged 16 to 21 years at six clinics in San Francisco found that certain strategic actions increased the probability of hormonal or LARCs use at six-months follow-up. These were: high-quality interactive counselling; identifying individuals capable of motivating the youth to maintain contraceptive use; balancing lifestyle characteristics with contraceptive use; paying attention to relationship characteristics and sexual behaviour; discussing contraceptive myths and misconceptions; and efficient management of contraceptive method-related side effects[49].

On the other hand, this paper has certain weaknesses. First of all is that a few studies dealing solely with post-abortion contraception in the adolescent population were identified. Thus, it is difficult to draw evidence-based conclusions regarding that issue. Furthermore, multicentre studies that have been conducted among teenagers who live in different political, socio-economic and cultural environments are still missing. It is not possible to generalize the results of investigations conducted among adolescents from one region or country on the whole respective population.

Relevance of the findings: Implications for clinicians and policymakers

This paper outlines a big public health issue. Adolescents are a population group that will have a significant impact on the demographic trends on the local, national, regional and global levels. In order to protect their sexual and reproductive health it is necessary to decrease the number of unplanned and unwanted pregnancies among adolescents and change their attitudes towards birth control by incorporating modern contraceptive use in the lifestyle. Thus, several facts might be important for health care providers: (i) adolescent girls should be provided with

good quality abortion care, that should include contraceptive counselling and immediate provision of efficacious contraceptive method according to their needs and preferences; (ii) LARCs are more effective in preventing repeat unplanned pregnancy than short-acting reversible contraceptive methods; (iii) in order to ensure continuation of contraceptive protection, vigilant follow-up is needed. However, to reduce teenage abortions in the broader, macro-level, a comprehensive strategic approach is essential, that would eliminate all forms of discrimination of adolescents and give them equal chances for respective education, utilisation of youth friendly health care services and procurement of various kinds of contraceptives. This implies that a society would respect sexual rights of adolescents and clinicians are providing abortion care and contraception in accordance with the evidence-based guidance.

Unanswered questions and future research

One of the most striking issues is how to maintain a high rate of continuity in the use of the selected method of contraception. However, there are some studies that partially explored that issue. In the retrospective follow-up study of the 6 to 18 months continuation rate of contraceptive methods chosen post-partum or post-abortum by 280 adolescents, the share of girls who stopped COC was 46%, and implants were removed in 16% of users. Irregular bleeding was the most common reason for discontinuing the use of both methods, and some COC users also stated having problems regularly taking the pills[50]. Another recently published study that investigated 24-months continuation rate of all reversible contraceptive methods for about 9000 women who participated in the Contraceptive CHOICE Project in St. Louis region, compared the respective data among adolescents and women aged 20 and over. One fifth of the participants younger than 20 years previously had an abortion. The 12-months and 24-months continuation rate in adolescent girls was higher for LARCs (82% and 66%, respectively), than for non-LARC methods (49% and 37%, respectively). Young women were at a bigger risk of discontinuing the chosen method at 24 months than older ones (crude and adjusted hazard ratios 1.47 and 1.40, respectively)[51]. Whether experiencing non-contraceptive benefits of short-acting contraceptive methods (COC, patch, vaginal ring and monthly injection) can increase a continuation rate was investigated in the prospective study that included 243 women aged 13 to 24 years. The assessment was made after six months by post-visit survey. The discontinuation rate was 33% among 163 women aged 13 to 24 years who completed follow-up. The expectation of non-contraceptive benefits was not found to increase the continuation rate, although young women to some extent appreciated the improvement of cycle-control[52].

Another unresolved challenge is how to raise awareness of adolescents on the need for effective prevention of pregnancy. Most studies that have dealt with this issue are small in size and of the in-depth type. This could be illustrated by the investigation that assessed the effects of motivational post-abortion counselling. According to the responses of 20 women aged 15 to 24 years regarding their satisfaction with intervention, obtained immediately after session and at one-month follow up, it was concluded that motivational counselling may have a potential to increase use of contraception after abortion[53].

CONCLUSION

Prevention of repeat unplanned pregnancies in adolescents is a challenge that must still be taken up. Understanding the developmental and personal characteristics of these girls, their life circumstances, partnership patterns and sociocultural environments will allow the health care professions to develop appropriate interventions. After an induced abortion it is necessary to motivate the youth to immediately initiate a reliable contraceptive method, preferably one whose efficacy is not user-dependent. Nondirective or active counselling, regular follow-up and management of side effects should contribute to achieving greater continuity in the usage of the contraceptive method selected.

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REFERENCES

1. Bajos N, Guillaume A, Kontula O. Reproductive health behavior of young Europeans. *Population studies No. 42* (Volume 1). Strasbourg: Council of Europe 2003.
2. Delva W, Wuillaume F, Vansteelandt S, *et al*. Sexual behaviour and contraceptive use among youth in the Balkans. *Eur J Contracept Reprod Health Care* 2007; 12:309–16.
3. Mogilevkina I, Odlind V. Contraceptive practices and intentions of Ukrainian women. *Eur J Contracept Reprod Health Care* 2003;8:185–96.
4. Leppälahti S, Gissler M, Mentula M, Heikinheimo O. Trends in teenage termination of pregnancy and its risk factors: A population-based study in Finland, 1987–2009. *Hum Reprod* 2012;27:2829–36.
5. Moreau C, Trussell J, Bajos N. Contraceptive paths of adolescent women undergoing an abortion in France. *J Adolesc Health* 2012;50:389–94.
6. Dueñas JL, Lete I, Bermejo R, *et al*. Trends in the use of contraceptive methods and voluntary interruption of pregnancy in the Spanish population during 1997–2007. *Contraception* 2011;83:82–7.
7. Brown S, Guthrie K. Why don't teenagers use contraception? A qualitative interview study. *Eur J Contracept Reprod Health Care* 2010;15:197–204.
8. Myers JE, Seif MW. Global perspective of legal abortion – Trends analysis and accessibility. *Best Pract Res Clin Obstet Gynaecol* 2010;24:457–66.
9. Sedgh G, Henshaw SK, Singh S, *et al*. Legal abortion worldwide: Incidence and recent trends. *Perspect Sex Reprod Health* 2007;39:216–25.
10. Daugirdaitė V, van den Akker O, Purewal S. Posttraumatic stress and posttraumatic stress disorder after termination of pregnancy and reproductive loss: A systematic review. *J Pregnancy* 2015;2015:646345. doi: 10.1155/2015/646345
11. Marrs RP, Kletzky OA, Howard WF, Mishell DR. Disappearance of human chorionic gonadotrophin and resumption of ovulation following abortion. *Am J Obstet Gynecol* 1979;135:731–6.
12. Schreiber CA, Sober S, Ratcliffe S, Creinin MD. Ovulation resumption after medical abortion with mifepristone and misoprostol. *Contraception* 2011;84:230–3.
13. Boesen HC, Rørbye C, Nørgaard M, Nilas L. Sexual behaviour during the first eight weeks after legal termination of pregnancy. *Acta Obstet Gynecol Scand* 2004;83:1189–92.
14. Madden T, Secura GM, Allsworth JE, Peipert JF. Comparison of contraceptive method chosen by women with and without a recent history of induced abortion. *Contraception* 2011;84:571–7.
15. Jaccard J, Levitz N. Counseling adolescents about contraception: Towards the development of an evidence-based protocol for contraceptive counselors. *J Adolesc Health* 2013;52:S6–13.
16. Department of Child and Adolescent Health and Development World Health Organization, Department of Reproductive Health and Research World Health Organization. *Contraception in adolescence. (Issues in adolescent health and development)*. Geneva: World Health Organization 2004. Accessed 12 May 2015 from: http://whqlibdoc.who.int/publications/2004/9241591447_eng.pdf
17. Bitzer J. Oral contraceptives in adolescent women. *Best Pract Res Clin Endocrinol Metab* 2013;27:77–89.
18. Ott MA, Sucato GS, Committee on adolescence. Contraception for adolescents. *Pediatrics* 2014; 134:e1257–81.
19. Erickson SJ, Gerstle M, Feldstein SW. Brief interventions and motivational interviewing with children, adolescents, and their parents in pediatric health care settings: A review. *Arch Pediatr Adolesc Med* 2005; 159:1173–80.
20. Wellings K, Brima N, Sadler K, *et al*. Stopping and switching contraceptive methods: Findings from Contessa, a prospective longitudinal study of women of reproductive age in England. *Contraception* 2015; 91:57–66.
21. World Health Organization. *Clinical practice handbook for safe abortion*. Geneva: World Health Organization 2014.
22. Faculty of Sexual and Reproductive Healthcare Clinical Effectiveness Unit. *Member's enquiry response - Enquiry Reference: 4129*. Sent: 8 July 2013. Prepared: 28 June 2013. Accessed 30 January 2015 from: http://www.fsrh.org/pdfs/No%204129.pdf
23. Faculty of Sexual and Reproductive Healthcare. *Combined hormonal contraception*. Clinical Effectiveness Unit. October 2011(Updated August 2012). Accessed 22 December 2014 from: http://www.fsrh.org/pdfs/CEUGuidanceCombinedHormonalContraception.pdf
24. Faculty of Sexual and Reproductive Healthcare. *Progestogen-only pills*. Clinical Effectiveness Unit. March 2015. Accessed 13 May 2015 from: http://www.fsrh.org/pdfs/CEUGuidanceProgestogenOnlyPills.pdf
25. Gaffield ME, Kapp N, Ravi A. Use of combined oral contraceptives post abortion. *Contraception* 2009;80: 355–62.
26. Martin CW, Brown AH, Baird DT. A pilot study of the effect of methotrexate or combined oral contraceptive on bleeding patterns after induction of abortion with mifepristone and a prostaglandin pessary. *Contraception* 1998;58:99–103.

27. Tang OS, Xu J, Cheng L, *et al*. The effect of contraception pills on measured blood loss in medical termination of pregnancy by mifepristone and misoprostol: A randomized placebo controlled trial. *Hum Reprod* 2002;17:1738–40.
28. Tang OS, Gao PP, Cheng L, *et al*. A randomized double-blind placebo controlled study to assess the effect of oral contraceptive pills on outcome of medical abortion with mifepristone and misoprostol. *Hum Reprod* 1999;14:722–5.
29. Lähteenmäki P, Rasi V, Luukkainen T, *et al*. Coagulation factors in women using oral contraceptives or intrauterine contraceptive devices immediately after abortion. *Am J Obstet Gynecol* 1981;141:175–9.
30. Faculty of Sexual and Reproductive Healthcare. *Progestogen-only injectable contraception*. Clinical Effectiveness Unit. December 2014 (Updated March 2015). Accessed 14 May 2015 from: http://www.fsrh.org/pdfs/CEUGuidanceProgestogenOnlyInjectables.pdf
31. Sonalkar S, McClusky J, Hou MY, Borgatta L. Administration of depot medroxyprogesterone acetate on the day of mifepristone for medical abortion: A pilot study. *Contraception* 2015;91:174–7.
32. Steyn PS, Goldstuck ND. Contraceptive needs of the adolescent. *Best Pract Res Clin Obstet Gynaecol* 2014;28:891–901.
33. Faculty of Sexual and Reproductive Healthcare. *Progestogen-only implants*. Clinical Effectiveness Unit. February 2014. Accessed 14 May 2015 from: http://www.fsrh.org/pdfs/CEUGuidanceProgestogenOnlyImplants.pdf
34. Church E, Sengupta S, Chia KV. The contraceptive implant for long acting reversible contraception in patients undergoing first trimester medical termination of pregnancy. *Sex Reprod Healthc* 2010;1:105–9.
35. World Health Organization. *Medical eligibility criteria for contraceptive use*, 4th edn. Geneva: World Health Organization 2010.
36. Steenland MW, Tepper NK, Curtis KM, Kapp N. Intrauterine contraceptive insertion postabortion: A systematic review. *Contraception* 2011;84:447–64.
37. Sääv I, Stephansson O, Gemzell-Danielsson K. Early versus delayed insertion of intrauterine contraception after medical abortion – A randomized controlled trial. *PLoS One* 7(11):e48948. doi:10.1371/journal.pone.0048948
38. Ravi A, Prine L, Waltermaurer E, *et al*. Intrauterine devices at six months: Does patient age matter? Results from an urban family medicine federally qualified health center (FQHC) network. *J Am Board Fam Med* 2014;27:822–30.
39. Trussell J. Contraceptive failure in the United States. *Contraception* 2011;83:397–404.
40. Mittal S. Contraception after medical abortion. *Contraception* 2006;74:56–60.
41. Gomes Ferreira ALC, Lemos A, Figueiroa JN, de Souza AI. Effectiveness of contraceptive counselling of women following an abortion: A systematic review and meta-analysis. *Eur J Contracept Reprod Health Care* 2009;14:1–9.
42. Bender SS, Geirsson RT. Effectiveness of preabortion counseling on postabortion contraceptive use. *Contraception* 2004;69:481–7.
43. Schunmann C, Glasier A. Specialist contraceptive counselling and provision after termination of pregnancy improves uptake of long-acting methods but does not prevent repeat abortion: A randomized trial. *Hum Reprod* 2006;21:2296–303.
44. Nobili MP, Piergrossi S, Brusati V, Moja EA. The effect of patient-centered contraceptive counseling in women who undergo a voluntary termination of pregnancy. *Patient Educ Couns* 2007;65:361–8.
45. Dean SV, Lassi ZS, Imam AM, Bhutta ZA. Preconception care: Promoting reproductive planning. *Reprod Health* 2014;11(Suppl. 3):S2–17.
46. Heikinheimo O, Gissler M, Suhonen S. Age, parity, history of abortion and contraceptive choices affect the risk of repeat abortion. *Contraception* 2008;78:149–54.
47. Merki-Feld GS, Gruber IML. Broad counseling for adolescents about combined hormonal contraceptive methods: The Choice study. *J Adolesc Health* 2014;54:404–9.
48. Correia L, Martins I, Oliveira N, *et al*. Contraceptive choices pre and post pregnancy in adolescence. *J Pediatr Adolesc Gynecol* 2015;28:24–8.
49. Minnis AM, Mavedzenge SN, Luecke E, Dehlendorf E. Provider counseling to young women seeking family planning services. *Perspect Sex Reprod Health* 2014;46:223–31.
50. Blumenthal PD, Wilson LE, Remsburg RE, *et al*. Contraceptive outcomes among postpartum and postabortal adolescents. *Contraception* 1994;50:451–60.
51. O'Neil ME, Peipert JF, Zhao Q, *et al*. Twenty-four-month continuation of reversible contraception. *Obstet Gynecol* 2013;122:1083–91.
52. Lazorwitz A, Sheeder J, Teal S, Guiahi M. Does the expectation or perception of noncontraceptive benefits lead to higher rates of short-acting reversible contraceptive continuation for adolescents and young adult women? *Contraception* 2015;91:380–5.
53. Whitaker AK, Quinn MT, Martins SL, *et al*. Motivational interviewing to improve postabortion contraceptive uptake by young women: Development and feasibility of a counseling intervention. *Contraception* 2015; Epub Jun 18.