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Research paper

Long-acting, reversible and permanent methods of contraception: insight into women's choice of method

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ABSTRACT

Background This study aims to explore the views of women concerning their choice of long-acting method of contraception.

Method Two-hundred and eighty-six women who had either been sterilised or fitted with an etonorgestrel (ETN) implant or the levonorgestrel intrauterine system (LNG IUS) were invited to take part. A response rate of 54% was achieved. Women from all three groups reported positive and negative experiences with their chosen method.

Results Women frequently choose sterilisation specifically because it is irreversible, does not involve hormonal treatment, and they do not wish to retain choice of future fertility. Women incorrectly regard sterilisation as more reliable than any reversible method. Regret after sterilisation was common, even if this was preceded by full counselling. Even among patients of practices with a special interest in family planning, long-acting methods, although available, were not widely known about.

Conclusion This study suggests that women chose sterilisation for one of three main reasons: to avoid the possible side-effects of hormones; to avoid continually having to make decisions regarding childbearing; and/or a lack of information regarding reversible methods. Sterilisation is often chosen by women specifically because of its irreversibility. This may explain why long-acting reversible methods have remained relatively unpopular.

Keywords: contraception, long-acting reversible (LARC) methods, sterilisation

How this fits in with quality in primary care

What do we know?
The pattern of contraceptive use has changed little in Britain over recent years, and sterilisation is one of the most popular methods chosen. It is, however, not without its problems, including failure and regret in some cases. In recent years, alternative long-acting methods, with the added benefit of being easily reversible, have been introduced. Despite their benefits, in relation to sterilisation they remain relatively underused.

What does this paper add?
This study combined quantitative and qualitative methods to explore the views of women on their choice of long-acting method of contraception. Participants described a number of reasons that helped to explain why sterilisation is still a relatively popular choice of method, despite the recent emergence of alternative, reversible long-acting methods of contraception. Participants described how they wished to refrain from methods involving hormones. Some women opted for sterilisation specifically because of its irreversibility, and this may help to explain its lasting popularity. Despite the participants being recruited from general practices in which staff had a special interest in long-acting reversible contraception (LARC) methods, there was evidence of a lack of awareness about them, suggesting the need for more information to allow fully informed choices.

Introduction

The pattern of contraceptive use has changed little in Britain over recent years.[1] In 2005/2006, 74% of women under 50 years were using at least one method of contraception. The contraceptive pill was the most popular method (24%) followed by the male condom (21%) and sterilisation (21%) of either partner. Other methods included the intrauterine contraceptive device (IUCD) (5%), withdrawal (4%), and hormonal injection (3%). Less than 1% of women used the female condom.[1]

Sterilisation is a popular choice of contraception and has been shown to produce high (92% in one study[2]) levels of satisfaction. However, failure rates are not as low as might be expected. One study showed that pregnancy occurred in 5.5 per 1000 women one year after sterilisation, and in 18.5 per 1000 after ten years.[3] That failure can occur some years after the procedure suggests that it is not simply governed by the ability of the operator. As a procedure, sterilisation is not without other complications, which are in the region of 0.5% following a simple laparoscopy, and this figure rises in cases of obesity, pelvic adhesions or incidental disease.[4]

Regret after sterilisation is also a significant problem, particularly in younger women,[5–8] and in women who are sterilised while undergoing concurrent Caesarean section,[9] in couples who report conflict prior to the procedure,[10,11] and in women sterilised shortly after making their initial request.[12] Regret rates remain significant even when there has been careful counselling prior to surgery, and in these circumstances few primary care trusts provide funding for either sterilisation reversal or *in vitro* fertilisation (IVF).

The relatively heavy reliance on sterilisation is somewhat surprising given the introduction of several long-term reversible contraceptive methods that are of at least equal efficacy and also have non-contraceptive benefits. Long-acting reversible methods are now widely available, and recent guidelines in the UK recommend that they should be included in information offered to all women requiring contraception.[13]

The levonorgestrel intrauterine system (LNG IUS), introduced in England in May 1995,[14] has many advantages. Failure rates are very low (less that 1%),[15] it gives contraceptive cover for five years, is easily reversible,[16] and results in few, if any, systemic hormone changes.[17] Other advantages include the reduction of menstrual blood flow,[18,19] and relief of dysmenorrhoea,[20] which led to it being licensed as a treatment for menorrhagia.[21] However, only 1% of women who require contraception choose the LNG IUS.[1]

The etonorgestrel (ETN) progestogen implant was introduced in 1999. It gives three years' contraceptive cover, and although delivering a systemic dose of steroid, has high efficacy,[22] a low failure rate,[23,24] and relatively high continuation rates,[25–27] which contribute to its high cost-effectiveness.[25,28] Recent studies demonstrate that difficulties with insertion and removal seem to have been overcome by the single rod system,[29–31] although there can be difficulties in certain situations, for example where the rod is non-palpable.[32] Where there has been evidence of failure, provider error has been suggested and further training for insertion recommended.[33] The main side-effect is unpredictable vaginal bleeding,[29] which has been shown to be the most common reason for discontinuation.[24] Despite ectopic pregnancy rates being low,[30] the first case was reported recently.[34]

As with the LNG IUS, a main benefit is that it is easily reversible. One study showed that the main reason for women to discontinue its use was a change of mind about wanting more children,[35] which serves to illustrate the positive aspects of its reversibility.

The aim of this study was to explore the views of women concerning choice of long-acting method of contraception and, where applicable, reasons for discontinuing their chosen method.

Method

The study used both quantitative and qualitative research methods to explore the reasons behind the women's chosen methods.

Quantitative component

A retrospective survey was conducted among three groups of women in north Lincolnshire, England, who requested long-term contraception during the two calendar years 2003 and 2004.

Using records from three GP practices, a total of 286 women were identified from the three groups below (the initial aim was to recruit 300 women: 100 from each of the three groups; however, only 86 women from the sterilisation group were eligible to participate in the study, giving a total sample of 286):

- those who had been sterilised
- those who had been fitted with an ETN implant (Implanon)
- those who had been fitted with the LNG IUS (Mirena; other injectable methods with shorter periods of effectiveness, were not included).

The GP practices were all similar in terms of sociodemographic and geographic characteristics. They were purposively selected, as their staff had a special interest in family planning. It was felt that this would increase the potential to explore the views of women who had exposure to and experience of long-acting reversible methods. The practices' family planning teams did the initial counselling. All professionals were family planning-trained, experienced counsellors and keen to promote long-acting contraceptive methods. Although a convenience sample, all eligible women registered at the given time period were included in the sampling frame, and so it can be considered to be representative of the total patient population meeting the inclusion criteria in the three practices.

Participants were initially contacted by letter and sent details of the study. Those who decided to take part were asked to return the questionnaire by post. Non-respondents were contacted again after six weeks. The questionnaire included items about the decisions behind their choice of contraceptive method, satisfaction with their chosen method, how successful they felt it to have been, and whether they had suffered any side-effects.

Qualitative component

Although not generalisable in the way quantitative studies are designed to be, the qualitative approach places an emphasis on the depth and richness of data, including subjective experience, that cannot be easily quantified and allows insight into personal experiences that are highly relevant to the user but often remain unreported in the medical literature.[36]

There were two parts to the qualitative component: a document review and a series of interviews, consent for which was sought on the questionnaire.

Document review

The main purpose of this retrospective analysis of general practice (GP) records was to allow comparisons between recorded reasons for method discontinuation and the answers to specific questions in the questionnaire. This provided a consistency check on the quality of data collected.

Interviews

Twenty-four women were purposively selected for qualitative interview: eight who had been sterilised; eight using the LNG IUS; eight using ETN implant. The interviews were conducted over the telephone by two experienced interviewers (GI or SB), and were tape-recorded and transcribed. A typical interview took around 20 minutes, and data were analysed using the 'framework' method.[37]

Ethical issues

Ethics approval was gained from the North Lincolnshire Local Research Ethics Committee (LREC). Each participant was fully informed of the implications of taking part and their right to withdraw at any time without affecting their future medical treatment. They were reassured that all information was totally confidential, individuals would not be identifiable in any of the research outputs, and data would be anonymised and only analysed by the central members of the research team. Each participant was then required to sign a consent form to confirm that she was happy to participate.

Results

The number of questionnaires posted and returned is shown in Table 1. The overall response rate was 54%,

Table 1 Response rates

	Sterilisation	ETN implant	LNG IUS	Total
Questionnaires posted (*n*)	86	100	100	286
Questionnaires returned (*n*)	47	48	60	155
Response rate (%)	55	48	60	54
Consent to notes scrutiny (*n*)	37	31	43	111
Consent to interview (*n*)	20	17	19	56

with 111 women agreeing to a scrutiny of their medical notes and 56 of these women agreeing to personal interview.

Figure 1 shows the age distribution of the women in the three groups of contraceptive use. ETN implant was a more popular choice among the younger age groups, including those under 20 years of age, while the LNG IUS increased in popularity with age, peaking among those in the 30–39-year age group. Perhaps most surprising was the relatively young age profile of those women opting for sterilisation, with 40% being in the 30–34-year age group.

Sterilisation

The age range, at time of procedure, of those women who had been sterilised was 22–44 years (median age 34 years; interquartile range (IQR) 6.75). There was evidence that wanting no more children was a dominating factor in women's decision to opt for sterilisation. Some women seemed certain about this:

> 'I was *positive* I wanted no more children.' (authors' emphasis)

> 'I *never* want any more children. I have five from 9 years to 18 months.' (authors' emphasis)

The women were asked which methods they had used previously and were also asked to identify which of a list of methods they felt they had sufficient knowledge about, prior to being sterilised (see Table 2; terminology relating to name of contraceptive methods is shown as used in the questionnaire; categories are not mutually exclusive as respondents were asked to circle as many as they wished). Interestingly, knowledge of all long-acting methods, including sterilisation was relatively low.

Reasons given for not considering other methods included having tried them previously (some reported negative experiences or reported that they simply didn't work), while others felt it was time for a more permanent method or one that had no side-effects. Examples of negative experiences with other methods are illustrated below:

> 'Not interested in hormones contraception. Tried pill, didn't like it ... heard coil's painful.'

> 'Tried Mirena [IUCD] but it made me feel angry with the world and on edge the whole time.'

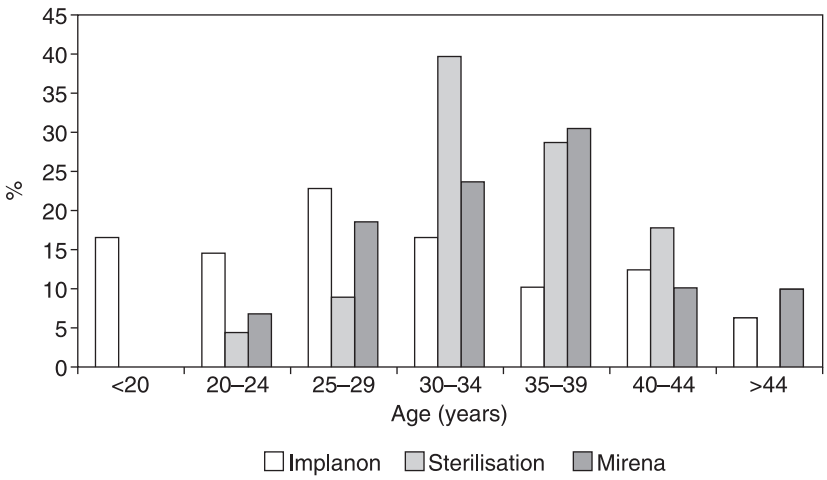

Figure 1 The age distribution for each of the three groups of women

Table 2 Previous use and knowledge of contraceptive methods among the women who had been sterilised

	What forms of contraception have you used in the past? % (*n*)	Before your sterilisation, which of the following do you think you had enough knowledge of? % (*n*)
The pill	94.4 (34)	91.2 (31)
The mini-pill	16.7 (6)	29.4 (10)
Condoms	69.4 (25)	70.6 (24)
IUCD (coil)	8.3 (3)	26.5 (9)
Mirena	8.3 (3)	14.7 (5)
Norplant	5.6 (2)	n/a
Implanon	8.3 (3)	5.9 (2)
Depo injections	25.0 (9)	23.5 (8)
Natural family planning methods	16.7 (6)	26.5 (9)
Sterilisation	n/a	41.2 (14)
None of the above	0 (0)	5.9 (2)

[a] Norplant was withdrawn from the UK market in 1999

Two women reported that they were unaware of alternative long-term methods, and only five said they had considered other reversible methods.

Twenty-eight percent (n = 13) of the women reported feeling regret at their decision to opt for sterilisation. Seven reported feeling a little regret, while six felt that they regretted their decision a lot. Seventy-two percent, however, when asked if they felt regret, replied 'not at all'. Those reporting regret began to feel this way shortly after the procedure (six women up to three months after). One respondent when asked to elaborate replied:

> 'Before, during and after. It's too final and takes your options away.'

Even some of the women who reported feeling no regret indicated later that they may in fact have had some doubts. The following statement was from a woman who initially replied 'not at all' to the question on regret:

> 'I sometimes wonder if I've missed out on family life, and if I was selfish.'

Reasons for regretting sterilisation were varied. Some related to marriage break up and starting a new relationship, or current children getting older. Others indicated that they may have changed their minds about not wanting any further children. Interestingly, one woman who initially reported the fact that sterilisation was 'easy and final' as her reason for opting for it, described her reasons for regret as:

> 'Thoughts of another baby and not having a choice any more.'

Other women reported some physical discomfort:

> 'Became apparent I can still feel the clips and sometimes it is painful'

whilst one woman reported heavy painful periods, which she had not suffered from previously. Another reported feeling:

> 'Very ill after op ... My periods have been so unbearable since op. Pain worse than having baby.'

ETN implant (Implanon)

The age range of women with an ETN implant was 16–48 years (median age 29 years; IQR 14.75). The main reasons for opting for this method included ease of use (n = 23), previous problems with other methods (n = 13), reliability (n = 7), long-term benefits (n = 6) and that it was selected on the advice of the GP or nurse (n = 4).

Eight (17%) of the women said they had considered sterilisation, and this was not significantly different

between clinics ($P = 0.57$). Reasons for ultimately opting against it related to feeling too young, possibly wanting more children in the future, being talked out of it, wanting to try an ETN implant first, it being too permanent, and family experience of difficulties after sterilisation, alongside not being able to spare the time away from small children to undergo the procedure.

Thirty-one (65%) of the women reported both physical and psychological side-effects from an ETN implant. These included excessive or constant vaginal bleeding ($n = 15$), mood swings or depression ($n = 8$), pain or bloatedness ($n = 6$), irregular periods ($n = 6$), weight gain ($n = 5$), headaches ($n = 4$), loss of libido ($n = 3$), and amenorrhoea ($n = 3$). One or two women also reported localised itching, breast tenderness, fatigue, hair growth, acne and nausea.

Of the 48 women who returned a questionnaire, 13 reported that their ETN implant had since been removed. One of these was not using any contraception as she was not sexually active. Of the remaining 12 women, four were now taking the combined pill and one the progesterone only pill, two were using condoms, two were using the LNG IUS, and three were using injectable contraception. None had gone on to be sterilised.

Of those who had had their ETN implant removed, four had done so less than 12 months after insertion, five between 12 and 24 months, and one more that 24 months after insertion (three women did not answer this question). Reasons for removal related mainly to excessive or constant vaginal bleeding (seven women). Other reasons were to end suffering from headaches and to increase libido.

LNG IUS (Mirena)

The age range of those women who had had an LNG IUS coil inserted was 20–53 years (median age 34.5 years; IQR 10). Women were asked through qualitative entries on the questionnaire about the reason they chose LNG IUS for contraception. The most popular explanations were its ease and convenience of use (especially not having to think about it every day), and its resulting in 'lighter periods'. Women also reported its reliability and the fact that they were aware of few side-effects as strong influences on their choice. Others chose it because it was 'long term' and because it was reversible.

Women were asked whether they had considered sterilisation; 22% replied that they had (there were no significant differences between clinics: $P = 0.345$), but reasons for not opting for it centred around uncertainty about never wanting to conceive in the future (four women), not wanting the additional risk of surgery (three women), the LNG IUS resulting in less vaginal bleeding (two women), being too young (three women), or being advised against it for unspecified reasons (one woman). One woman cited the one-year waiting time for sterilisation as her reason for opting against it. One woman felt that sterilisation:

> 'does not offer any advantage over Mirena but has less benefits (i.e. periods) and more risks.'

The pill was the most commonly cited previous contraceptive method (97%), with condoms next (77%). Interestingly, some women had previously also tried other long-acting contraceptive methods: coil 23%, injectable contraception 17%, Norplant 13% and ETN implant 10%.

Fifty-three per cent reported having suffered side-effects from the LNG IUS (there were no significant differences in numbers reporting side-effects by clinic of insertion: $P = 0.079$), and these included irregular bleeding (11%), abdominal or pelvic pain (6%), vaginal discharge (4%), weight gain (3%), breast tenderness (3%), nausea (2%), tiredness (2%) and mood swings (2%).

Twenty-five per cent of the women had had their LNG IUS removed at the time of data collection (there were no significant differences by clinic of insertion: $P = 0.098$), some for reasons unrelated to any side-effects (such as their partner being sterilised or coming to the end of five years of use). Other reasons for removal included: 'abdominal pain' ($n = 2$), 'felt ill and was suffering tingling in foot, hand and face' ($n = 1$), 'infection/bleeding' ($n = 1$), 'treatment required following irregular smear test' ($n = 1$). Three women reported having it removed to try for another baby, which highlights its use as a reversible method. Those who had discontinued the LNG IUS were asked about their current contraceptive method. Interestingly, two had gone on to use an ETN implant but none had gone on to be sterilised.

Discussion

This study provided insight into why the LNG IUS and ETN implant are so rarely chosen as alternatives to sterilisation despite their obvious advantages. It investigated women's decisions to opt for both sterilisation and other long-acting contraceptive methods. We looked at the both influences behind their initial decisions and, where applicable, the reasons behind their decisions to discontinue their chosen method.

The response rate (54%) constituted a significant limitation to this study, which could not therefore be considered truly representative of all women using each of the contraceptive methods discussed, but nevertheless provided valuable insight into the experiences of the respondents.

This study suggests that women chose sterilisation for one of three main reasons: to avoid the possible side-effects of hormones, to avoid continually having to make decisions regarding childbearing, and/or a lack of information regarding reversible methods.

In line with other research, this study found evidence of women regretting the decision to be sterilised,[5–12] even among those who felt very secure about their initial decision. In addition, the study identified that sterilisation was often chosen by women specifically because of its irreversibility. This may explain why long-acting reversible methods have remained so unpopular, even in medical practices where they are actively promoted.

Given the significant regret rates, further use of reversible methods of contraception would seem to be a desirable progression. This argument holds when we consider the relatively high divorce rates in the UK (in 2007, at 2.7 per 1000 population, the UK had the third highest divorce rate in western Europe[38]), which may lead to the re-establishment of new relationships and subsequent desire for more children. Additionally, studies have shown that the main reason for regret of sterilisation is later deciding that more children are actually wanted. The evidence suggests that despite feeling confident at the time of decision making, sterilisation may not be the best option for many women. More research is required to explore the most viable methods of raising awareness of valid alternatives to sterilisation.

This study did show a surprising age distribution of women opting for sterilisation, peaking among the 30–34-year age group, who were relatively young women who might be more prone to changing their mind in the future about desired family size. Nevertheless, this study demonstrated that there was some knowledge and awareness of long-acting reversible methods of contraception in our study population. Where women reported experience of long-acting reversible methods, positive experiences were heard from women using both an ETN implant and the LNG IUS, although neither was completely without problems and some women did report side-effects.

Even among participants who were recruited from specialist family planning practices, there was evidence of a need for increased awareness about alternatives to sterilisation. The sampling methods used here limited the extent to which findings could be generalised, and therefore a further study of women randomly selected from non-specialist practices in the future, when long-acting reversible methods have become more widespread, would be informative. Of particular interest would be the extent to which the National Institute for Health and Clinical Excellence (NICE) guidelines on the use of long-acting reversible methods are being implemented, and whether regret after sterilisation is being reduced.[13]

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PEER REVIEW

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CONFLICTS OF INTEREST

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