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A review of barriers and myths preventing the more widespread use of intrauterine contraception in nulliparous women

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ABSTRACT

Objectives Intrauterine contraceptives (IUCs) are highly effective and safe for use in all women, including those who are nulliparous. However, many myths and barriers prevent more widespread utilisation. The objective of this article was to explore the health care provider (HCP), health system and user issues that prevent more widespread use of IUCs, particularly among nulliparous women, and to present the evidence that supports achieving greater utilisation of these devices.

Methods MEDLINE, PubMed and Embase were used to identify studies reporting attitudes and beliefs around IUCs, and clinical studies providing evidence of their risks and benefits.

Results HCP, health system and user factors limiting use of IUCs were identified. The most widely explored barriers in published studies are those at the HCP level. User barriers are less well documented and health system barriers are mostly assessed through indirect evidence. Many, but not all, of the barriers can be reduced through greater understanding of the evidence.

Conclusions Efforts need to be made to disseminate the evidence, which shows that few contraindications exist to IUC use. Addressing HCP lack of knowledge, training and confidence with IUC insertions, particularly in nulliparous women, could make a substantial positive impact on IUC utilisation.

KEY WORDS Intrauterine contraception; Intrauterine device; Intrauterine system; LNG-IUS; Nulliparous

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INTRODUCTION

Despite improved access to contraceptive methods over the last 30 years, 'failure' of methods requiring daily decisions still contributes to between half and two-thirds of unplanned pregnancies in the USA and Europe^{1,2}. Interventions to improve compliance with pills using different counselling strategies and/or instituting immediate-start protocols have not consistently improved contraceptive use patterns or continuation rates, or reduced unintended pregnancies^{3,4}. As such, international experts believe that improving access to long-acting reversible contraceptives (LARCs) – including implants, injectables and intrauterine contraceptives (IUCs) – will be an effective strategy to reduce unintended pregnancies⁵. These unintended conceptions impact on the economic, social, psychological and physical aspects of women's lives, and have repercussions on subsequent maternal and child health⁶. For these reasons, expanding access to LARCs was declared a national public health priority in the USA in 2009⁷.

LARCs, including intrauterine contraceptives (the copper devices [Cu-IUDs] and the levonorgestrel releasing-intrauterine system [LNG-IUS]), are among the most cost-effective of all contraceptive methods^{8–10}. Despite these advantages, IUCs are little used in many countries¹¹ particularly among young women, who are most susceptible to unplanned pregnancies¹². Published data from 2002 suggested only 1.2% of contraceptive users in Australia have opted for an IUC; however, with increased uptake of the LNG-IUS since then, the percentage is likely to be much higher in 2012¹³. In the USA and UK, 5 and 10% of women (aged 15–49 years who are married or in union), respectively, select an intrauterine method¹¹. In contrast, 23% of such women in Norway, 26% in Finland and only 5% in Germany choose an IUC as their family planning (FP) method¹¹.

Diverse issues lead to low utilisation of IUCs; they include health care provider (HCP), health system and user factors. It is likely that reluctance to use these methods may result from a lack of understanding of recent evidence¹⁴. The 1970s class action lawsuits against the manufacturers of the Dalkon Shield in the USA linked that particular IUD to pelvic infection, infertility, and even death from sepsis¹⁵. There is good evidence that modern devices do not carry the same risks, but unbalanced information about the benefits

and risks of IUDs persist and result in reluctance among HCPs to recommend an IUC, and reluctance among women to take up these methods¹⁶. The misunderstandings about the risk of IUC-related infection may impact utilisation in nulliparous women, despite the fact that international guidelines support their use in this group¹⁷.

This paper aims to present a review of published evidence of the factors that impact negatively on IUC use. We were particularly interested in the myths and barriers surrounding use in nulliparous women, although any of the obstacles to more prevalent use apply to all women, regardless of parity.

METHODS

We undertook a literature search of articles published in English between 1990 and 2012 through Embase, PubMed and MEDLINE using the following MeSH headings: intrauterine devices; intrauterine devices, copper; intrauterine devices, medicated; attitudes; satisfaction; clinician knowledge; efficacy; and cost-effectiveness. We reviewed primary studies of any study design that looked at provider and user knowledge and attitudes towards IUCs. Further articles examining clinical outcomes of IUC utilisation were reviewed, focussing on cohort studies and randomised controlled trials when possible. Reference lists of all articles were checked to identify further relevant studies. Due to resource constraints, searching of the grey literature and hand searching were not carried out. We specifically aimed to explore the health system, HCP and user barriers that impact on uptake of IUCs, and to explore some of the ways in which these can be addressed.

HEALTH CARE PROVIDER BARRIERS: MYTHS AND EVIDENCE

Misperceptions regarding the risk of PID, infertility and ectopic pregnancy

The Dalkon Shield, which was responsible for several cases of severe and potentially fatal pelvic sepsis, has now been off the market for more than 30 years, but it still tarnishes the reputation of modern intrauterine contraceptives in certain countries¹⁸. Many HCPs believe that having an IUC *in situ* is associated with

an ongoing risk of pelvic inflammatory disease (PID) and resultant infertility^{18–22}. This misperception is a particular barrier to IUC use in nulliparous women, especially if they are single or have several sexual partners^{19,20,23}. This is despite the fact that there is strong evidence that Chlamydia infection causes PID and infertility, *not* the presence of an IUC^{20,24,25}.

Some HCPs may feel inclined to use antibiotics to prevent infection at the time of intrauterine contraceptive insertion. However, two large, randomised, placebo-controlled studies conducted in the US²⁶ and Kenya²⁷ showed no significant benefit of prophylactic antibiotics in reducing the risk of PID following IUC insertion. In the US-based study²⁶ 1985 women in California who were at low risk of STIs according to self-reported medical history were randomised to azithromycin 500 mg orally or placebo approximately one hour prior to insertion of an IUC. Of 918 women in the antibiotic group and 915 women in the placebo group who had a device inserted and were followed for 90 days, only one woman in each group developed salpingitis²⁶. In the African study²⁷, 1813 women were randomised to receive doxycycline 200 mg orally or placebo at the time of IUC insertion; 1.3% and 1.9% of women developed PID in the antibiotic and placebo groups, respectively ($p = 0.17$), showing no significant benefit associated with antibiotic prophylaxis²⁷. In addition, a later systematic review of the literature concluded that doxycycline 200 mg or azithromycin 500 mg given orally before IUC insertion ‘confers little benefit’²⁸.

Other studies have described the risk of placing an intrauterine contraceptive through a cervix that is already infected with Chlamydia. These trials showed that few to no women developed PID after insertion with positive Chlamydia testing (none out of five women²⁹, none out of nine women³⁰, none out of 13 women³¹, two out of 19 women³²). Of course, it is impossible to know how many of those women with asymptomatic chlamydial infections would have gone on to develop PID in the absence of IUC insertion.

In a study of 1895 women in Mexico, use of Cu-IUDs was not associated with subsequent infertility; however, evidence of previous Chlamydia infection was shown to be a risk factor²⁵. There is even some evidence that use of the LNG-IUS might provide some protection against PID. In one randomised trial comparing the LNG-IUS with Cu-IUDs in more than 2500 women over a follow-up period of three

years, the rate of PID was significantly lower in LNG-IUS users, and the rate of PID in Cu-IUD users was similar to the background risk of PID in non-users, suggesting that the LNG-IUS might protect against PID^{20,33}.

The relationship between ectopic pregnancy and use of an IUC is also poorly understood. HCPs have been found both to overestimate the risk of ectopic pregnancy and to consider a past history of ectopic pregnancy to be a contraindication to future use of an IUC³⁴. It is true that a woman who becomes pregnant with an IUC *in situ* has a 10.6-fold increased chance that the pregnancy will be ectopic compared to a woman who has become pregnant under other circumstances^{35,36}; nevertheless, what is less appreciated is that a woman’s absolute risk is extremely low compared to using no contraception³⁷. A history of ectopic pregnancy is listed as category 1 (no restriction) for use of an IUC in the WHO Medical Eligibility Criteria for contraceptive use¹⁷.

Misperceptions about the difficulty and risks of insertion of IUCs

HCPs have reported reluctance to insert an IUC into women who have not given birth to a child, because of the perceived technical challenges^{20,38}. Although studies do suggest an increased rate of insertion problems in nulliparous women³⁹, the vast majority of women will have an IUC inserted with ease regardless of parity⁴⁰. According to physicians in New Zealand inserting the LNG-IUS, the relative risk of a difficult insertion in women who were nulliparous compared to parous women was 1.6 (95% confidence interval [CI]: 1.0–2.6)³⁹. However, the reporting of difficulty was also significantly associated with HCP experience³⁹.

Evidence for insertion success in nulliparous women comes from several case series. In a Swedish non-interventional study of LNG-IUS insertions in 224 nulliparous women, only six insertions were unsuccessful and more than 70% were regarded as ‘easy’ by the inserting clinician⁴¹. In another study comparing the LNG-IUS with oral contraceptives in young nulliparous women in Finland and Sweden, HCPs reported that insertion of the LNG-IUS was ‘easy’ in 85% of cases (80/94 insertions) and only two of the 94 attempted insertions failed⁴². In a retrospective study conducted in Brazil comparing LNG-IUS

insertions in nulliparous versus parous women, only one of 159 insertions in nulliparous women was unsuccessful⁴⁰.

Few data directly comparing insertion-related pain in nulliparous women versus parous women exist, but the evidence suggests that it is likely to be greater in nulliparous women. A higher pain score for the insertion of the CuT380A in nulliparous versus parous women (mean of 2.7 cm vs. 1.9 cm on a 10 cm visual analogue scale) has been reported⁴³, although neither score was particularly high. In the Swedish study of LNG-IUS insertions in nulliparous women, moderate to severe pain was experienced by almost 90% of all participants at the time of insertion⁴¹. Misoprostol (a prostaglandin analogue and cervical ripening agent) appears to aid insertion in nulliparous women from the HCP's perspective⁴⁴, but has no impact on discomfort during insertion from the woman's perspective^{44,45}.

Another concern is the risk of uterine perforation, which HCPs perceive as being greater in nulliparous women²⁰. Although data about perforation are likely to underestimate the true incidence of perforation because of insufficient length of follow-up, loss to follow-up and unrecognised cases, there is some evidence that the risk is indeed higher in women who have not had a child, or have had a termination of pregnancy, but is probably greatest for women in the post-partum period⁴⁶.

In a European study of IUC insertions in 8343 women, the rate of uterine perforation was 2.2 per 1000 women⁴⁶. The authors found that higher parity lessened the risk (odds ratio [OR]: 0.04, CI: 0.01–0.1) whereas a greater number of abortions increased the risk (OR: 2.1, CI: 1.2–3.6). However, the greatest risk was observed in women who were 0–3 months post-partum (OR: 11.7, CI: 2.8–49.2) and those 4–6 months post-partum (OR: 13.2, CI: 2.8–62)⁴⁶. This finding was supported by an earlier study which showed that 90% of women with IUC perforations had the device inserted within 12 months of a full-term pregnancy and 62% had been within 12 weeks, suggesting the softer post-pregnancy uterine wall was predisposed to perforation⁴⁷.

The rates of perforation reported for all women (regardless of parity) amounted to 1.6 per 1000 insertions in a prospective study of 17,469 Multiload® Cu375 insertions⁴⁸. The authors noted that most perforations were not recognised at the time of insertion and some of the cases were not identified until years afterwards or

possibly remained undiagnosed. Therefore, it is likely that all the published studies might underestimate the true risk.

Recently a number of case series have examined the risk of perforation associated with insertions in nulliparae. In a pilot study of Cu-IUD/LNG-IUS insertions in such women, none of 113 successful insertions resulted in uterine perforation⁴⁹, and in a study of LNG-IUS (Mirena®) insertions in Sweden, none of 218 successful insertions performed in nulliparous women resulted in perforation⁴¹, although scheduled follow-up in each of these studies was only 12 months.

When inserted, some HCPs believe that IUCs in nulliparous women may have a higher risk of expulsion. Again, the data do not support this belief. In a Dutch study evaluating complications of IUCs according to parity, the expulsion rate for Cu-IUDs was 0–2.8% per year among 142 nulliparae versus 0–1.4% per year among 443 parous women; this difference was not statistically significant⁵⁰. In a Brazilian study comparing use of the LNG-IUS in nulliparous and parous women, the expulsion rate within the first year after insertion was similar (~4%) in both groups⁴⁰. Furthermore, in the US-based Contraceptive CHOICE Project, the one-year Cu-IUD/LNG-IUS expulsion rate among 437 nulliparae was 2.5%, compared with 5.6% among parous women⁵¹.

Misperceptions about the mechanism of action

Concern over the mechanism of action of copper IUDs has also dissuaded HCPs from recommending or inserting, and women from using IUCs. For many years it was thought that IUDs exerted their effect by preventing implantation of a fertilised egg and for a number of those who believed that life begins at conception, IUC use was considered morally unacceptable^{19,52,53}.

Various studies have confirmed that the main mechanism of action is in effect prior to fertilisation. IUCs create a sterile inflammatory response that immobilises sperm, and women with one of these devices in place have considerably fewer fertilised ova in their Fallopian tubes than women not using contraception^{52,54,55}. Wilcox and colleagues^{56,57} utilised a highly sensitive immunoradiometric assay for hCG in user and non-users of IUDs in order to detect the earliest possible

evidence of an embryo. In over 100 cycles in IUD users, they detected only one case of transient hCG elevation while their controls had four transient rises in 89 cycles. Their conclusion was, 'the IUD interferes with the reproductive process before the embryo produces enough hCG to be detected in the maternal body fluids'. In a comprehensive review from 2007 which cited the previous papers and several others, Ortiz and Croxatto stated, 'The common belief that the usual mechanism of action of IUDs in women is destruction of embryos in the uterus is not supported by empirical evidence'⁵⁸. The LNG-IUS, in addition, causes thickening of the cervical mucus, which impedes transport of sperm through the cervix⁵⁹ (Table 1)^{52,54,55,60,61}.

HEALTH SYSTEM BARRIERS

Pharmaceutical guidelines

In many countries, attitudes regarding candidates for IUC use are reinforced by guidelines, package inserts or product labelling that recommend IUCs for multiparous women⁶². In 2005, the US Food and Drug Administration (FDA) approved the package insert for the CuT380A IUD in which the requirement for the device to be used in women with one or more

children had been removed. However, the LNG-IUS still has not received specific FDA approval for use in nulliparous women⁸, making its use in this group 'off label'. Given the medico-legal environment in the USA, this may prohibit HCPs from inserting a LNG-IUS in nulliparous women. Furthermore, many providers working for large organisations (health departments, Planned Parenthood) often have to practise within regulations related to package inserts and, therefore, are not allowed to place a LNG-IUS in nulliparous women even if they believe it is safe. In a survey about use of IUCs among American gynaecologists, 16% felt that inserting IUDs would lead to lawsuits against them¹⁹.

Lack of understanding of the value/cost-effectiveness of IUCs

Because the up-front costs of intrauterine contraception are high in some countries, it may be perceived as being an expensive option. However, once placed an IUC is effective for several years and over time becomes cost-effective^{9,10,63}. The Cu-IUD, the LNG-IUS and vasectomy were actually the three most cost-effective methods of contraception over five years of use in a US-based analysis¹⁰. Although the health care system as

Table 1 Intrauterine contraception: the mechanism of action is not abortifacient (adapted from Schulman *et al.* 2009)⁶⁰.

	Copper IUD	LNG-IUS
<i>Effects on sperm</i>		
Sterile foreign body reaction in uterine cavity results in changes that may be toxic to sperm ^{52,54,55,61}	✓	✓
Release of copper ions is spermicidal or cytotoxic ^{52,54,61}	✓	
Thickening of cervical mucus may impede sperm transport through the cervix (preventing sperm reaching the egg) ⁶¹		✓
<i>Effect on fertilisation</i>		
Decrease in the number of fertilised ova in Fallopian tubes compared with women not using contraception ^{52,54,55,61}	✓	✓
<i>Effects on the endometrium</i>		
Increases leukocytes in the endometrium ⁶¹	✓	
Altered cytokine and integrin profile in the endometrium ⁶¹	✓	✓
Endometrial suppression, decreased thickness and secretions ⁶¹		✓

a whole will benefit by averting the costs of unplanned pregnancy, a particular payer may not. This can be true in a system with private insurers, but can also plague a national health care system where the different budgets (gynaecology/contraception and obstetrics/maternity) have no crossover, as is the case in the UK.

Mandatory Pap screening for cervical cancer before insertion of an IUC

Mandatory screening for cervical cancer (the Papanicolaou [Pap] smear) before insertion of an IUC may be another barrier to more widespread uptake of these methods²¹. Guidelines regarding cervical cancer screening requirements prior to insertion of an IUC vary between countries^{64,65}. Beyond actual guidelines is the systemic perception that women must be up to date on all screening, including Pap smears or mammograms, to receive contraceptive care. Limiting the provision of IUCs because of lack of cervical cancer screening (Pap smear) is not evidence-based and could lead to unintended pregnancies. Furthermore, a recent pooled analysis of 26 epidemiological studies suggested that IUCs might protect against cervical carcinogenesis⁶⁶.

Factors affecting the number of trained providers

Some HCPs who are competent in IUC insertion may be hesitant to have more providers gain those skills, for fear they will lose an important source of revenue. In other health care systems, referral systems may make it more beneficial for HCPs to send women elsewhere for IUC placement than to spend the time and money to provide this care themselves. A survey in the US analysing IUC insertion found that of the HCPs not providing IUCs, 47% cited lack of reimbursement as a reason for not performing insertions²³. Both scenarios lead to shortages of skilled providers to insert IUCs.

USER BARRIERS: MYTHS AND EVIDENCE

Many of the HCP barriers and health system barriers overlap or become user barriers. For example, if a woman obtains most of her information about contraception from a HCP who is not up to date with evidence-based practice on intrauterine methods, she is likely to be subjected to common myths that may

negatively impact her perception of the devices. Similarly, if her insurance does not pay for contraceptive benefits, paying for the device may be a difficult barrier to overcome. In this section we will discuss the issues that are unique to the user.

Women's lack of awareness and understanding of IUC

In one study of 252 women aged 14–27 presenting to a FP clinic, 55% had not heard of IUCs⁶⁷, and those who were parous were 4.4 times more likely to be interested in this modality of birth control compared with nulliparous women. If a woman had been educated about IUCs by their HCP, she was 2.7 times more likely to be interested in using one of these⁶⁷. In another study of 144 women aged 14–24 who were given a knowledge survey prior to a three-minute educational intervention⁶⁸, 60% had not heard of IUCs before the teaching. Of those who had heard of the method, only 37.5% had a positive attitude before the intervention. After the education, 53.5% had a positive attitude about IUCs and the participants particularly liked the fact that the method was long acting and very private. In a study in which 40 women were asked more detailed questions about intrauterine contraception, Rubin and Winrob⁶⁹ determined that women had conceptual concerns and fears about letting a foreign body be placed inside their womb. Their respondents also believed that an IUC was to be used only when other FP methods had failed. Finally, the women in this study reported a lack of discussion and information about IUCs from their HCP, in the media or from informal networks⁶⁹. In an Australian study, women were surveyed when they presented to FP clinics for IUC insertion. There were 318 completed questionnaires among 334 women who attended over a three-month period; 16% of respondents (51/318) had not found it easy to obtain IUC-related information, and almost a fifth (58/318) had been told it was not a suitable method for them by either a HCP or a friend or family member (or both), despite these women meeting appropriate medical eligibility criteria at the FP clinic⁷⁰.

Fear of IUC

In a large study undertaken to determine women's knowledge of intrauterine contraception, 12,500 questionnaires were randomly sent to homes in

St. Louis, Missouri, USA in 2008⁷¹ and the results from 1665 responses were analysed. Knowledge of the expected side effects and safety was limited. Although 49% considered that method as safe, those who felt it was not (8%) or were unsure (43%) thought that it increased the risk of ectopic pregnancy, cancer or sexually transmitted infections.

Some women may avoid IUCs for fear that the actual insertion will be too painful^{43,45}. Although a Cochrane Library review has suggested that, to date, no effective intervention has been proven to decrease this insertional pain⁴⁵, many studies show high rates of acceptance^{41,42,49,72}. It is up to the provider to allay those fears with proper counselling and accurate information.

Discontinuations due to bleeding pattern changes

A change in bleeding pattern is a common reason that women discontinue their contraceptive method. It is well established that copper devices may increase the quantity of blood being lost as well as the length and pain associated with menses, whereas the LNG-IUS typically decreases menstrual blood flow and may even lead to amenorrhoea in a significant number of users. In early comparative studies, Nilsson *et al.*⁷³ reported higher discontinuation rates for 'bleeding problems' in users of two different LNG-IUSs (LNG-IUS A, release rate 20 µg/day and LNG-IUS B, release rate 30 µg/day) compared with women using a copper device (Nova T); conversely, Andersson *et al.*⁷⁴ reported higher discontinuation rates for 'bleeding problems' in copper device (Nova T) users compared with those using an LNG-IUS (release rate 20 µg/day). In Nilsson's study, 11% of women using LNG-IUSs were amenorrhoeic at the end of the first year of use; the discontinuation rates due to amenorrhoea were 2.6% and 4.1% for the lower (20 µg/day) and higher (30 µg/day) dose LNG-IUSs, respectively⁷³. In Andersson's study, 6% of LNG-IUS users discontinued because of amenorrhoea⁷⁴. In a more recent study of 136 adolescents, 7.4% had the device removed within the first year as a result of bleeding-related complaints, with no difference in rate by IUC type⁷⁵. Women also need to be educated about the bleeding pattern changes to be expected with an IUC, so that they are able to select the method that is best for them and hopefully continue with it as long as pregnancy

is not desired. In the Contraceptive CHOICE Project, where education covered expected bleeding pattern, continuation at 12 months was 88% for the LNG-IUS and 84% for copper devices⁷².

Cost of the IUC as a barrier

Cost as a barrier to IUC use has been poorly explored. An impression of the impact of the up-front expense on use can be drawn from the differing experiences in Australia and New Zealand. In New Zealand, the copper IUDs are subsidised and women pay 19 Euros (US\$25), whereas the LNG-IUS costs approximately 228 Euros (US\$300). The reverse is true in Australia: the LNG-IUS is subsidised and the copper IUDs are not. Although cost is probably not the only reason for increased acceptability and utilisation of the LNG-IUS in Australia, it is likely to be a contributing factor.

The Contraceptive CHOICE Project sought to remove financial barriers while increasing women's knowledge of the safety and efficacy of LARCs. Among the first 2500 women enrolled in this St. Louis, Missouri study, 67% chose a LARC and of those, 56% decided on an IUC⁷⁶. In comparison, the most recent National Survey of Family Growth reported that less than 6% of contraceptors in the USA use an IUC⁷⁶. Overall, these data suggest that if all barriers were removed, IUC use would greatly increase in the USA.

OVERCOMING THE OBSTACLES

Addressing HCP misperceptions

Contraception must be an integral part of medical education, prior to the point of specialisation. This allows HCPs in all specialties to provide women with accurate information to meet their reproductive needs, even if they will not be the actual provider of services. Women's health practitioners with various levels of training from physician, to nurse, to midwife, must be additionally trained to insert IUCs. Those who have completed their training without these skills should have ample opportunity, in both didactic and hands-on training, to learn IUC placement.

Addressing the health system barriers

There must be incentives for experts to train others without fear of losing a revenue stream, and for others

to gain skills for insertion and not refer women to specialists. Contraceptive care must be uncoupled from cancer screening and follow evidence-based guidelines. This does not mean to say that good practice of ensuring that the Pap smear is up-to-date before IUC insertion should be discounted, but simply that the practice should not be mandated where there is no evidence to support it. Broader societal goals and costs must influence decisions to pay for the up-front costs of intrauterine contraception. Cost should be removed as a limiting factor when a woman is choosing her contraceptive method.

Addressing the user barriers

Education aimed at women, particularly younger, nulliparous women must include IUCs among the contraceptive options. Programmes in schools, and programmes that take advantage of social media should be utilised to improve women's awareness of these methods and dispel myths. Women who are aware of the benefits of IUCs are likely to choose one of these, as demonstrated by a survey conducted by the American Congress of Obstetricians and Gynaecologists which showed that female obstetricians/gynaecologists were approximately 20 times more likely to use IUCs than women in the general population (reviewed by MacIsaac & Espey and the Association of Reproductive Health Professionals [study data were presented but not published as a full paper])^{18,77}. The Contraceptive CHOICE Project also demonstrated how patient education can impact positively on IUC uptake⁷². Clearly both uptake and continuation of intrauterine contraception are influenced by education.

FUTURE RESEARCH

Future areas for research need to address the gaps in the evidence base. More information about both short- and long-term use in nulliparous women, including young women's knowledge of and attitudes

towards IUCs, may persuade HCPs towards recommending them. More information is needed about the HCP and system barriers, including the impact of training, time constraints and remuneration. The impact of the up-front cost of IUCs on user uptake also needs to be further explored.

CONCLUSION

This review has identified a number of barriers to IUC use including HCP, health system and user barriers; however, the beliefs of HCPs have perhaps the most profound effect on uptake of these methods. There is sufficient evidence to support the use of IUCs in nulliparous women in terms of safety (low insertion and expulsion risks as well as minimal risk of infection or ectopic pregnancy) and both short- and long-term satisfaction/continuation. The challenge is to ensure that HCPs understand the evidence and do not discount IUCs for nulliparous women but rather offer them, along with other contraceptive options, as a suitable method to be considered.

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