**Young women’s attitudes toward, and experiences of,**

**long-acting reversible contraceptives**

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**Short title:** Attitudes toward long-acting reversible contraceptives

**Key words:** Contraceptive implant; Contraceptive injection; Intrauterine device; Intrauterine system; Long-acting reversible contraceptive (LARC); Young women

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ABSTRACT

**Objectives:** To identify factors involved in women’s decisions to choose particular contraceptive methods and more specifically, incentives and disincentives to use three long-acting reversible contraceptive (LARC) methods: injectables, implants, and intrauterine devices/systems (IUDs/IUSs).

**Methods:** Five hundred and two women aged 18-30 completed a cross-sectional online questionnaire.

**Results:** The three most important factors in choosing a contraceptive method were: high efficacy at preventing pregnancy, protection against sexually transmitted infections, and non-interference with sexual intercourse. The most common incentives for LARC use were the high efficacy and long duration of action. Disincentives included the possibility of irregular bleeding and concerns about effects on fertility; fear of needles and pain was a particular disincentive for IUD/IUS use. Only 93 (18%) of the participants reported ever having used a LARC.

**Conclusions:** Reported disincentives to LARC use (e.g., concern about effects on future fertility) indicated that many young women hold inaccurate beliefs about these methods. The relatively high proportions of women who held neutral attitudes about LARCs (21-40%, depending on the method) highlights the importance of education and contraceptive counselling to improve knowledge about the advantages of these methods.

INTRODUCTION

Long-acting reversible contraceptives (LARCs) include the injectable contraceptive, implant, and intrauterine device/system (IUD/IUS).1 LARCs are highly effective and, unlike other methods of contraception, their effectiveness is not reliant on daily compliance by the user. However, these methods are associated with a number of side effects, primarily related to irregular and potentially excessive menstrual bleeding.1-3

The World Health Organization and the UK National Institute for Health and Care Excellence (NICE) have both issued guidelines on the utilisation of LARCs, highlighting their importance.1,4 Yet, despite few contraindications, uptake of these methods within the UK remains low, with 28% of women relying on a LARC as their primary method of contraception in 2011/2012.5,6 In 2010 just under 10% of American women using contraception had opted for an injectable contraceptive, implant, or IUS/IUD.7

It is important to increase the uptake of LARCs as these highly effective, user- independent methods have been found to reduce the rate of unintended pregnancies, whilst being cost-effective compared to oral contraceptives. To do this, it is crucial to understand the facilitators and barriers affecting their use.8 There is evidence that many women have a lack of knowledge and/or misperceptions about LARCs;9,10 by increasing education it might be possible to improve attitudes towards these contraceptives.11,12 Bharadwaj and colleagues identified reasons for their acceptance or rejection among a sample of young British adolescents (14-21 years).13 Their findings indicated that the long duration of action and reliability encouraged adoption of long-acting methods, whereas fear of pain and needles were the primary reasons cited for non-use.

The current study extended these earlier findings by recruiting a larger and somewhat older sample (18-30 years) and obtaining additional information about women’s attitudes towards LARCs, as well as their intention to use one of these methods in the future. The primary aim was to identify factors involved in women’s decisions to use a particular contraceptive and elucidate barriers to these methods amongst a sample of young women living in the UK. A secondary objective was to identify advantages and disadvantages relating to each individual LARC method (i.e., injectable, implant, and IUD/IUS).

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# METHODS

A cross-sectional design was used, with online data collection via iSurvey, a research tool designed to create and distribute questionnaires.

**Participants**

To be eligible for the study, women had to be between 18 and 30 years old. Participants were recruited by means of various methods, including social networking sites, posters around the university campus, and an advertisement placed on the School of Psychology subject pool website. Advertisements were placed on Facebook and displayed to women aged 18-30 who were living in the UK. Students who accessed the questionnaire via the Psychology subject pool website received course credit for completing the study.

## Measures

The contraception questions were modified from those used by Bharadwaj et al.13 Women were asked about both current and previous contraceptive method use. Those who had ever tried a LARC were asked to rate their experience on a 5-point Likert scale, with 1 corresponding to ‘extremely negative’ and 5 to ‘extremely positive’.

Participants were presented with a list of nine factors they might consider when choosing a contraceptive method e.g., “it is good at stopping me getting pregnant” and “I don’t have to remember to use it every day” (for the full list of factors, see Table 1). Women were then asked to rate the importance of these factors (from 1 to 4, with 1 corresponding to ‘least important’ and 4 to ‘most important’) in their choice of contraceptive method. Free response text boxes were provided to allow respondents to list additional important factors in choosing a contraceptive method.

Following this, brief descriptions of each of the LARC methods (injectable, implant, and IUD/IUS) were given, including information regarding efficacy and mode of action. Participants were then presented with a list of perceived incentives (e.g., “I know other women who use it successfully”) and disincentives (e.g., “It might cause irregular bleeding”) to choose each of these methods (for the list of incentives and disincentives, see Tables 2 and 3). For each specific method, women were asked to indicate whether the incentive/disincentive would influence whether they would consider selecting the method (yes/no response). Finally, respondents were asked if they would ever consider adopting the specific method in question; this was used as a proxy for their attitude towards the method. Those who answered “yes” (i.e., they would consider trying the method) scored a 1, indicating a positive attitude and those who answered “no” scored -1, indicating a negative attitude. Participants who answered “unsure” scored 0. Each woman’s scores for the three different LARC methods were summed and a new variable created, representing a woman’s overall attitude towards LARCs (range 3, indicating a very positive attitude, to -3, indicating a very negative attitude).

## Procedure

Advertisements for the study provided potential volunteers with a link to the online questionnaire. The link directed women to an information sheet about the nature and objectives of the study. They were assured that their data would be confidential and that they would be able to discontinue at any stage. Online data collection ran from December 2012 to March 2013. A university research ethics committee granted full ethical approval.

## Analysis

All statistical analysis was completed in SPSS version 20. Chi-squared analysis was employed to compare differences between LARC ever- and non-user groups on their ratings of factors influencing contraceptive choice and on their attitudes toward each of the LARC methods. Cochran’s Q test was used to compare incentives and disincentives reported across the different methods.14 This non-parametric test was chosen because it allowed for the fact that each participant provided responses for all three contraceptive methods.

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# RESULTS

Of the 1,285 women who opened the link to the study website, 505 filled out the questionnaire. Almost all of those who did not finish the questionnaire (n=780) left it entirely blank (n=730, 94%). Of those who completed the survey, three participants were excluded because they were outside of the required age range, resulting in a sample size of 502.

The mean age of the respondents was 20.6 years (range 18-30, SD=2.1). Most (n=468, 93%) reported having had sex (defined as “penile-vaginal intercourse”) and described their sexual orientation as heterosexual (n=471, 94%). They were predominantly white (n=455, 91%), nulliparous (n=492, 98%), and in an exclusive relationship (n=290, 58%).

## Contraception use

Almost all respondents (n=464, 94%) reported having ever used a contraceptive method and the majority (n=291, 58%) had attended a contraceptive or sexual health clinic. The most commonly used contraceptives were the combined oral contraceptive (COC) and condoms (76% and 75%, respectively). Ninety-three (19%) of the women reported ever using a LARC (injection n=23, 5%; implant n=59, 12%; IUD/IUS n=19, 4%), with eight (9%) of these women having used more than one of these methods. There were no significant differences between the LARC ever-users and non-users in relationship status or current/previous use of COCs. Five participants indicated they had used other methods (three the contraceptive vaginal ring and two post-coital contraceptives).

## Factors influencing contraception choice

The most important factor when choosing a method of contraception was effectiveness at preventing pregnancy, with 95% of women rating this as most important. This was followed by the method being able to prevent sexually transmitted infections (STIs) and not interfering with sexual intercourse, rated as most important by 37% and 28% of respondents, respectively. Not having to remember the method daily was rated least important by 41% of the women, followed by the method being able to stop one’s period, rated as least important by 40% of the sample.

When comparing the factors rated as important among LARC ever-users (n=93) and non-users (n=405) there were statistically significant group differences for five of the nine factors (Table 1). LARC ever-users rated prevention of STIs a significantly less important factor when choosing a method of contraception than non-users (*p*=<0.001). LARC ever-users also considered their partner being happy with the method as a less important consideration than non-LARC users (*p*=0.004). Not having to remember to use the method every day (*p*=<0.001) and the method not interfering with sexual intercourse (*p*=0.007) were rated as more important factors by LARC ever-users than non-LARC users. The ability of a method to prevent menses was less important to non-users than to LARC ever-users (*p*=<0.001).

*Note to the Publisher: Insert Table 1 about here.*

Additional factors listed as important in choosing a contraceptive method were identified by 105 women. The most frequently mentioned factor was having control over the menstrual cycle (n=11 e.g., “I want to be able to control when I have my period” and “regulates cycle”) and the method not having an effect on mood (n=10 e.g., “It doesn’t make me a psycho” and “It doesn’t cause mood swings”). Other factors, including effects on skin and the method containing minimal hormones, were less frequently mentioned.

## Incentives and disincentives of LARC use

Across the three LARC methods, very similar proportions of women stated that they would choose the method for its reliability in preventing pregnancy (Table 2). Significantly more participants reported that they knew women who had used the implant successfully than the injection or IUD/IUS. The duration of the method was more likely to be considered an incentive for use of the injection and the implant than the IUD/IUS.

*Note to the Publisher: Insert Table 2 about here.*

Regarding disincentives, women were significantly more likely to report fear of needles and pain as a disincentive of IUDs than of the other two LARC methods (Table 3). Women were more likely to be concerned about weight gain associated with the use of the injection and the implant than intrauterine methods. Respondents more often cited ‘hormone use’ as a disincentive for the implant than the injection or IUD/IUS. A similarly high proportion of women (three-quarters of the sample) rated a possible effect on future fertility as a disincentive for all three LARC methods.

Comparing LARC ever-users (n=93) and non-users (405) with ever-users, significantly more of the non-users reported all of the disincentives listed in Table 3 (injection: χ 2=445.0, df=6, p ≤.001; implant: χ 2= 378.1, df=6, p ≤.001; IUD/IUS: χ 2= 363.5, df=6, p≤.001).

*Note to the Publisher: Insert Table 3 about here.*

## Attitudes toward and experience of LARCs

Participants’ attitudes toward the three different methods are presented in Table 4. The mean overall attitude toward LARCs (i.e. across all three methods) was negative (-0.53; SD 1.64). Only 82 of the 93 current or previous LARC users responded to the question about their experiences with a method; on a 1-5 rating scale, with ‘5’ an ‘extremely positive’ experience, the mean rating was 3.37 (SD=1.47). Ratings for experiences with each of the three methods are contained in Table 5.

*Note to the Publisher: Insert Table 4 and 5 about here.*

# DISCUSSION

**Findings and interpretation**

# Very little research on young women’s attitudes toward LARCs has been undertaken and much of the previous research has relied on small sample sizes. An exception is the large-scale longitudinal Contraceptive CHOICE project,15 which examined contraceptive choice among 14-20 year old adolescents; overall, 70% of the participants chose a LARC method. However, the CHOICE study did not identify the factors involved in women’s decisions to use a LARC. The current study extends the literature in this area by providing more detailed information on women’s attitudes toward three different long-acting contraceptives.

**Strengths and weaknesses of the study**

One strength of this study was the relatively large sample of women recruited, relative to previous studies on this topic.13 Despite the large sample size, however, this was a convenience sample and it would be valuable to obtain similar data using a larger, nationally representative sample.

Providing participants with a short paragraph of information regarding each contraceptive method ensured assessment of their attitude was not reliant on memory or previous knowledge. In addition, as contraception can be considered a sensitive topic, online data collection may have allowed women to feel more confident giving honest answers than if a researcher was present.16

Over half of the individuals who clicked on the link for the questionnaire failed to complete it. However, this high level of discontinuation is not unusual for an online survey. Given that 94% of those who did not complete the questionnaire left it entirely blank, it is possible that a proportion of participants read the inclusion criteria within the information sheet and closed the study upon realising that they were not eligible because, for example, they were outside of the age range. Another limitation was the use of a 4 point scale to assess importance of various factors in contraceptive method choice; a 5 point scale would have offered the advantage of containing a neutral response. Whether a woman would consider adopting a method herself was considered a proxy for her attitude toward the method. This is, however, a method of measuring attitudes towards contraceptives that has been employed in previous studies.17,18

**Differences in results and conclusions in relation to other studies**

In comparing attitudes toward contraceptives across different studies, it is important to note that LARCs are defined differently in different contexts. This study, based in the UK, used the definition issued by NICE (2005): “contraceptive methods that require administration less than once per cycle or month”;1 in contrast with the US, progestogen-only injectable contraceptives are classified as LARCs in the UK.

Almost all of the women in our sample reported having ever used a contraceptive method, with the most commonly used method the COC. Previous research has shown that effective prevention of pregnancy is the most important factor influencing choice of contraception;13,19,20 this factor was also rated as highly important by participants in the current study. Weisberg and colleagues21 reported that both women and general practitioners rated high efficacy, long duration of use, and minimal or no bleeding without pain as preferred characteristics of contraceptive methods. Despite prevention of STIs being reported as an important factor in method choice, only 75% of participants in our sample reported ever having used (male or female) condoms.

When comparing the importance of various factors influencing contraceptive choice, LARC ever-users and non-users rated five factors differently. For the most part these were related to attributes of the method; for example, women who had ever used or currently used LARCs rated not having to remember the method daily and contraception not interfering with sexual intercourse as significantly more important factors than non-LARC users. Not surprisingly, non-LARC users were significantly more likely than ever-users to rate a method being able to prevent STIs as an important factor in contraceptive choice. Less easily explained was the finding that, compared with non-LARC users, women who had used LARCs were less likely to rate their partner being happy with the method as an important factor when choosing a contraceptive method. Although speculative, this could be related to the long-acting nature of LARC methods, meaning that their use may extend across multiple relationships.

The proportion of participants in our sample who had ever used a LARC (19%) was similar to that in the 2011/2012 UK national data, which indicated that 22% of women aged 18-19 and 26% of women aged 20-24 currently used LARCs.6 In the earlier UK sample of Bharadwaj and colleagues,13 28% of women had used a long-acting method. Fifty-eight percent of our participants reported having attended a specialist contraceptive or sexual health clinic, a much lower figure than in the Bharadwaj et al. study, where 87% of the sample had attended a specialist clinic.13 This difference may explain why fewer women in the current study had used LARCs; in a 2008 UK study, 40% of women who attended specialist clinics for contraceptive advice had tried long-acting methods, compared to just 6% of those who sought contraceptive advice from their general practitioners (GPs).22 This difference may reflect that healthcare professionals differ in their attitudes toward prescribing long-acting methods. One study demonstrated that despite recommendations,1 fewer than half of GPs surveyed would prescribe LARCs to teenagers.23 In an Australian study, Black and colleagues24 concluded that healthcare professionals’ beliefs about intrauterine contraceptives were perhaps the biggest barrier to women using these methods.

In comparison with the earlier UK study by Bharadwaj et al.,13 the mean age of our sample was somewhat older (20 years vs. 17 years). However, although the proportions varied somewhat, the patterns in the incentives and disincentives for LARC use found in our sample are similar to those reported by Bharadwaj et al.13 Several studies have shown that women have a limited knowledge of LARCs and that there are a number of prevalent myths existing regarding these methods.9,10 High proportions of our participants stated that possible effects on their future fertility were a disincentive for all three LARC methods. Research suggests that the IUD/IUD and implant have no effects on future fertility.25 If health professionals dispelled this myth, women may look more favourably upon these methods.

**Relevance of the findings: implications for clinicians and policymakers**

In the current sample relatively high proportions (21-40%) of participants had neutral attitudes towards the three LARC methods. This finding suggests there is opportunity for further education of women to highlight the efficacy of LARC methods, which might also lead to more positive attitudes.12,26

Contraceptive counselling could be tailored in regards to incentives and disincentives; for example, if women are anxious about experiencing pain when an intrauterine method is fitted, healthcare professionals could focus on explaining the precautions taken to reduce this e.g., the use of local anaesthetic. This may help to increase positive attitudes towards these methods and increase uptake. It may be useful to design a brief screening form or a mobile app. that could be completed by patients to inform the healthcare provider about their contraceptive preferences and the factors deemed most important in choosing a contraceptive. This would allow counselling to be focussed on the method most suited for that individual.

**Unanswered questions and future research**

Our findings, on a slightly older population of women than in a previous UK study,13 suggests that high efficacy and long duration of action are incentives for LARC use and fear of needles/pain and concerns about weight gain and future fertility are disincentives. However, both of these studies relied on convenience samples; future research should include nationally representative samples of women. Further research should also focus on high-risk groups such as, for instance, women with a history of repeat induced abortions.

Future studies should also investigate the efficacy of interventions that test different methods of presenting information about LARCs; for example, different framing of health messages in other areas of healthcare has been shown to produce large effects on acceptance of different treatments.27 The application of principles from behavioural economics has recently been advocated as a way to improve contraceptive counselling and to promote LARC methods.28

CONCLUSION

The findings from this study suggest that many young women hold inaccurate beliefs about LARCs (e.g., beliefs that these methods affect future fertility). However, the fact that a sizeable proportion of participants held neutral attitudes about long-acting methods suggests that education and contraceptive counselling could improve uptake and adherence to LARCs.

With a better understanding of the factors influencing adoption of these highly effective methods, it should be possible to tailor contraceptive counselling to individual women.

***Declaration of interest:*** The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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**Table 1:** Participants’ ratings of importance of various factors in choosing a contraceptive method; N=498.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Importance scoring | | | |  |
|  |  | 1= least | 2 | 3 | 4 = most |  |
| Factors important in choosing contraception | LARC use (n) | n (%) | n (%) | n (%) | n (%) | χ2 (*p*-value) |
| It is good at stopping me from getting pregnant | Yes (93) | 1 (1) | 1 (1) | 2 (2) | 89 (96) | 0.725 (0.867) |
| No (405) | 5 (2) | 2 (1) | 13 (3) | 385 (95) |
| Total (498) | 6 (1) | 3 (1) | 15 (3) | 474 (95) |
| It helps to protect me against STIs | Yes (93) | 24 (26) | 31 (33) | 19 (20) | 19 (20) | 26.267 (<0.001) |
| No (405) | 46 (11) | 84 (21) | 109 (27) | 166 (41) |
| Total (498) | 70 (14) | 115 (23) | 128 (26) | 185 (37) |
| It doesn’t interfere with sexual intercourse | Yes (93) | 5 (5) | 7 (8) | 47 (50) | 34 (37) | 12.243 (0.007) |
| No (405) | 29 (7) | 89 (22) | 183 (45) | 104 (26) |
| Total (498) | 34 (7) | 96 (19) | 230 (46) | 138 (28) |
| My partner would be happy with it | Yes (93) | 31 (33) | 22 (24) | 27 (29) | 13 (14) | 13.462 (0.004) |
| No (405) | 69 (17) | 96 (24) | 158 (39) | 81 (20) |
| Total (498) | 100 (20) | 118 (24) | 185 (37) | 94 (19) |
| There is a low risk of gaining weight | Yes (93) | 14 (15) | 28 (30) | 28 (30) | 23 (25) | 0.215 (0.975) |
| No (405) | 59 (14) | 118 (29) | 132 (33) | 96 (24) |
| Total (498) | 73 (15) | 146 (29) | 160 (32) | 119 (24) |
| I don’t have to remember to use it every day | Yes (93) | 10 (11) | 13 (14) | 35 (37) | 35 (37) | 138.365 (<0.001) |
| No (405) | 193 (48) | 146 (36) | 43 (10) | 23 (6) |
| Total (498) | 203 (41) | 159 (32) | 78 (16) | 58 (11) |
| **Table 1 (cont’d)**  It is quickly reversible | Yes (93) | 25 (27) | 25 (27) | 22 (24) | 21 (22) | 3.948 (0.267) |
| No (404) | 128 (32) | 129 (32) | 86 (21) | 61 (15) |
| Total (497) | 153 (31) | 154 (31) | 108 (22) | 82 (16) |
| It doesn’t affect my periods | Yes (93) | 27 (29) | 28 (30) | 22 (24) | 16 (17) | 5.134 (0.162) |
| No (405) | 81 (20) | 146 (36) | 121 (30) | 57 (14) |
| Total (498) | 108 (22) | 174 (34) | 143 (29) | 73 (15) |
| It stops my period | Yes (93) | 21 (23) | 25 (27) | 30 (32) | 17 (18) | 40.287 (<0.001) |
| No (405) | 180 (44) | 146 (36) | 55 (14) | 24 (6) |
| Total (498) | 201 (41) | 171 (34) | 85 (17) | 41 (8) |

LARC, long-acting reversible contraceptive; STI, sexually transmitted infection

**Table 2.** Comparison of participants’ responses to the question about incentives to use long-acting reversible contraceptives (LARCs) by specific type of LARC; N=502.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Injection n (%) | Implant n (%) | IUD/IUS n (%) | Cochran's Q score | *p-*value |
| I know other women who use it successfully | 268 (53) | 379 (75) | 262 (52) | 94.37 | <0.001 |
| I wouldn’t have to think about contraception  for 3 months/3 yrs/5 – 10 yrs | 406 (81) | 420 (84) | 343 (68) | 54.269 | <0.001 |
| I could rely on it to prevent me from getting pregnant | 443 (88) | 448 (89) | 438 (87) | 1.974 | 0.373 |
| My periods might get lighter or stop altogether | 321 (64) | 328 (65) | 346 (69) | 7.393 | 0.025 |
| With the IUD I wouldn’t be using hormones | - | - | 308 (61.4) | - | - |

IUD, intrauterine device; IUS, intrauterine system

**Table 3.** Comparison of participants’ responses to the question about disincentives to use long-acting reversible contraceptives (LARCs) by specific type of LARC; N=502.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Injection n (%) | Implant n (%) | IUD/IUS n (%) | Cochran's Q score | *p-*value |
| Fear of needles and pain | 213 (42) | 315 (63) | 382 (76) | 183.35 | <0.001 |
| Having a foreign object in my body | - | 343 (68) | 66 (13) | 7.053 | 0.008 |
| Use of hormones | 143 (28) | 156 (31) | 121 (24) | 18.97 | <0.001 |
| Once it is in, it can't be taken out | 242 (48) | - | - | - |  |
| Possibility of weight gain | 341 (68) | 337 (67) | 308 (61) | 29.938 | <0.001 |
| It might affect my chances of getting  pregnant in the future | 379 (75) | 370 (74) | 389 (77) | 6.53 | 0.038 |
| It might cause irregular bleeding | 422 (84) | 412 (82) | 418 (83) | 2.923 | 0.232 |

IUD, intrauterine device; IUS, intrauterine system

**Table 4.** Participants’ attitudes toward the individual long-acting reversible contraceptive methods; n (%); N=502.

|  |  |  |  |
| --- | --- | --- | --- |
| Method | -1 | 0 | +1 |
|  | negative | neutral | positive |
| Injection | 174 (34) | 199 (40) | 129 (26) |
| Implant | 219 (44) | 107 (21) | 176 (35) |
| IUD/IUS | 272 (54) | 136 (27) | 94 (19) |

IUD, intrauterine device; IUS, intrauterine system; χ 2=77.8; df=4, p≤0.001)

**Table 5.** Women’s experiences of the three long-acting reversible contraceptive methods; n (%);N=82\*.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Experience score | | | | |  |  |
| Method (n of users) | Extremely negative (1) | Negative (2) | Neither negative nor positive (3) | Positive (4) | Extremely positive (5) | Mean | SD |
| Injection (21) | 4 (19) | 3 (14) | 0 (0) | 8 (38) | 6 (29) | 3.43 | 1.54 |
| Implant (52) | 8 (15) | 12 (23) | 4 (8) | 12 (23) | 16 (31) | 3.31 | 1.5 |
| IUD/IUS (16) | 1 (6) | 4 (25) | 2 (12) | 7 (43) | 2 (12) | 3.31 | 1.2 |
| Overall Attitude (82) | 12 (15) | 18 (22) | 4 (5) | 24 (29) | 24 (29) | 3.37 | 1.47 |

\* N=82 because of some missing data on this item. SD, standard deviation; IUD, intrauterine device; IUS, intrauterine system.