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Jacqueline Coombe, Melissa L Harris, Deborah Loxton; "Who uses long-acting reversible contraception? Profile of LARC users in the CUPID cohort". Published in Sexual & Reproductive Healthcare Vol. 11, Issue March, p. 19-24 (2017)

Available from: <http://dx.doi.org/10.1016/j.srhc.2016.09.003>

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Accessed from: <http://hdl.handle.net/1959.13/1328190>

Who uses long-acting reversible contraception? Profile of LARC users in the CUPID cohort

Abstract

Objective: To explore the characteristics of long-acting reversible contraception (LARC) users in a nationally representative cohort of young Australian women aged 18-23.

Methods: Data from 3155 women who responded to a question about their contraceptive use in the previous six months at the baseline Contraceptive Use, Pregnancy Intention and Decisions (CUPID) survey were included.

Results: 726 (19.1%) women reported LARC use, with the Implanon being the most popular method (n=478; 65.8%). A history of pregnancy was strongly associated with increased odds of LARC use in the multivariate model (OR=2.67, 95%CI=2.11, 3.34, $p<0.001$).

Comparatively, using contraception for reasons other than pregnancy prevention were associated with decreased odds of LARC use in the multivariate model (period management: OR=0.74, 95%CI=0.60, 0.91, $p=0.004$, body management: OR=0.53, 95%CI=0.37, 0.77, $p=0.001$, medical condition: OR=0.25, 95%CI=0.09, 0.66, $p=0.005$). Highest education and Medicare card status also contributed to the final multivariate model, and were associated with decreased odds of LARC use.

Conclusion: Reproductive history and reasons for contraceptive use are strong indications of method choice. Promoting LARC as highly effective may not be sufficient incentive for young women to take up the method when pregnancy prevention may be equal or secondary to their desired non-contraceptive effects.

Keywords: long-acting reversible contraception; Australia; young women

Introduction

Most women will use some form of contraception at some stage of their lives. In Australia, approximately 68.4% of women aged 15-49 who are married or in a heterosexual union (defined as “a man and a woman regularly cohabiting in a marriage-like relationship”) utilise some form of contraceptive method [1], a rate comparable to the United States (USA) where in 2011-2013, approximately 62% of 15-44 year old women reported using contraception [2]. Most commonly, the method of choice is the oral contraceptive pill [2, 3]. While this method is effective at preventing pregnancy when used perfectly, the reliance on user compliance means its typical effectiveness rate is reduced [4].

Rates of unintended pregnancy vary from country to country; from 16.2% in the United Kingdom [5] to 45% in the USA [6]. The exact rate in Australia is unknown; one study suggests up to one third of Australian women experience an unintended pregnancy [7], while others suggests that as many as 50% of all pregnancies are unintended [8]. This has led to advocacy for increasing the uptake of long-acting reversible contraception (LARC), both in Australia [9], and internationally [10]. LARC is characterised by its minimal user action and longevity, which translates to a high rate of efficacy given that potential user error is removed. These characteristics position LARC as a potentially ideal method of choice for those women wishing to use a convenient and highly effective method of pregnancy prevention. In Australia, four methods of LARC are available; a hormonal intrauterine device (IUD) (Mirena®), a copper IUD (Cu-IUD), a contraceptive implant (Implanon®), and a contraceptive injection (Depo-Provera®). All are subsidised by the Medicare Benefits Schedule (MBS) or Pharmaceutical Benefits Scheme (PBS) except for the copper IUD [9]. However, high efficacy may not be the only characteristic women take into consideration when choosing a contraceptive method [11]. In fact, it has been demonstrated that women

take into account a myriad of factors when considering which contraceptive method is right for them, including perceived or real positive and negative side effects [12]. It is therefore necessary to explore contraceptive practices within the lives of the women using them, if we are to gain insight into their reasons for method choice. Much recent research in the field of LARC has focussed on women of reproductive age in general (for example [13, 14]).

Although studies such as these provide valuable information about the contraceptive practices of reproductive aged women, and hence contraceptive practices across the life course, they are unable to explore the nuances of contraceptive use among specific age groups.

Although a recent United Nations reports that long acting (namely IUDs and Implants) and permanent methods are on the rise [1], overall, rates of LARC use among Australian women using contraception remain low. In 2011 approximately 4.8% were using an IUD, 2.4% the contraceptive injection, and 5.4% the Implant [3]. Young women have been targeted as ideal candidates for LARC [15]; in part due to their increased risk of experiencing an unintended pregnancy [16], as well as their high rates of pill use (just under 60% of women aged 18-24 [3]). Nevertheless, rates of uptake among this group remain low and we know little about the motivators and disincentives to use LARC as compared to other methods.

An important first step to understanding these trends is to identify the sociodemographic and sexual and reproductive health characteristics of young women based on their contraceptive of choice. Hence, this paper aims to examine the characteristics of LARC users in a cohort of young Australian women, aged 18-23 who participated in the Contraceptive Use, Pregnancy Intention and Decisions Study (CUPID). In particular, we were interested in identifying factors that distinguish LARC users from non-LARC users.

Methods

The Contraceptive Use, Pregnancy Intention and Decisions Study (CUPID)

The Contraceptive Use, Pregnancy Intention and Decisions Study (CUPID) is an online longitudinal population based cohort study of young Australian women, aged 18-23 years. The aim of the study was to identify the factors which influence contraceptive use and unintended pregnancy among young Australian women. Three waves of online self-report surveys were conducted at approximately six monthly intervals and collected information about sociodemographic characteristics, knowledge and attitudes towards contraception, sexual and reproductive health histories and health service use. Most questions were quantitative, with some opportunities for elaboration in open ended questions. Online and offline recruitment strategies were employed, including Facebook advertising, press releases, and face-to-face recruitment at events relevant to the study population. Details about the recruitment methods have been published elsewhere [17].

A total of 3795 women aged 18-23 years were recruited into the study from September 2012-September 2013. Of these, 3731 (98.3%) completed at least one survey item and 3509 (92.5%) completed the entire survey. Towards the end stages of recruitment, the participant population was monitored against the 2011 Australian Bureau of Statistics census data to achieve a demographically representative sample of this age group, as compared to the broader Australian population. As such, the cohort was found to be largely representative of young Australian women in terms of demographic profile, with the exception of an over-representation of high school completers [17]. The study received ethical approval from two university and one non-government organisation human ethics committees.

Participants

This analysis focused on women who responded to a question about their contraceptive use in the previous six months at the baseline CUPID survey (N=3338). Women who reported using only using emergency contraception (n=9), only permanent forms of contraception (n=3) and only breast feeding (n=1), or who indicated they did not use any contraception (n=170) were excluded from the analysis. The final sample for the analysis was 3155 women.

LARC use (outcome variable)

Participants were asked to respond to the following question, “*Thinking about the last 6 months, did you use any of the following at any time?*” and given a list of options including space to report a method not listed. Women who reported using hormonal intrauterine device (Mirena IUD), Copper IUD, contraceptive implant (Implanon) or Depo-Provera injection were classified as LARC users, while women who reported use the pill, mini-pill, condoms, Vaginal Ring (Nuva Ring), diaphragm, Natural Family Planning and withdrawal were classified as non-LARC users.

Explanatory variables

Sociodemographic factors

A number of sociodemographic variables were included in the analysis. These included age (based on date of birth and reported in years; 18-23), area of residence based on ARIA+ status [18] (major city, regional, remote), highest education (year 12 or below, certificate/diploma, university) and relationship status (single, boyfriend/girlfriend, cohabitating, engaged/married). After examining the specific patterns of study and work, employment status was collapsed into 4 categories: unemployed/not working (i.e. those who indicated they were unemployed and those who indicated they were not working or looking for work including stay at home mothers and women on maternity leave), studying (i.e. exclusively studying either part or full time), working (i.e. those who were exclusively

working either part or full time) and working and studying (i.e. working and studying in any combination of casual, part or full time).

Health service use

Participants were asked to provide the distance from their home to their nearest doctor or medical clinic. Responses were dichotomised into $\leq 30\text{km}$ and $> 30\text{km}$. Likewise, level of difficulty gaining transport to health services was categorised as difficult (which included the responses always difficult and sometimes difficult) and easy (including the responses usually easy and always easy). Medicare card holder status was dichotomised into own/have copy and don't own/don't have copy.

Sexual and reproductive health factors

Pregnancy and abortion histories were based on participant reports of a previous, or current (i.e. at the time of completing the survey) pregnancy (no or yes) or previous abortion (no or yes). Participants were also asked their reasons for using contraception and responses were categorised as follows: period management (i.e. period regulation, pain reduction etc.), body management (i.e. management of migraines, weight gain, headaches etc.), medical condition (i.e. management of conditions such as Polycystic Ovary Syndrome (PCOS)) and contraception. Participants also responded to a question regarding the relationship with the last person they had sex with, which was collapsed into the following: no relationship (i.e. single, one night stand etc.), in a relationship (i.e. monogamous or polygamous relationships but not living with that person/people), cohabitating (i.e. in a relationship and living with that person) and engaged/married. For some women, their relationship status was not congruent with their reported relationship with the last person they had sex with, and for this reason we decided to include this variable to encapsulate this complexity.

Statistical analysis

Bivariate analyses were conducted using chi square tests for categorical variables and t-tests for continuous variables to assess the relationship between LARC use and the sociodemographic and reproductive health variables. Unadjusted logistic regression analyses were carried out to examine the odds ratios (95% CI) associated with LARC use and individual variables. A final multivariate model adjusting for demographic and reproductive health characteristics was constructed using a backward elimination stepwise procedure. All variables were entered equally in the initial model and those variables found not to contribute significantly to the model ($p>0.05$) were manually removed. The variable examining abortion was not tested due to collinearity with the pregnancy history variable. All analyses were conducted with Stata software, version 13 (StataCorp 2013 College Station, TX).

Results

In all, 3155 women reported using some form of contraception in the last 6 months (excluding only permanent methods, breast feeding and emergency contraception and no methods). A total of 726 (19.3%) respondents indicated use of a LARC of which 478 (65.8%) were Implanon users, 130 (17.9%) Mirena users, 101 (13.9%) Depo-Provera users and 17 (2.3%) Copper IUD users. The remaining 2429 (64.0%) participants indicated use of other forms of contraception including the Pill, withdrawal and condoms. Demographic and sexual and reproductive health variables by LARC use are shown in Table 1.

Table 1 about here

Bivariate results are presented in Table 2. Age, area of residence, distance to health services, transport to health services and history of abortion did not differ significantly between LARC and non-LARC users. In regards to highest education, compared to women who have achieved up to a year 12 education, having a certificate or diploma was associated with

slightly increased odds of using a LARC (OR = 1.25, 95%CI = 1.03, 1.51, $p = 0.021$) while having a university degree was associated with 30% decrease in odds of using a LARC (OR = 0.70, 95%CI = 0.55, 0.89, $p = 0.003$). Similarly, compared to women who were working, being unemployed or not currently working was associated with increased odds of LARC use (OR = 1.74, 95%CI = 1.30, 2.34, $p < 0.001$), while working and studying concurrently was associated with decreased odds of LARC use (OR = 0.77, 95%CI = 0.63, 0.94, $p = 0.010$). Not owning, or not having a copy of a Medicare card was also associated with 40% decreased odds of using a LARC (OR = 0.63, 95%CI = 0.49, 0.80, $p < 0.001$). Significant differences between LARC and non-LARC user's reproductive and sexual health characteristics were also observed. The most significant predictor of LARC use was a history of pregnancy, with these women 2.71 times more likely to use a LARC as those who had never been pregnant (95%CI = 2.24, 3.28, $p < 0.001$). Using hormonal contraception for reasons other than pregnancy prevention was found to be associated with decreased odds of using a LARC (period management: OR = 0.69, 95%CI = 0.57, 0.83, $p < 0.001$, body management: OR = 0.39, 95%CI = 0.27, 0.55, $p < 0.001$, medical condition: OR = 0.32, 95%CI = 0.13, 0.76, $p = 0.010$). Relationship status was also an indicator of LARC use, with women in cohabitating relationships (OR = 1.41, 95%CI = 1.11, 1.79, $p = 0.005$) and women who were engaged or married (OR = 1.63, 95%CI = 1.22, 2.19, $p = 0.001$) more likely to use a LARC than those that were single. Similarly, women who reported that the last person they had sex with was their cohabitating partner (OR = 1.43, 95%CI = 1.12, 1.82, $p = 0.004$), or their fiancé or husband (OR = 1.67, 95%CI = 1.23, 2.24, $p = 0.001$) were also more likely to use a LARC than someone whom they didn't have a relationship with.

Multivariate results are also presented in Table 2. Distance to health services, area of residence, transport to health services, age and, dissimilar to the bivariate analysis, relationship status and relationship at last sex were all found not to contribute to the final

multivariate model. As in the bivariate analysis, a significant association was found between highest education and LARC use. Compared to women with up to a year 12 education, having a university degree was associated with a 30% decrease in odds of using a LARC (AOR = 0.74, 95%CI = 0.56, 0.97, $p = 0.027$). Not owning or not having a copy of a Medicare card was also associated with decreased odds of LARC use (AOR = 0.74, 95%CI = 0.56, 0.98, $p = 0.036$), although this significance decreased in the multivariate model. As in the bivariate model, a history of pregnancy remained the most significant predictor of LARC use (AOR = 2.67, 95%CI = 2.11, 3.34, $p < 0.001$). Similarly, the reason for hormonal contraceptive use also remained significant in the multivariate model, with women using contraception for reasons other than pregnancy prevention less likely to use a LARC (period management: AOR = 0.74, 95%CI = 0.60, 0.91, $p = 0.004$, body management: AOR = 0.53, 95%CI = 0.37, 0.77, combined $p = 0.001$, medical condition: AOR = 0.25, 95%CI = 0.09, 0.66, $p = 0.005$).

Table 2 about here

Discussion

Overall, 19.3% of our sample reported using a LARC, of which the implant (Implanon) was the most common method. This rate is higher than has been reported for young women internationally. In the USA among 15-24 years olds the uptake of LARC was recently reported as 5% [2], and among young women in France at 6.5% [20]. This difference may in part be due to these international studies not considering the contraceptive injection as a LARC, as we did in our study. In the Australian context, our rates of LARC use are similar to those recently published using data from the 2011 Household Income and Labour Dynamics in Australia (HILDA) study [3]. These rates are higher than has previously been reported in

Australia; HILDA data from 2005 indicated that approximately 6% of young women were using a LARC [21], suggesting the use of these methods may be on the rise.

In our study, a history of pregnancy was strongly associated with LARC use. The relationship between use of a LARC and parity has been shown internationally, with women who have had one or more children more likely to use these methods (for example, see [22]). Much of this research focuses on women across the reproductive life course (i.e. 18 – 44), so it was interesting to see this relationship between LARC use and previous pregnancy remain a significant indicator of use among young women aged 18-23. Given the high rate of unintended pregnancy among this group of women, [23], the high effectiveness of LARC may be an attractive characteristic for women trying to prevent a repeat unintended pregnancy. Our finding is supported by a recent Australian prospective multicentre cross-sectional study focusing on contraceptive use post-abortion which found that women younger than 20 years were more likely to choose a LARC after the termination [24].

On the other hand, using contraception for reasons other than its ability to prevent pregnancy was associated with decreased odds of using a LARC method. Research has shown that women use contraception for a multiplicity of reasons, of which pregnancy prevention is but one consideration [11]. Further, women are prepared to discontinue their chosen contraceptive if it does not meet these additional needs [25]. Unwanted (or undesirable, adverse) side effects, such as increased bleeding volume and frequency, as well as increased cramping have been shown to impact satisfaction with LARC methods [26], with abnormal bleeding often cited as the reason for discontinuation [27]. Although side effects are reported regularly in regards to one or more of the LARC methods, studies which have explored levels of satisfaction with these methods after 6 months of use generally find that satisfaction remains high [26]. Indeed a recent systematic review which explored the perceived positive and negative qualities of LARC methods suggested that the consistent reporting of perceived

negative characteristics of LARC obscures their potential positive characteristics, including longevity, high efficacy and a lack of interference with sex [12]. Ensuring that women are provided with information regarding the potential positive and negative impacts of LARC may go some way towards reducing misgivings towards these methods.

Relationship status also appears to have some effect on LARC use, although it did not contribute to our final multivariate model. In our study, women who reported being in a cohabitating relationship, or who were engaged or married, were more likely to use a LARC than single women, or women in non-cohabitating relationships. Similar findings have been reported both internationally [28] and in Australia [3]. Our study adds to these findings by including un-partnered women in the analyses. Given that young women are sexually active within a wide range of differing relationship types (marriage, serious relationships, casual relationships, friends with benefits and so on) it is important to capture those who identify as partnered and un-partnered, in an effort to understand the impact of relationship status on contraceptive practices.

Socioeconomic factors were also shown to influence contraceptive use. In the current study, women without a Medicare card (a card issued by the Australian government which provides access to health benefits, subsidised pharmaceuticals and low or no cost care in public hospitals) or without a copy of a card were less likely to use a LARC. Whilst LARC is subsidised by the PBS and MBS in Australia (except for the Copper IUD) [9], subsidised rates require use of a Medicare card. Financial and time costs associated with repeat visits to a GP or Gynaecologist must also be taken into account. Bergin and colleagues have shown that 'two visit' protocols for IUD insertion pose a significant barrier to its uptake [29]. Cost has also been identified as a barrier for other contraceptive methods, including the pill in Australia [30], and more recently as a barrier to LARC [31]. Highest education was also found to impact LARC use, with having a university education, associated with decreased

odds of use. Further research is required to fully elucidate the reasons for this relationship; previous findings regarding the relationship between educational attainment and LARC use are mixed (for example see [14, 27, 28]).

In regards to barriers due to geographical location, contrary to Lucke and Herbert [32], we did not find LARC use to be associated with area of residence. Similarly, distance to health services and transport to health services were also not found to be associated with use of a LARC. Potentially, this may be due to the age range of interest (Lucke and Herbert's study focussed on women aged 31-36 in 2009 [32]) and the ability of young women to access LARC more generally. A recent study of Australian GPs found that they were prescribing LARC to women aged 35-54 years more often than to women 12-34 years [33]. Despite the development of guidelines which indicate the suitability of LARC for young, nulliparous women [10, 34, 35] studies have shown that service providers are still unsure of their safety for young women [36] and that the pill is still considered the first-line contraceptive option [37]. This is reflected in women reporting difficulties in obtaining an IUD, including being told they are unsuitable for the method, despite meeting the medical eligibility criteria [38]. As the gatekeepers of hormonal contraception, it is essential that health professionals receive the education and training regarding LARC methods in order to reduce barriers and provide these methods to patients who request them [36]. Hence, our finding that young women do not significantly vary in their LARC use by location may reflect issues with accessing these methods for young women in general.

Strengths and Limitations

The findings of our study must be considered in light of a few limitations. Firstly, while our sample of women is largely demographically representative of the wider Australian population, educated women are slightly overrepresented [17]. This is not unusual for longitudinal health surveys. Recent recruitment of a cohort of young women aged 18-23 for

participation in the Australian Longitudinal Study of Women's Health also resulted in an overrepresentation of educated women [39]. This disparity was however controlled for in the multivariate model, and was found not to contribute to the final model. Additionally, our study involves self-reported data in the context of a survey asking about contraception. Therefore our results must be considered within this frame. Strengths of our study include participants recruited based on their age, rather than previous history of pregnancy or abortion, use of specific contraceptive methods or their relationship status. This allows for an examination of and comparison between contraceptive practices in light of reproductive histories, rather than because of these histories. Further strengths lie in our study's focused exploration into contraceptive practices and pregnancy intention among young women, questions which are usually asked under the umbrella of larger health surveys. This focus allows for a nuanced exploration into contraceptive practices.

Implications

Our findings have several implications for the clinical setting. Primarily, previous pregnancy history and reason for hormonal contraceptive use were shown to be the strongest indicators of LARC use or non-use. This highlights the importance of considering contraceptive method choices within the specific context of the individual; promoting LARC as highly effective may not be sufficient incentive for young women to take up the method when pregnancy prevention may be equal to, or secondary to their desired non-contraceptive effects.

Alternatively, LARC may be a very attractive option to women who have difficulty with compliance, or who desire a convenient, long acting and highly effective method. As the gatekeepers of hormonal contraception, women rely on health professionals to provide them with the most suitable option for their individual needs and desires, and it is important that health professionals are wary of their personal preferences and biases in contraceptive consultations.

Conclusion

Overall, our findings indicate that 19.3% of the CUPID cohort is using a LARC, a rate comparable to recent Australian studies. We found that young women with a history of pregnancy and women using contraceptive for reasons other than pregnancy prevention are strong indicators of LARC use or non-use. Relationship status and socioeconomic factors were also found to influence LARC use. Further research into the role of cost and geographical location as barriers to LARC use for young women is needed, as is a greater understanding about the impact of highest educational attainment. Moreover, identifying reasons for contraceptive method change, particularly the motivators for switching to or from a LARC, would also be an important next step in developing our understanding of the contraceptive practices of young, Australian women.

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Table 1 Demographic characteristics of non-LARC users versus LARC users

	Non-LARC user		LARC user	
Age (Mean ± SD)	20.67	(1.72)	20.66	(1.73)
	N	%	N	%
Area of residence				
Major city	1576	66.50	450	62.67
Regional	728	30.72	245	34.12
Remote	66	2.78	23	3.20
Highest education				
Year 12 or below	1299	53.72	388	53.74
Certificate/diploma	608	25.14	227	31.44
University	511	21.13	107	14.82
Employment status				
Unemployed/not working	159	6.55	90	12.40
Studying	517	21.28	141	19.42
Working	776	31.95	252	34.71
Working & Studying	974	40.10	243	33.47
Distance to health services				
<30kms	2320	97.60	691	96.78
>30kms	57	2.40	23	3.22
Transport to health services				
Difficult	215	9.00	80	11.24
Easy	2175	91.00	632	88.76
Medicare card status				
Own/have copy	1993	82.29	638	88.12
Don't own/ don't have copy	429	17.71	86	11.88
Abortion ever				
No	202	56.27	120	51.50
Yes	157	43.73	113	48.50
Pregnant ever				
Yes	375	15.91	239	33.90
No	1982	84.09	466	66.10
Reason for hormonal contraceptive use				
Period management	1100	55.42	350	51.85
Body management	246	12.39	44	6.52
Medical condition	41	2.07	6	0.89
Contraception	598	30.13	275	40.74
Relationship status				
Engaged/Married	248	10.26	103	14.25
Cohabiting	644	26.63	231	31.95
Boyfriend/Girlfriend	972	40.20	248	34.30
Single	554	22.91	141	19.50
Relationship with last person had sex with				
Engaged/married	250	10.38	105	14.54
Cohabiting	667	27.69	241	33.38
In a relationship	991	41.14	249	34.49
No relationship	501	20.80	127	17.59

Table 2 Unadjusted and adjusted models testing the association between LARC use and sociodemographic and sexual and reproductive health variables

	Unadjusted model		Adjusted model	
	OR (95% CI)	p-value	OR (95% CI)	p-value
Age	1.00 (0.95, 1.05)	0.868	---	---
Area of residence				
Major city [ref]	---	---	---	---
Regional	1.18 (0.99, 1.41)	0.071	---	---
Remote	1.22 (0.75, 1.98)	0.422	---	---
Highest education				
Year 12 or below [ref]	---	---		
Certificate/diploma	1.25 (1.03, 1.51)	0.021	1.14 (0.91, 1.43)	0.240
University	0.70 (0.55, 0.89)	0.003	0.74 (0.56, 0.97)	0.027
Employment status				
Unemployed/not working	1.74 (1.30, 2.34)	<0.001	1.42 (0.98, 2.05)	0.066
Studying	0.84 (0.66, 1.06)	0.144	0.82 (0.62, 1.08)	0.150
Working [ref]	---	---	---	---
Working & Studying	0.77 (0.63, 0.94)	0.010	0.87 (0.69, 1.10)	0.238
Distance to health services				
<30kms [ref]	---	---	---	---
>30kms	1.35 (0.83, 2.21)	0.226	---	---
Transport to health services				
Difficult	1.28 (0.98, 1.68)	0.074	---	---
Easy [ref]	---	---	---	---
Medicare card status				
Own/have copy [ref]	---	---	---	---
Don't own/ don't have copy	0.63 (0.49, 0.80)	<0.001	0.74 (0.56, 0.98)	0.036
Abortion ever*				
Yes	1.21 (0.87, 1.69)	0.256	---	---
No [ref]	---	---	---	---
Pregnant ever				
Yes	2.71 (2.24, 3.28)	<0.001	2.67 (2.11, 3.34)	<0.001
No [ref]	---	---	---	---
Reason for hormonal contraceptive use				
Period management	0.69 (0.57, 0.83)	<0.001	0.74 (0.60, 0.91)	0.004
Body management	0.39 (0.27, 0.55)	<0.001	0.53 (0.37, 0.77)	0.001
Medical condition	0.32 (0.13, 0.76)	0.010	0.25 (0.09, 0.66)	0.005
Contraception [ref]	---	---	---	---
Relationship status				
Single [ref]	---	---	---	---
Boyfriend/girlfriend	1.00 (0.80, 1.26)	0.983	---	---
Cohabiting	1.41 (1.11, 1.79)	0.005	---	---
Engaged/married	1.63 (1.22, 2.19)	0.001	---	---
Relationship with last person had sex with				
No relationship [ref]	---	---	---	---
In a relationship	0.99(0.78, 1.26)	0.942	---	---
Cohabiting	1.43 (1.12, 1.82)	0.004	---	---
Engaged/married	1.67 (1.23, 2.24)	0.001	---	---

* All variables were entered equally in the initial adjusted model and those variables found not to contribute significantly to the model ($p>0.05$) were manually removed. Abortion was not tested in the adjusted model due to collinearity with the variable examining previous pregnancy.