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Knowledge, Attitude and Practice towards Long Acting Reversible Contraceptives among Clinical Sciences Students, University of Bradford, UK

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Authors' contributions

This work was carried out in collaboration between both authors. Author ED contributed to the conception and designed the study. Author ED helped in the acquisition, analysis and interpretation of data and the drafted the manuscript. Author MAAM contributed to the analysis and interpretation of data and the drafting of the manuscript. Both authors participated in the critical revision of the manuscript and approved the final paper for submission.

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ABSTRACT

Aim: To investigate the knowledge, attitudes and practice of Clinical Sciences students at the University of Bradford, UK towards Long-acting Reversible Contraceptives (LARCs).
Methods: A cross-sectional study was conducted to investigate the KAP (knowledge, attitude and practice) of LARC among Clinical Sciences students at the University of Bradford, UK during Jan-Feb 2016. Female students of all stages (Foundation year, Year 1 to Year 3; n=228) of Clinical Sciences Department were invited to participate in the study. A self-completed paper-based questionnaire was developed by the researcher and 147 questionnaires were completed.
Results: Low uptake of LARCs (10.2%) and knowledge of contraceptive efficacy were found. Students reported contraceptive efficacy as the most important factor considered for contraceptive

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choice. Students were highly likely to use emergency contraception (78.9%) but unlikely to terminate an unwanted pregnancy (39.5%).
Conclusion: Students' knowledge of contraception requires improvement to maximise the uptake of LARCs and thus student welfare. Further research is also required.

Keywords: Sexual behaviour; contraception; LARCs; university students; UK.

1. INTRODUCTION

University life provides the ideal environment for students to engage in risky sexual behaviours due to lack of parental guidance and control, increased alcohol consumption, and close living conditions [1]. In 2015, 60% of UK students reported engaging in a one-night stand and only 21% of students reported every-time use of condoms [2]. Engagement in unprotected sex unarguably lead to risk of unintended pregnancies and transmission of sexually transmitted infections and/or diseases, research has found that despite these risks 30% of people would definitely engage in unprotected sex [3]. The consequences of an unintended pregnancy can include low economic and educational attainment, as well as poor mental and physical health for both mother and child [4], and 57% of unintended pregnancies in the UK result in termination [5]. Contraceptive use can therefore be deemed an issue of student welfare and thus the promotion of positive sexual and contraceptive behaviours should be maximised within the student population.

Long-acting Reversible Contraceptives (LARCs) are the most effective contraceptive methods available [6,7] with efficacy of up to >99.99% [8], and provide further benefits through the removal of user error [6]. The four methods of LARCs include implant, injection, copper hormonal intrauterine devices (IUDs), and hormonal IUDs) [9]. Use of LARCs is lower than that of non-LARC methods (e.g. oral contraceptives, sterilisation, barrier methods etc.) [10,11] and although these figures are increasing following the implementation of recommendations in 2007 [12], this highlights that women in the UK are relying on less effective methods of contraception.

Lack of LARC knowledge demonstrated by both contraceptive users [10] and healthcare professionals [13] poses a barrier to uptake. Previous research conducted both in health and educational settings identified that women associate these methods with unpleasant side effects and the process of insertion/removal further contribute to this [10,14]. Previous student based research found that contraceptive choice within this population is based upon contraceptive efficacy (95% of students said this was most important) and STI protection [4].

Steps therefore need to be taken in order to maximise effective contraceptive practice. The aim of the study was to investigate the knowledge, attitudes and practice (KAP) of long acting reversible contraceptives (LARC) among Clinical Sciences students at the University of Bradford, UK.

2. MATERIALS AND METHODS

2.1 Study Setting

A cross-sectional study was conducted to investigate the KAP of LARC among Clinical Sciences students at the University of Bradford, UK from the 19th January 2016 to 9th February 2016.

2.2 Study Population

Female students of all stages (Foundation year, Year 1 to Year 3; n=228) of Clinical Sciences Department were eligible to participate in the study.

2.3 Study Instrument

A self-completed paper-based questionnaire was developed by the researcher and then evaluated by an expert. The questionnaire had divided into four sections which include demographics of study population, use, knowledge, attitude of LARCs. Closed questions were used which comprised of a series of tick boxes to indicate a specific response or position on a Likert scale, explicit written response was only required when indicating an 'other' response.

In section one (demographics), participants were asked to provide their age, ethnicity, current sexual relationship status and length. In section two (use of contraception), participants were asked to indicate which contraceptive they were

currently using with instruction to tick multiple responses if applicable. In section three (knowledge of contraception), participants were required to complete four questions concerning awareness (indicating the specific contraceptives that the participant was aware of as well as providing an indication of self-reported knowledge on a Likert scale) and actual knowledge (indication of perceived efficacy for pregnancy protection and STI prevention). Section four asked the participants to identify key factors for contraceptive choice which would actually affect their choice with use of a Likert scale, as well as asking participants which side effects they associated with differing contraceptives, and finally to indicate likelihood that they would use emergency contraception or engage in a pregnancy termination.

2.4 Pilot Study

A pilot study was completed on 3rd December 2015. Ten Clinical Sciences students took part in the pilot study and provided feedback following completion in order to highlight any methodology mistakes/issues or question ambiguity. Participants took approximately 10 minutes to complete the questionnaire. No problems were raised regarding the questionnaire itself or the accompanying consent form. Therefore, no changes were made.

2.5 Data Collection

Participants were approached during compulsory modular teaching sessions twice to minimise the effects of absenteeism. Before distribution participants were made aware of the research, methodology, right to withdraw and the procedure to do so, ethical approval and confidentiality arrangements. Participants opted into participate avoiding coercion, and were provided with a randomly numbered questionnaire covered by a consent form allowing blinding. Informed consent was obtained from all individual participants included in the study.

Ethical approval was granted by the Chair of the Biomedical, Natural, Physical and Health Sciences Research Ethics Panel at the University of Bradford on 30th November 2015, following an application which was initiated on 15th October 2015. Participants were provided with a consent form which fully described the study, participant invitation, participant rights (voluntary involvement, confidentiality, right to withdraw), methodology expectations, and researcher contact details. Researcher explained detailed methodology of the study before distribution. Code number was allocated for each questionnaire and participants were required to anonymously complete it including a consent form.

2.6 Data Analysis

Descriptive analysis was completed for all questions to provide nominal and frequency data. In addition to this, Chi Squared analyses were completed to investigate the potential differences between ethnic groups, LARC and non-LARC users and age. Significance levels of $p \leq 0.05$ were met in order to define a significant result. Data analysis was carried out using SPSS v22.

3. RESULTS

A total of 149 questionnaires were collected, of these, 2 were excluded from data analysis due to lack of completion, 147 questionnaires were therefore finally analysed. The overall response rate for the study was 67.43%. The mean age of participants was 20.1 years (range 18-38 Sd 2.67.) Participants mainly (34.1%) came from Asian backgrounds, and 36.7% of participants were currently in a sexual relationship ranging from 0-3 months to more than 5 years (Table 1).

Table 1. Characteristics of participants

Demographic	Respondents (%) (n)=147
Age (years)	
18-19	67 (45.9%)
≥20	79 (54.1%)
Ethnicity*	
White	49 (33.4%)
Mixed/multiple ethnic groups	9 (14.1%)
Asian	50 (34.1%)
Black	27 (18.9%)
Other	9 (6.3%)
Current sexual relationship	
Yes	54 (36.7%)
No	93 (63.6%)
Length of sexual relationship	
0-3 months	13 (24.1%)
4-12 months	10 (18.5%)
>1 year	26 (48.1%)
>5 years	5 (9.3%)

**Note: 3 participants omitted ethnicity data*

3.1 Use of Contraception

The most commonly used method were oral contraceptives (19.2%) closely followed by male

condoms (18.0%) and 11.6% of participants used 2 or more methods of contraception. It was also found that more than 10% of participants used some form of LARCs and of those students currently using contraception the uptake of LARCs was 25.6%. The most commonly used LARC was an IUD (53.3% of LARCs) and 87.5% of IUD users were non-adolescents (>19 years old). In addition to this 17.1% of participants reported using no contraception and 3.4% being abstinent. LARCs users were most likely to be from a White ethnic background (p≤0.05) and significantly older (p≤0.005) (Table 2).

3.2 Contraceptive Knowledge

Participants awareness of contraceptives was very good with students indicating awareness of a mean number of 10 out of a possible 15 methods (Sd 3.69, range 0-15) and 2 of 3 LARCs (Sd 0.90 Range 0-3) (Fig. 1). This was significantly higher for adolescent participants and those from White ethnic backgrounds (p≤0.0005 and p≤0.0005 respectively).

When assessed on a Likert scale participants showed lower self-reported knowledge of LARCs than non-LARCs, however the difference was statistically insignificant. Of the four LARCs participants felt that they knew most about the contraceptive implant (Table 3). Adolescent participants and those from White ethnic backgrounds reported higher knowledge of LARCs (p≤0.0005 and p≤0.05 respectively).

Table 2. Demographic differences of LARC users

Demographics	LARC users (%)	P Value
Ethnicity		
White	10 (66.7%)	P =
Mixed/multiple ethnic groups	1 (6.7%)	0.008
Asian	2 (13.3%)	
Black	1 (6.7%)	
Other	2 (13.3%)	
Age Category		P =
Adolescent	5 (33.3%)	0.002
Non-adolescent	10 (66.7%)	

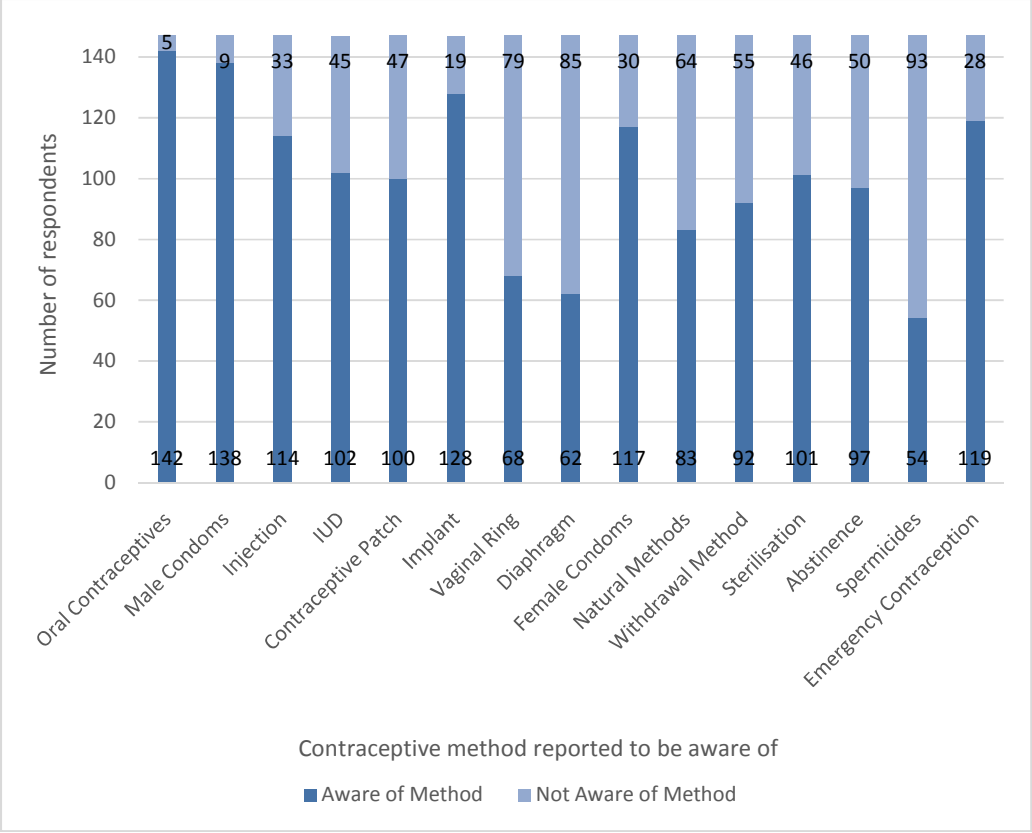

Fig. 1. Contraceptive awareness among participants

Almost half of students reported that they were uncertain of the efficacy of IUDs (48.3% and 44.2% of participants indicated 'not sure' of the protective effect of the hormonal and copper IUD respectively) with a further 16.3% and 23.1% of participants incorrectly identifying the efficacy of the hormonal and copper IUD respectively. Despite this almost half of participants correctly identified the contraceptive efficacy of the implant (45.5%) and injection (44.2%), and indicated the lack of STI protection provided by LARCs (53.7%, 55.1%, 60.5% and 61.9% of participants for the copper IUD, hormonal IUD, implant and injection respectively) (Fig. 2).

Actual knowledge of contraceptive efficacy was, again, greatest for adolescent participants and those from White ethnic backgrounds ($p \leq 0.0005$).

Table 3. Self-reported LARC knowledge

LARCs	Respondents (%)			
	Nothing	Very Little	Some	A Lot
Copper IUD	47 (32%)	54 (36.7%)	35 (23.8%)	11 (7.5%)
Hormonal IUD	51 (34.7%)	57 (38.8%)	28 (19%)	11 (7.5%)
Implant	16 (10.9%)	30 (20.4%)	68 (46.3%)	33 (22.4%)
Injection	30 (20.4%)	35 (23.8%)	52 (35.4%)	30 (20.4%)

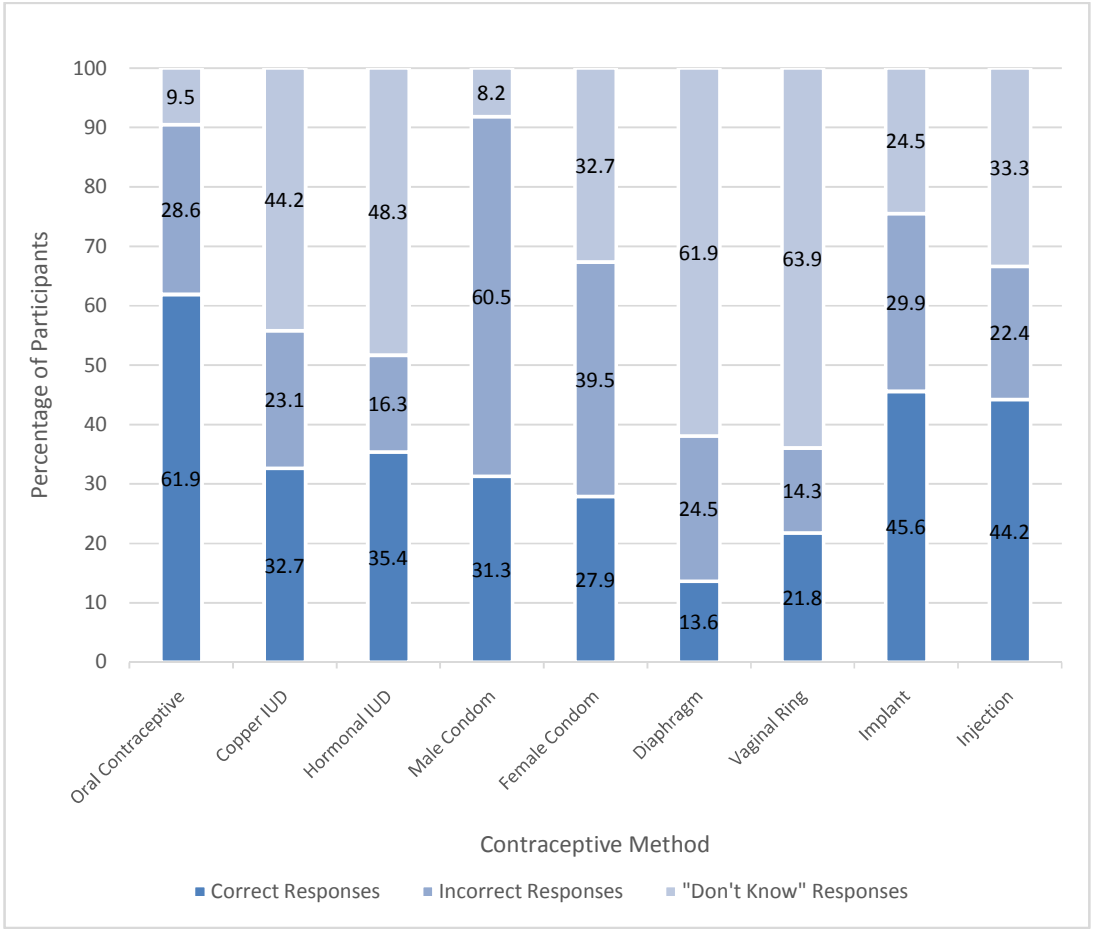

Fig. 2. Perceived pregnancy protection of contraceptives

Participants belief of out of every 100 women how many people fall pregnant in the first year of use, as incorrect, correct and "don't know" responses

3.3 Attitude to Contraception

Of the eleven factors (Fig. 3) which could affect contraceptive choice, participants reported contraceptive efficacy and ability to protect against STIs as the two most important factors (n=123 and n=111respectively reported that these two factors would affect their decision 'A Lot') This was closely followed by ease of use (n=93 reported that this would affect their decision 'A Lot').

LARCs were mostly associated with ineffective protection against sexually transmitted infections (STIs) (55.1%, 51.0%, 52.4% and 47.7% of participants indicating that this was associated with the copper IUD, hormonal IUD, implant and injection respectively), and both IUDs and the injection were associated with an uncomfortable/painful insertion or removal process (48.3%, 32% and 30.6% of participants respectively) (Table 4).

The majority (79%) of participants reported that they would use emergency contraception (EC) if their current contraceptive method failed, whereas only 39.5% of participants reported that they would terminate and unwanted pregnancy.

4. DISCUSSION

The overall findings of the present study are that the uptake of LARCs is lower than the uptake of non-LARCs in the student population and knowledge of these contraceptives within the population requires improvement. The general results of this study are reflective of that seen in previous research conducted in the academic institutes [14].

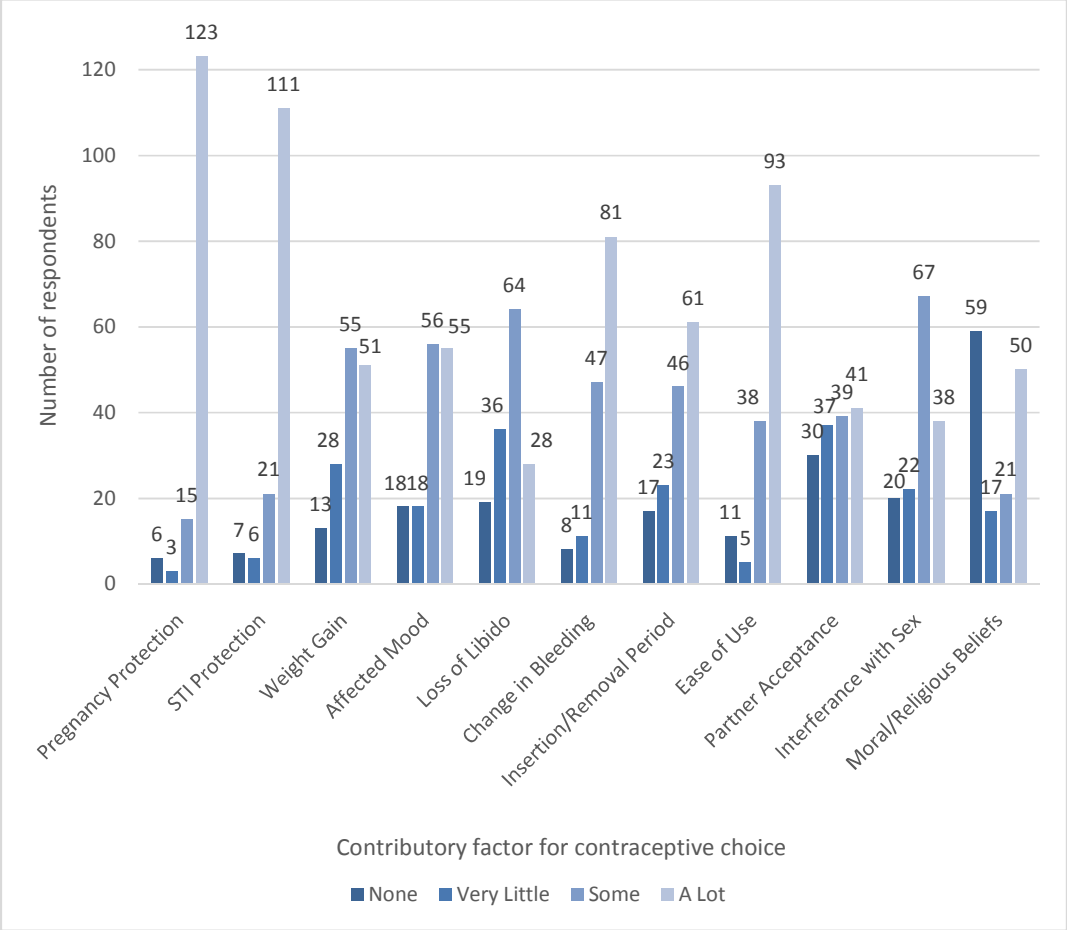

Fig. 3. Contributory factors towards contraceptive choice

Frequency of responses when asked how much of an affect each factor would have on the participants' choice of contraception

Table 4. Frequency of side-effects associated with contraceptives

		Respondents (%)								
	Contraceptives	**Oral contraceptive**	**Copper IUD**	**Hormonal IUD**	**Male condoms**	**Female condoms**	**Diaphragm**	**Vaginal ring**	**Implant**	**Injection**
Side-effects	Has an effect on sex	9 (6.1%)	24 (16.3%)	22 (15%)	83 (56.7%)	68 (46.2%)	13 (8.8%)	29 (19.7%)	10 (6.8%)	10 (6.8%)
	Painful or uncomfortable insertion/removal	2 (1.4%)	71 (48.3%)	47 (32%)	16 (10.9%)	30 (20.4%)	16 (10.9%)	51 (34.7%)	6 (4.1%)	45 (30.6%)
	Irregular periods	65 (44.2%)	34 (23.1%)	38 (25.9%)	3 (2%)	5 (3.4%)	4 (2.7%)	15 (10.2%)	45 (30.6%)	52 (35.4%)
	Mood swings	97 (66%)	21 (14.3%)	47 (40%)	3 (2%)	3(2%)	2 (1.4%)	8 (5.4%)	35 (23.8%)	42 (28.6%)
	Reduced libido	24 (16.3%)	11 (7.5%)	17 (11.6%)	9 (6.1%)	12 (8.2%)	1 (0.7%)	3 (2%)	20 (13.6%)	22 (15%)
	Weight gain	107 (72.8%)	16 (10.9%)	35 (23.8%)	4 (2.7%)	4 (2.7%)	4 (2.7%)	6 (4.1%)	42 (28.5%)	49 (33.3%)
	Ineffective protection against STIs	99 (67.3%)	81 (55.1%)	75 (51%)	19 (12.9%)	23 (15.7%)	18 (12.2%)	47 (40%)	77 (52.4%)	70 (47.7%)
	Ineffective pregnancy protection	15 (10.2%)	17 (11.6%)	11 (7.5%)	32 (21.8%)	23 (15.7%)	10 (6.8%)	14 (9.5%)	11 (7.5%)	13 (8.8%)

4.1 LARC Use among Students

This research provides a new light on the general use of contraception within the student population, as previous research regarding LARC used by women had been mainly focused on those who attended sexual health clinics [10,15,16]. Compared to previous research with student participants within the UK, the uptake of LARCs is higher than that has been expected, Bracken et al. [16] found only 19% of contraceptive users were using a LARC (compared to 25% in this study). Other research in UK clinics found a significantly higher uptake of LARCs (70-82% of participants being LARC users) [10,15]; however, these were contradicted by research conducted in general practice in the UK, which found only 12.6% of contraceptives prescribed by the general practitioners were LARCs [17]. The highly differing findings suggest that knowledge is key for the uptake of LARCS with women attending sexual health clinics receiving more comprehensive information regarding their choice with less barriers than those attending in general practice [18]. From this conclusion, it could be deduced that 25% of students in this study had attended a sexual health clinic, explaining the different findings; however, this was not investigated within the scope of this research.

Differing LARC use was seen between ethnicities and age groups, with students from white ethnic backgrounds and those who were aged >20 years most likely to use an LARC. It is conceivable that the impact of cultural practices and religious beliefs have had an influence on students and thus their contraceptive behaviour. The largest ethnic group was participants from Asian backgrounds (34.1%). Asian cultural norms tend to be dissuasive towards premarital sex [19] and the use of contraception within the general population of Asian countries is low (29.6%, 56.3%, 55.8%, 49.7% of women use some form of contraception in Pakistan, India, Bangladesh and Nepal, respectively) and are mostly permanent or long term methods used for the spacing of fertility or following the completion of a family [20]. However, attitudes to premarital sex vary across British Asian cultures, and the negative dissuasion is less prevalent in current generations than it was previously [19]. Research conducted in London found that the majority of teenage women from South Asian descent are sexually active, and the married women within this population are those less likely to be using contraception [21]. In addition to this, research conducted in a sexual health clinic found that, although less women of Asian descent use these services, there are no differences of reasons for using these services compared to women of other ethnicities [22]. This contradicts the findings of this study – the difference is likely due to the differing geographical location and settings of the research [21,22].

This research also found that participants of Black ethnic backgrounds or of mixed ethnicities were least likely to use LARCs, contrastingly, Bharadwaj et al. [10] found that attendees of sexual health clinics who are of black ethnicities were more likely to use LARCs than women of white ethnicities (34% and 27% respectively). It is therefore important to take into account regional factors when considering these findings, as the aforementioned research was conducted in areas where the black communities are more affluent than at the University of Bradford.

Age has been found to be a predictive factor of LARC use, with the majority of LARC users in this study aged ≥20 years old (66.7%), and new LARC users in general practice being of a higher age than oral contraceptives [7]. However, Bharadwaj et al. [10] and Mestad et al. [15] found that the majority of LARC users were aged over 18 years and between 18-20 years respectively. Additionally, LARC use has previously been shown to decline with age, relative to the increasing desire to begin a family [23]. The postponement of childbearing is related to the greater access to effective contraceptives, allowing couples to have better control on when to begin their family, with the age of the majority of participants within this study being under 25 further research is required to fully assess the relationship between age and LARC use in the student population.

4.2 LARC Knowledge among Students

Contraceptive knowledge directly affects the risk of engagement with risky sexual behaviours [24] and the provision of detailed information prior to LARC initiation has be found to increase satisfaction and continuation of these methods. Thus, the knowledge of contraceptive choice should be maximised in order to increase the uptake of effective contraceptives.

Participants in this study showed good awareness of contraception, yet displayed uncertainty of actual knowledge regarding LARCs. Lack of knowledge and awareness was

most seen for IUDs, consistent with previous research [25]. Knowledge of IUDs has been shown to increase with age [25], associated with the increased likelihood of childbearing, as this method is the most favourable method used post-partum [26]. Thus lack of knowledge within this study is likely due to the generally young age of participants and thus low likelihood of pregnancy – further research would be required to define this relationship.

The majority of participants indicating 'don't know or an incorrect response when asked to indicate the risk of pregnancy for LARCs. Despite this, the majority of participants were aware that these methods provided no protection to STIs. Glasier et al. found that when provided with detailed information participants perception of LARCs changed [27]. Contraceptive efficacy has been identified as a key factor when young women choose their contraceptive in both previous research [10,24] and this study, and thus young women's knowledge of this is key for determining the uptake of these methods. To reiterate this, research has found that lack of knowledge is a barrier to LARC knowledge, and this can be exhibited by service providers as well as users [24,28]. Negative attitudes of clinicians to provide young nulliparous women and teens with LARCs also has a significant impact on the uptake of LARCs by young women [28]. This study showed that students showed more awareness of LARCs (78%) than women who were attending sexual health clinics (71%) [10], despite the amount of information provided at clinic. It is likely that this is due to the clinical nature of the course on which the students are enrolled.

4.3 Attitude of the Students to LARCs

Participants indicated that efficacy of contraception, STI protection, and ease of use were the most important considerations when choosing a contraceptive. In previous research participants also indicated that long-term effects of LARCs and their lack of interference with sex were favourable [10,14].

LARCs fulfill two of three of the main criteria of students, and participants were aware of the downfall of these methods as they associated LARCs with a lack of STI protection. In order to fulfil student requirements, recommendations could be made that combine LARC use for effective pregnancy protection with the use of condoms or engagement with screening services prior to intercourse (the compliance rate of which is unfortunately likely to be low due to the high levels of stigma associated with STI screenings by young people) [28].

Unlike in previous research where LARCs were associated with multiple negative side effects [10,14], students within this research associated these methods with few side-effects – mainly lack of STI protection. The difference could be attributed to the low level of knowledge previously exhibited by the students (which was poorer than in previous research) [10].

There is a high likelihood that students would use Emergency Contraception (EC), the reliance on EC may explain the low uptake of effective contraception within this population. Data in the UK suggests that the actual utilisation of EC is low, resulting from feelings of embarrassment [29]. As this study investigated use of EC following failure of a contraceptive opposed to non-use, the levels of embarrassment may be perceived as lower [30], explaining the high indication of use within the study population.

The majority of participants in the present study indicated that they would not terminate an unwanted pregnancy and thus students are therefore at risk of the medical, psychological and social consequences of this [4], highlighting the need for use of effective contraception within this population.

5. STUDY LIMITATIONS

The main limitation of this study is the small sample size, despite the students were representative of the ethnic backgrounds of the undergraduate population at the University of Bradford. A larger-scale investigation of the whole university population is required to truly investigate the LARCs use, knowledge and attitudes of students at the University of Bradford, and should not be generalized as sample is very small.

The study does not assess the impact of STI and STD infection comparative to unintended pregnancy, it could be argued that the former may be more detrimental to health but this is not within the scope of this research.

6. CONCLUSION

The uptake and knowledge of LARCs has been shown to be low within the student population, and both of these factors have been shown to be

influenced by age and ethnicity. Students regard efficacy, STI protection and ease of use as the key considerations when choosing a contraceptive, LARCs fit two of three of these criteria. Students are aware of the lack of STI protection provided by these methods, and this alongside lack of knowledge and awareness are likely barrier to access of effective contraception. Effective contraceptive behaviour should be promoted to university students and recommendations to improve the knowledge and access to support and information of students have been made alongside the need for further large scale research to be conducted.

Further larger-scale nationwide research is required to investigate the use, knowledge and attitudes towards contraception of the university population it it's entirety, and greater steps should be taken to improve the knowledge of students by the provision of tailored made resources and appropriate support by the university. All of the above recommendations are made whilst respecting and maintaining patient autonomy.

CONSENT

Informed consent was obtained from all individual participants included in the study.

ETHICAL APPROVAL

This study was approved by the Chair of the Biomedical, Natural, Physical and Health Sciences Research Ethics Panel at the University of Bradford, UK.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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