Infertility Awareness among UK University Students

Harriet Ribbons* and Radwan Faraj

Department of Obstetrics and Gynaecology, University of Sheffield, UK

Submission: April 14, 2016; **Published:** April 21, 2016

*Corresponding author: Harriet Ribbons, Department of Obstetrics and Gynaecology, Rotherham Hospital, University of Sheffield, Moorgate Road, Rotherham, S60 2UD, UK, Tel: 01709424191; Email: Harriet.Ribbons1@doctors.net.uk

Abstract

The average age of a Mother in 2013 was found to be 30 years older than in 2012. The average family size in 2013 was 1.85 children, lower than in 2012. The factors which are seen to influence the number of births, average age of Mothers and the number of children are timing of child bearing, completion of family size, finance, housing, welfare and employment uncertainty. Statistics show that individuals are delaying child bearing and University Students are seen to delay child bearing further. This is the first study of this kind in the UK and will assess attitudes among UK students. In this study we have 181 randomly selected University Students completed a 20 question fertility questionnaire. 96.1% of students agreed that smoking is bad for female fertility. 90.6% of students correctly answered that a raised Body Mass Index (BMI) can affect fertility. 72.4% of students correctly identified chlamydia as a cause of infertility. This study showed that UK students have a good awareness of adverse factors that affect their fertility. However, their awareness needs to improve on best duration when to seek help for subfertility and also the available resources for NHS funding. .

Keywords: Fertility awareness; Subfertility; Childbearing; Medicine students

Introduction

The aim of this study is to assess the understanding of fertility and fertility affecting factors among a range of University educated students. The objective is to show whether fertility understanding is improving over time. Birth rates in 2012 for England and Wales showed 27.9 per thousand births were to women aged under the age of 18 [1]. Teenage pregnancy rates are decreasing year on year in the United Kingdom (UK). However, in 2012 the UK continued to have the fourth highest teenage pregnancy rate in Europe; marginally behind Bulgaria, Romania and Slovakia [2].

In the UK the average age for first time Mothers and Fathers has increased over the past 20 years. In 1993 the average age of first time Mothers was 27.9 years; 2013 statistics showed an increase to 30 years of age. The average age for first time Fathers was 31.1 years in 1993 which increased to 32.9 years by 2013 [3] (Figure 1). There were 698,512 births in England and Wales in 2013, a large decrease in births since 2012 [3]. The average fertility rate in 2013 was 1.85 children, lower than in 2012. Factors which are seen to influence birth rates are an increase in effective contraception, females increased participation in careers and education, gender equality, finances and housing [4]. Data has shown that over time childlessness among women is increasing and population sizes are decreasing [5]. Childlessness has

commonly been attributed to women's choice of career, women continuing into higher education and the general underestimation of the importance of the "biological clock" [4]. Female financial independence has given women more options and opportunities than in previous generations. This change has shown an affinity to further education (and for longer) among females resulting in a delay in child bearing and further to this, decreased marriage rates [6] (Figure 2).

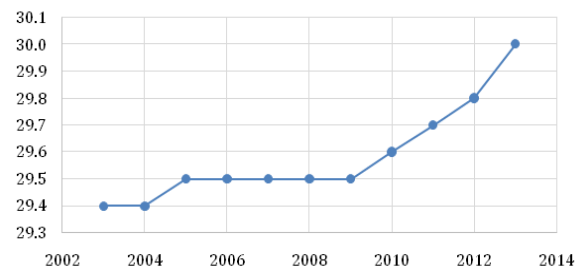**Figure 1:** Maternal average age from 2003-2013. Adapted from Office for National Statistics [26].

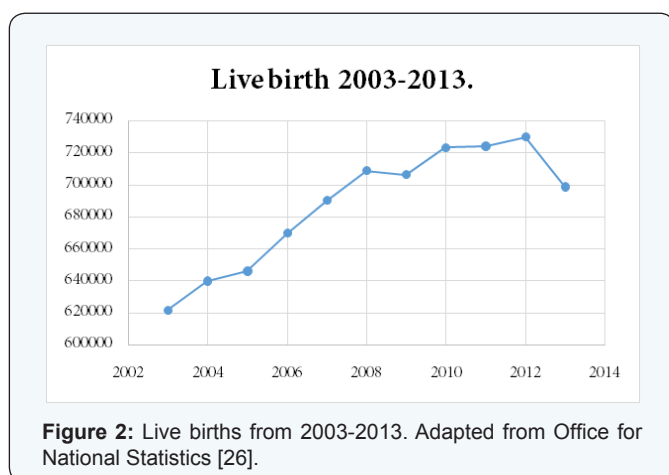**Figure 2:** Live births from 2003-2013. Adapted from Office for National Statistics [26].

Infertility is defined as "a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse" [7]. Approximately 1/7 couples in the UK experience childlessness despite a desire to become pregnant according to the National institute of Clinical excellence [8].

Previous studies have tried to assess the extent of the general public's knowledge of fertility. Many studies have shown that childbearing while simultaneously pursuing a career or continuing education is a common concern for many women [9]. The Peterson *et al.* study showed a lack of fertility awareness among the cohort of 246 American University students [10]. Other studies have additionally shown a lack of fertility awareness among young women, especially women in a career or continued education [11-15]. These women that delay childbearing may rely on assisted reproductive technology (ART) techniques such as *in vitro* fertilisation (IVF) that is both costly and unreliable. In 2010 45,264 women underwent IVF with a conception rate of 33.4% from embryo transfer [16]. In 2011, 40.3% of IVF cycles were National Health Service funded, however, with increasing pressures in NHS funding the funding may decrease in years to come.

The National Health Service (NHS) was launched in the UK in 1948 and remains the main healthcare provider in the UK, funded by taxation. The NHS ethos is that good healthcare should be available to everyone regardless of wealth [17].

Biologically women's fertility peaks in the late teens/ early 20s [5]. Fertility further declines with steep oocyte deterioration from age 35 onwards. The effect of maternal age on oocytes is considerable. In addition to poor conception rates obstetric complications such as miscarriage, chromosomal abnormalities and birth complications are more common with increasing maternal age [18].

Other factors may affect a women's fertility regardless of their age. In 2008 the most common cause of infertility in the UK was male factor infertility. Other common female causes of infertility were unexplained infertility and tubal disorders [19]. In 2003 the National Chlamydia Screening Program (NCSP) was introduced in England with the following objectives: to prevent and control chlamydia through early detection, to reduce onward transmission to sexual partners, to prevent the consequences of the untreated infection, to ensure all sexually active under 25 year olds are informed about chlamydia and have access to sexual health services. By 2013, ten years after the screening programme was implemented, 207,755 diagnoses of chlamydia were made. Chlamydia may lead to Pelvic inflammatory disease (PID) which infertility is one of its complications [20]. PID is a significant disease as it leads to tubal infertility in 8% of cases. PID is a leading cause of ectopic pregnancy, chronic pelvic pain and infertility [21].

Previously published studies show that an understanding of infertility issues among students is important as many women will delay child bearing until later, potentially their fourth decade. Maternal and paternal age is a significant determinant on fertility; however other factors must be understood by young men and women such as the "biological clock", smoking status, menstrual cycle, BMI and the complications of any untreated sexually transmitted infections (STIs).

Method

This study was approved by the University of Sheffield Ethics review committee with the title "Fertility awareness among UK University students". The University of Sheffield caters for 26,309 students across 50 departments. Psychology is a three year Bachelor of Science degree and Medicine is a five year Bachelor of Medicine and Bachelor of Surgery degree. Statistics show that the majority of students from the University of Sheffield are Undergraduate students that attended University directly from school or college (86%) [22]. 6.4% of University of Sheffield students apply as undergraduates when they are over 21 and only 7.3% of students come from low participation neighbourhoods as undergraduate students. A low participation neighbourhood is a term that encompasses a student whose postcode falls within the lowest participation of students in higher education. These students are stated as being from a low participation neighbourhood (Higher education statistics agency, 2014). The questionnaire was formulated by Mr Faraj and Doctor Ribbons. The aim of the questionnaire was to assess students understanding of fertility and to ascertain when students plan to have a family, and whether they plan to have a family. A pilot study was completed by 12 students before the questionnaire was distributed. This pilot study used multiple choice and open text options. A pilot version of the questionnaire was completed by 12 students with an area to comment on any recommended changes for the questionnaire.

The objective of this study is to establish University students understanding of infertility issues using the questionnaire that was distributed. The areas to be assessed in the questionnaire

included future fertility knowledge, awareness of how age affects fertility, awareness of how BMI may affect fertility, knowledge on what pathologies may affect fertility and the government policies on Assisted Reproductive Technology NHS funding. The aim of this study is to assess how the questionnaire was answered and to compare answers between students of differing age, marital status and course types. The uptake of psychology students was 100% as all of the 75 students filled in the questionnaire during a second year psychology lecture. The uptake of Medical students was lower. 35 first year (15.0%) medical students responded; the questionnaire was available to all 234 students. 71 second year (22.5%) medical students responded; the questionnaire was available to all 290 students.

This study used 181 students; 57 male and 124 female. The students that were selected had voluntarily completed a questionnaire with 20 questions regarding infertility. 8 questions concerned the students' personal details and 12 questions were regarding the students' knowledge of infertility issues. As all students were registered with the University of Sheffield they were all over 18. Informed consent by the student was presumed by the completion of the questionnaire. 181 questionnaires were completed with the option of "unsure" being available for most of the questions. The questionnaire was developed by the authors and the questions were seen to assess the demographics of each patient and their knowledge of infertility issues. The questionnaire is available in Figure 1. IBM SPSS (IBM SPSS Statistics 21, IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.) was used for statistical analysis throughout this study. Statistical analysis began with summary statistics. The nominal variables were assessed for normality of distribution then compared using parametric or non-parametric tests accordingly. Binomial variables were compared using logistic regression analysis. The level of confidence accepted in this study was 0.05.

Results

Of the 181 students in the study there were 57 male, 124 female. The questionnaire was distributed to students on two courses; 75 participants were psychology students and 104 were medical students. 146 of the students were in their second year of study and 35 students were in their first year of study. The age range of participating students ranged from 18-30 years of age with a negatively skewed distribution. The mean age of student was 19.8 years ± Standard deviation (S.D) 2.1. 165/181 (91.2%) of the students were aged 18-21 years.

92.3% (167/181) of the students were single, 12/181 (6.6%) of the students were co-habiting and only 2/181 (1.1%) of the students were married. The age range for the co-habiting students was 19-30 years (mean 20 years +- SD 3.0). Ages of the married students were 26 and 27 years. 3/181 (1.7%) of the students had tried to become pregnant in the past; 2 students for up to 12

months and 1 student for up to 24 months. One of the 181 (0.6%) students had children (Table 1).

Table 1: Demographics.

Demographics		n	%
Sex	Male	57	31.5
	Female	124	68.5
Age (mean +- SD)	18-21	165	91.2
	22-25	8	4.4
	26-30	8	4.4
Year of Study	First	35	19.3
	Second	146	80.7
Course	Medicine	104	57.5
	Psychology	75	41.4
Marital Status	Single	167	92.3
	Co-Habiting	12	6.6
	Married	2	1.1
Number of Children	0	180	99.4
	1	0	0
	2	0	0
	3	1	0.6

When asked "What do you think is the approximate percentage of infertile couples in the UK?" 80/181 (44.2%) of the students answered this question correctly. The correct answer is 10-20%. The most frequently selected incorrect answer was 20-30% with 51/181 (28.2%) of students answering this. No correlation was found between the age of student and whether they selected the correct answer (p=0.241). There was no correlation between selection of the correct answer and the course studied (p=0.868). The optimal age for female fertility is <30. For the question "What do you think is the optimal age of female fertility" the most common answer, 115/181 (63.5%), was "20-30 years". 57/181 (31.5%) of students selected the answer "<20 years". There was no correlation between age and the answer selected for this question (p=0.425). Course type and the answer selected to this question showed no correlation (p=0.104). Analysis showed that significantly more males answered "<20" (p<0.001) and significantly more females answered "20-30" (p<0.001).

To the question "What is the best age to become a Mother biologically?" 137/181 (75.7%) of the students answered "20-30 years". 21/181 (11.6%) of the students answered "<20 years". There was no correlation between age of the student and the selected answer (p=0.062). Chi squared test showed no correlation between course type and the answer given (p=0.126). Analysis again showed consistency that significantly more males answered "<20" (p<0.008) and significantly more females answered "20-30" (p<0.004). NICE Guidelines state that medical assistance and advice may be sought after 12 months of unprotected sexual intercourse with no conception [4]. 87/ 181 (48.1%) of students

would not wait the NHS required 12 months to receive medical assistance for failed conception. 94/ 181 (51.9%) of the students would correctly wait beyond the required 12 months of no conception before receiving medical assistance. The most frequent answer from 71/181 (39.2%) of the students was "7-12 months", too short a time period to receive a medical referral for infertility investigations. The Kruskall-Wallis test showed no correlation between age and the answer for this question (p=0.797). There was no correlation between course type and the correct answer for this question (p=0.227). Significantly more females answered this question correctly when compared to males, p<0.001 (Table 2).

Table 2: Fertility questions.

Fertility Questions		n	%
What do you think is the approximate percentage of infertile couples in the UK?	<10%	33	18.2
	10-20%	80	44.2
	20-30%	51	28.2
	30-50%	6	3.3
	>50%	2	1.1
	Unsure	9	5.0
What do you think is the optimal female age for fertility?	<20	57	31.5
	20-30	115	63.5
	30-35	6	3.3
	35-40	1	0.6
	>40	1	0.6
	Unsure	1	0.6
What do you think the best age is to become a Mother biologically?	<20	21	11.6
	20-30	137	75.7
	30-35	20	11.0
	>35	1	0.6
	Unsure	2	1.1
After how long of trying to conceive unsuccessfully would you seek medical help?	1-6 months	16	8.8
	7-12 months	71	39.2
	13-18 months	68	37.6
	19-24 months	19	10.5
	Longer	5	2.8
	Unsure	2	1.1

The NHS guidelines on which patients receive infertility treatment funded by the NHS is strict. There are limits on age, smoking status, BMI, number of IVF cycles and the number of children in the family [4]. 54.7% (99/181) of students did not think that the NHS would fund any fertility treatment that they may require. 22.7% (41/181) of students did think that the NHS would fund any fertility treatment that they may require and a further 22.7% were unsure of the answer. No correlation was shown between age and the answer that was chosen. Additionally no correlation was shown between course type and the answer that was chosen, p=0.515. Statistics showed significant differences between how males and females answered (p<0.001). Significantly more males answered "Yes", while women answered "no" or "Unsure" significantly more frequently than males.

96.1% (174/181) of students agreed that smoking is bad for female fertility. 1 student (0.6%) did not think smoking would affect fertility and 6/181 (3.3%) were not sure of the answer. When age of the student and the correct answer were compared no correlation was found, p=0.822.

139/181 (76.8%) of students thought that irregular periods affect female fertility. 13/181 (7.2%) of students incorrectly did not think that irregular periods would affect fertility. 16% (29/181) of students were not sure of the affect of irregular periods on infertility. Correlation was found between age and the correct answer for this question, p=0.010. The T-Test also showed correlation between course type and the correct answer for this question, p=0.008. When the correct answer was compared to gender this showed significance (p=0.018). Significantly more males answered correctly (p=0.018) and significantly more females answered incorrectly (p=0.018). 90.6% (164/181) of students correctly answered that a raised BMI can affect fertility. 3.3% (6/181) of students did not think that BMI affected fertility and 11/181 (6.1%) were not sure of the answer. No correlation was found between age and the correct answer using Mann-Whitney U test, p=0.839. The T-Test showed significance between the course type and correct answer, p=0.002. The data showed that more medical students gave the correct answer.

171/181 (94.5%) of students correctly answered that at a higher BMI there are higher rates of obstetric complication. 1.7% (3/181) of students did not think a raised BMI would cause complications and 3.9% (7/181) of students were not sure. There was no correlation between age and the correct answer, p=0.140. No correlation was found between course type and the correct answer, p=0.637. Significant difference was found between how males and females answered this question (p=0.045). More males answered incorrectly and significantly more females answered correctly (Table 3). When asked what single STI would cause infertility ten different responses were given. The most common response was a correct answer, "chlamydia", given by 131/181 (72.4%) of students. This was followed with "unsure" by 18/181

(9.9%) of students. Other correct answers included "HIV/AIDs" (7.7%) and "gonorrhoea" (2.8%). Incorrect answers were given by 30/181 (16.6%) of students. Incorrect answers included herpes, human papilloma virus, PID, pneumonia, syphilis, most STIs and "unsure". The Mann-Whitney U test showed that at a younger age significantly more students got the correct answers for this question, p=0.023. The T test showed that psychology students significantly selected the incorrect answer for this question, p<0.001.

Table 3: Fertility questions.

Questions		n	%
Do you think NHS would fund all your fertility treatment if required?	Yes	41	22.7
	No	99	54.7
	Unsure	41	22.7
Is smoking bad for fertility?	Yes	174	96.1
	No	1	0.6
	Unsure	6	3.3
Do you think irregular periods (every 2-3 months) can affect fertility?	Yes	139	76.8
	No	13	7.2
	Unsure	29	16.0
Do you think a person's raised Body Mass Index or BMI affects fertility?	Yes	164	90.6
	No	6	3.3
	Unsure	11	6.1
Does obesity (Raised BMI >30) cause a higher risk of complications during pregnancy?	Yes	171	94.5
	No	3	1.7
	Unsure	7	3.9

The correct statement for "what is your understanding of IVF" was selected by 69.6% (126/181) of students- the answer was "a test tube baby". The following answers were "sperm insemination in the uterus" 19.3%, "unsure" 8.8% and "a surrogate pregnancy" 2.2%. The Mann-Whitney U test showed no correlation between age the correct answer, p=0.997. The T-Test showed that significantly more medical students answered this question correctly, p<0.001. "Pregnancy outside of the uterus" was correctly selected by 78.5% (142/181) of students when asked "what is your understanding of ectopic pregnancy?" The incorrect answers selected were "unsure" 18.2%, "pregnancy after a period of infertility" 2.2% and "a twin pregnancy" 1.1%. There is no correlation between age and the correct answer to this question, p=0.850. The t-Test shows no correlation between course type and correct answer, p=0.436 (Table 4).

Table 4: Pathology questions.

Pathology Questions		n	%
What single Sexually Transmitted Infection (STI) can you think of that affects fertility?	HIV/ AIDs	14	7.7
	Chlamydia	131	72.4
	Gonorrhoea	4	2.2
	Herpes	1	0.6
	Human Papilloma virus	1	0.6
	Pelvic inflammatory disease	2	1.1
	Pneumonia	1	0.6
	Syphilis	6	3.3
	Most STIs	3	1.7
	Unsure	18	9.9
What is your understanding of IVF?	Sperm insemination in the uterus	35	19.3
	Test tube baby	126	69.6
	Surrogate pregnancy	4	2.2
	Unsure	16	8.8
What is your understanding of an ectopic pregnancy?	Pregnancy after a period of infertility	4	2.2
	Pregnancy outside of the uterus	142	78.5
	Twin pregnancy	2	1.1
	Unsure	33	18.2

Discussion

Overall results from this study were more optimal than anticipated. The findings of this study show more fertility awareness among our cohort than the statistics shown by Lampic et al. [9] Peterson et al. [10] Tyden et al. [13] and The larger study which this paper is based on was written in 2012. It is an American study using 246 male and female University students. The findings of the Peterson *et al*, study were that students had a significant lack of fertility awareness despite the majority of students (88% female, 91% male) wanting to conceive in the future. A disadvantage of the Peterson et al. [10] study was that future fertility plans were not assessed using the questionnaire.

Of the 181 students in this study there were 57 male and 124 female students; from both Medicine and Psychology degrees. The majority (92.3%) of students were single which was to be expected as the mean age of student in the study was 19.8 years. Perhaps a future study using more post graduate students would

give a useful extra dimension to the study. Of the 12 students that co-habited in this study the mean age was 20 years; a younger age than would have been expected for most University students. The two married students in the study were aged 26 and 27, significantly older than the mean age of single students, which would be expected. These statistics differed to the Peterson *et al.* study; however Peterson et al. [10] included the additional variable of "committed relationship". Perhaps in future studies this variable could be added. Teenage pregnancy rates in the UK are among the highest in Europe, however, among this cohort of students there are no teenage pregnancies. This is expected as teenage pregnancy is related to a lower social status, of which fewer individuals' progress to higher education as shown in this introductory paragraph.

Only 3 students (1.7%) had tried to conceive in the past. These students were a 20 year old female medical student, a 24 year old female psychology student and a 26 year old psychology student. A 20 year old student is younger than would be expected among this cohort of students. This could be an anomaly or a representation of changing ideals about child bearing among an educated population. Only one of the students in this cohort (0.6%) had children- this was a 26 year old, female, married, second year psychology student with three children in total. This is perhaps to be anticipated considering the pre-existing evidence of female academics postponing childbearing [9,13]. These statistics supported previous stereotypes that few educated students will child bare at a young age when compared to the general population.

For the fertility questions included in the questionnaire the answers selected had the binary outcome of either correct or incorrect. Statistics demonstrated the percentage of correct answers; this was further analysed by age and course. 44.2% of students correctly answered that approximately 10-20% of the population will suffer from infertility problems. There was association between the age, or course type of students that answered the question correctly. It is less expected that only 44.2% of students correctly identified the percentage of infertile couples; 32.6% of students overestimated the percentage of infertile couples in the UK which is more positive than the 18.2% of students that underestimated the percentage of infertile couples in the UK as <10%. These statistics are similar to the Lampic et al. [9] Peterson et al. [10] Tyden et al. [13] findings that showed students underestimating the prevalence of infertility among couples. The significance of this is that many students may seek fertility services in the future but may not be aware of this.

51.9% of students would wait the required 12 months to seek medical attention after failed conception with regular sexual intercourse. There was no correlation when this was analysed by age and course type (p>0.05). Again it is concerning that students do not understand that medical intervention is not appropriate after failed conception unless more than 12 months has passed. Almost 50% of students would seek infertility treatment before the 12 months. Therefore this highlights that young people require more attention and education about human natural fertility. Fertility statistics show that if couples have not conceived within 12 months a further 50% of couples will conceive within 24 months (85% conceive within 12 months) [23]. It could cause a significant strain on NHS resources in the future if patients attend their General Practitioner (GP) within a few months of trying to conceive. We already understand that despite a small increase in infertility issues there has been a large increase in ART uptake [9] which is costly and psychologically distressing for many couples. With financial pressures on the NHS it is unclear what financial resources will be available for ART funding in the future. Without personal private finances ART may not be an option for the majority of infertile couples in the UK.

96.1% of students correctly stated that smoking is bad for female fertility. With public health campaigns and new studies emerging for smoking and smoking in pregnancy it is encouraging that so many students answered this question correctly [24]. There was no correlation when this was analysed by age and course type (p>0.05). 76.8% of students correctly identified that irregular period will affect fertility of women. The Mann-Whitney U test shows correlation between age and the correct answer for this question, p=0.010. This shows that at a younger age a higher proportion of the patients got the question correct. This is an interesting finding with no obvious reason behind it. The T-Test shows correlation between course type and the correct answer for this question, p=0.008. This shows that a higher proportion of medical students selected the correct answer to this question, which you may assume considering their Medical studies and basic sciences background. 90.6% students correctly answered that a raised BMI may affect a female fertility. The T-Test showed significance between the course type and correct answer, p=0.002. The data showed that more medical students gave the correct answer. 94.5% of students correctly answered that at a higher BMI there are higher rates of obstetric complications. There was no correlation when this was analysed by age and course type (p>0.05).

When "What do you think is the optimal age of female fertility?" was asked the most common answer was "20-30 years" (63.5%). 31.5% of students selected the answer "<20 years". This is encouraging as the majority of students (95.0%) understood that fertility is optimal at a younger age. There was no correlation when this was analysed by age and course type (p>0.05). These results concur with previous studies that students understand that female fertility is optimal at a younger age [9,10,13]. Despite the trend in this study, 1.2% of students selected ">35 years of age" for optimal female fertility. 75.7% of the students thought the best age to become a Mother biologically was "20-30 years". 11.6% of the students selected "<20 years". This again shows

consistency that students understand there is better fertility at a younger age. There was no correlation when this was analysed by age and course type (p>0.05).

54.7% of students did not think that the NHS would fund any fertility treatment that they may require in the future; 22.7% did think that the NHS would fund any fertility treatment that they may require; a further 22.7% were unsure of the answer. The answer to this question is important to highlight as the answers are inconsistent and show indecisiveness. With current restrictions on NHS funding there may be further more funding restrictions for NHS IVF treatment cycles, an issue that may become important to women of increasing childbearing ages. Perhaps more information and education is required for women on access to IVF to avoid disappointment and anxiety to women of a sub-optimal fertility age.

To the question "which single STI can you name that may affect fertility" the leading answer was chlamydia (72.4%). In light of the 2003 public health campaign for chlamydia that targets 18-25 year olds it is supportive that this answer was selected by such a high proportion of students. Other acceptable answers included gonorrhoea and HIV/ AIDs. Ten different responses were written to this question. The most common response was "chlamydia" and correct answers were given by 82.9% of students. The Mann-Whitney U test showed that at a younger age significantly more students got the correct answers for this question, p=0.023. The T test showed that psychology students significantly selected the incorrect answer for this question, p<0.001. It is encouraging that after 12 years of public health campaigning for chlamydia awareness there is a good understanding among the targeted individuals of how chlamydia may lead to infertility [25]. There is further evidence that chlamydia campaigning is effective as in this study a significant proportion of correct answers were selected by students in younger age groups ; 18-25 year olds are targeted for STI screening . In turn this understanding may lead to the more frequent practise of safe sex (use of a condom) among University students; the practise of "safe sex" is the largest contributor to rates of STIs.

69.6% of the students correctly identified the correct answer to "what is your understanding of IVF". Significantly more medical students answered this question correctly when compared to psychology students, p<0.001. This is perhaps to be expected considering the medical sciences background of medical students. It is important that young people are aware of the limitations of IVF as studies have shown that many women are unaware of the cost implications and low success rates of IVF treatments [15]. In addition to this, IVF uptake is increased among women with a sub-optimal (increased) fertility age. 78.5% of the students correctly identified what an ectopic pregnancy is. There was no correlation when this was analysed by age and course type (p>0.05). As stated in previous sections ectopic pregnancy rates increase with PID which results from chlamydia or gonorrhoea infections. It is important that students understand the implication of STIs so they are tested and treated promptly. Additionally this highlights the importance of the practise of safe sex [26].

The strengths of this study are that there was a large cohort of students (n=181) and that the questionnaire was tested in a pilot scheme to ascertain clarity of the questionnaire. There are inherent weaknesses in the use of a questionnaire. These weaknesses include poor response rates, the questions included and the length of the questionnaire. Use of the questionnaire was only accepted by the Medicine and Psychology facilities at the University of Sheffield giving minimal diversity. The science background of both Medical and Psychology students must be considered in the answers for the questionnaire. In addition to this Medical students may have a reasonable knowledge of fertility issues when compared to other faculties, however avoidance of this bias was attempted by using only first and second year students (Appendix 1).

Conclusion

In general, the finding of this study is encouraging. It revealed that the sampled university students are reasonably aware of the optimum biological age for fertility. The question is whether they will consider that in their future career planning or delay childbearing beyond this 'optimum' fertility age? Probably, further study on older aged students will be useful to assess this fact. Also the awareness of effect of obesity which is a highly vital public health problem is encouraging.

Fertility awareness among UK University students

Aim: To assess fertility awareness among university students and their expectation of infertility treatment if needed in the future. It will also assess the student's information about factors that could affect their fertility.

Target: 1st and second year university students (If Medical then before obstetrics & gynaecology placement)

Number: 200-250 students.

All information will be anonymous

Dear student,

We would be really grateful if you could spare a few minutes to answer this questionnaire.
It will help us to understand the awareness of young people about their future fertility and factors that may affect that either way. We will collate your answers anonymously then use these answers to create a useful publication.
This information will help us to assess and target public awareness of infertility, this important aspect of health care.
Your answers will be anonymous and confidential.

If you require any further information regarding any of the questions listed then please find support at: http://www.infertilitynetworkuk.com/ alternatively you may contact the researcher on mda09hr@sheffield.ac.uk

Many thanks in advance for your assistance,
Mr R Faraj MRCOG, Consultant Obstetrician and Gynaecologist, Rotherham District General Hospital
and
Harriet Ribbons, Fourth year Medical Student.

* Required

1) Sex? *
☐ Female
○ Male

2) Age *
[_____]

3) Year of Study *
[_____]

4) Course *
[_____]

5) Marital Status *
○ Single
○ Married
○ Co Habiting

6) Number of Children? *
[_____]

7) What do you think is the approximate percentage of infertile couples in the UK? *
○ < 10%
○ 10 - 20%
○ 20 - 30%
○ 30 - 50%
○ > 50%
○ Unsure

8) Have you ever tried as a couple to become pregnant? *
If NO then please go to question 10
○ Yes
○ No
○ Unsure

9) If so, for how long have you tried to conceive?
Only answer if answered yes to question 8
○ 0 - 1 years
○ 1 - 2 years
○ > 2 years
○ Unsure

10) What do you think is the optimal female age for fertility? *
○ < 20
○ 20 - 30
○ 30 - 35
○ 35 - 40
○ > 40
○ Unsure

11) What do you think the best age is to become a Mother biologically? *
○ < 20
○ 20 - 30
○ 30 - 35
○ > 35
○ Unsure

12) After how long of trying to conceive unsuccessfully would you seek medical help? *
○ 1 - 6 months
○ 7 - 12 months
○ 13 - 18 months
○ 19 - 24 months
○ Longer
○ Unsure

13) Do you think NHS would fund all your fertility treatment if required? *
○ Yes
○ No
○ Unsure

14) Is smoking bad for fertility? *
○ Yes
○ No
○ Unsure

15) Do you think irregular periods (every 2-3 months) can affect fertility? *
○ Yes
○ No
○ Unsure

16) Do you think a person's raised Body Mass Index or BMI (measure of human body shape based on an individual's weight and height) affects fertility? *
○ Yes
○ No
○ Unsure

17) Does obesity (Raised BMI >30) cause a higher risk of complications during pregnancy? *
○ Yes
○ No
○ Unsure

18) What single Sexually Transmitted Infection (STI) can you think of that affects fertility? *
[_____]

19) What is your understanding of IVF? *
○ Sperm insemination in the uterus
○ Test tube baby
○ A surrogate pregnancy
○ Unsure

20) What is your understanding of an ectopic pregnancy? *
○ Pregnancy after a period of infertility
○ A pregnancy outside of the uterus
○ A twin pregnancy
○ Unsure

Appendix 1: Fertility among UK University students questionnaire.

References

1. Office for national statistics (ONS) (2014) Teenage pregnancies at a record low: how does your local area compare?

2. World Health Organisation (WHO) (2015) What are the most effective strategies for reducing the rate of teenage pregnancies?

3. Office for National Statistics (ONS) (2013) Births in England and Wales 2013.

4. Melinda M, Ronald RR, Peter M, Egbert V (2011) Why do people postpone parenthood? Reasons and social policy incentives. Human Reproduction Update 17(6): 848-860.

5. Craig BM, Donovan KA, Fraenkel L, Watson V, Hawley S, et al. (2014) A Generation of Childless Women: Lessons from the United States. Women's health issues 24(1): e21-e27.

6. Blossfeld HP, Huinink J (1991) Human Capital Investments or Norms of Role Transition? How Women's Schooling and Career Affect the Process of Family Formation. American Journal of sociology 97(1): 143-168.

7. World Health Organisation (WHO) (2013) Sexual and reproductive health,Infertility definitions and terminology: WHO.

8. National Institute for Clinical Excellence (NICE) (2014) Fertility: Assessment and treatment for people with fertility problems.

9. Lampic C, Svanberg AS, Karlström P, Tydén T (2005) Fertility awareness, intentions concerning childbearing and attitudes towards parenthood among female and male Academics. Hum Reprod 21(2): 558-564.

10. Peterson BD, Pirritano M, Tucker L, Lampic C (2012) Fertility awareness and parenting attitudes among American male and female undergraduate university students. Hum Reprod 27(5): 1375-1382.

11. Nouri K, Huber D, Walch K, Promberger R, Buerkle B, et al. (2014) Fertility awareness among medical and non-medical students: a case-control study, Reprod Biol Endocrinol 12(94): 1-9.

12. Oppermann A (2014) Exploring the Relationship between Educational Field and Transition to Parenthood—An Analysis of Women and Men in Western Germany. European Sociological Review 30(6): 728-749.

13. Tyden T, Svanberg S, Karlstrom PO, Lihoff L, Lampic C (2006) Female University Students' attitudes to future Motherhood and their understanding of infertility. Eur J Contracep Reprod Health Care 11(3): 181-189.

14. Lampic C, Skoog-Svanberg A, Karlstrom P, Tyden T (2006) Fertility awareness, intentions concerning childbearing and attitudes towards parenthood among female and male Academics. Hum Reprod 21(2): 558-564.

15. Wyndham N, Figueira PGM, Patrizio P (2012) A persistent misperception: assisted reproductive technology can reverse the "aged biological clock". Fertil Steril 97(5): 1044-1047.

16. Human Fertilisation and Embryology Authority Society (HFEA) (2010) Fertility treatment in 2010: Figures and trends. p. 41.

17. NHS (2015) The NHS in England.

18. Munne S, Alikani M, Tomkin G, Grifo J, Cohen J (1995) Embryo morphology, developmental rates, and maternal age are correlated with chromosome abnormalities. Fertil Steril 64(2): 382-391.

19. Human Fertility and Embryology Association (HFEA) (2010) Fertility Facts and Figures 2008, HFEA.

20. Symonds EM, Symonds IM (1980) Essential obstetrics and gynaecology. In: Arulkumaran S (Ed.), Churchill and Livingstone, 4e, Chapter 22: Genital tract infections, London, UK, pp. 309-312.

21. Ross J, McCarthy G (2011) UK National Guideline for the Management of Pelvic Inflammatory Disease, British Association for Sexual Health and HIV (BASHH). National Guideline Clearinghouse 4: P1-18.

22. University of Sheffield, Undergraduate prospectus (2015) Medicine.

23. National Institute for Clinical Excellence (NICE) (2013) Fertility: Assessment and treatment for people with fertility problems.

24. Tappin D, Bauld L, Purves D, Boyd K, Sinclair L, et al. (2015) Financial incentives for smoking cessation in pregnancy: randomised controlled trial. BMJ 350: h134.

25. The National Chlamydia Screening programme (NCSP) (2015) Public health England, NHS England.

26. Office for National Statistics (ONS) (2014) International comparison of teenage births.