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## **Influence of Cost on Contraceptive Choices Amongst University Students**

R. McConnell<sup>1</sup>, S. Meaney<sup>2</sup>, K. O'Donoghue<sup>3</sup>

1. Department of Obstetrics and Gynaecology, University College Cork.
2. National Perinatal Epidemiology Centre, University College Cork.
3. The Irish Centre for Maternal and Child Health Research (INFANT), University College Cork.

### **Abstract**

#### **Introduction**

Cost remains a major barrier in accessing effective contraception especially long-acting reversible contraception. This study sought to assess the current contraception choices amongst university students including the influence of cost on choices.

#### **Methods**

A cross-sectional study of Irish university students at University College Cork was undertaken. The online survey examined current contraception use, justifications for this choice of contraception and the effect that hypothetical provision of free contraception would have on their choices.

#### **Results**

A total of 1,840 sexually active students completed the online survey. Condoms were used by 1,020 students (55.4%), the combined pill was used by 729 (39.6%) and 'coitus interruptus' was used by 169 students (9.1%). Statistically males were more likely to spend under €50 annually (47.6%, n=182 of 382, p<0.001) and female students were more likely to spend over €100 on contraception (41.2%, n=470 of 1,141, p<0.001). By removing cost, 394 (34.3%) sexually active women would definitely change contraception, with another 250 women (21.8%) considering changing.

#### **Discussion**

Students often rely on unreliable or user-dependent methods of contraception. Our study has demonstrated that cost influences contraceptive choice with nearly half of the women surveyed stating they would change contraception if cost was removed.

## Introduction

In Ireland, currently one in seven pregnancies is perceived as a crisis pregnancy<sup>1</sup>. With recent changes in Irish legislation permitting termination of pregnancy up to twelve weeks gestation<sup>2</sup>, prevention of unplanned pregnancies has received renewed attention. The Citizen's Assembly on the Eighth Amendment raised concerns over the cost of contraception in Ireland and its potential prohibitive effects to contraception use<sup>3</sup>.

Access to contraception is an international problem<sup>3, 4</sup>, with women aged under 25 are most at risk of an unplanned pregnancy, and typically use less reliable forms of contraception<sup>1, 5</sup>. Difficulty accessing contraception increases the likelihood of unprotected sexual intercourse (UPSI)<sup>6</sup>. Cost was cited as a barrier by 17-24 year olds in Ireland to using condoms or the combined oral contraceptive pill (COCP)<sup>1</sup>. Lally et al, highlighted that condoms, the COCP and coitus interruptus were the main contraceptives used among Irish students in 2015<sup>7</sup>. Condom use was reported by 89% of the student population, however their use was inconsistent, as 69% of students reported recent UPSI<sup>7</sup>. Non-use of contraception remains the leading reason for requiring emergency contraception amongst students<sup>(8, 9)</sup>.

The costs associated with long-acting reversible contraceptives (LARCs) affect their uptake<sup>10-12</sup>. LARC uptake has been shown to be inversely proportional to its cost<sup>13</sup>, once it rises above \$200, uptake decreases from 87% to 27%<sup>10</sup>. The CHOICE study highlighted if cost was removed entirely, LARC uptake increased to 67%<sup>12</sup>, with 48% selecting a hormonal intrauterine system (Mirena®/Jaydess®/Kyleena®)<sup>12</sup>. In 2013, Gyllenburg et al demonstrated that it was cost effective to provide free LARCs, as the reduction in unplanned pregnancies reduced government expenditure on providing terminations.<sup>14</sup> LARC uptake was highest among women aged under 25, evidencing their unmet need for contraception<sup>14</sup>.

Despite several campaigns, students' use of contraception can be unreliable and inconsistent<sup>8, 15</sup>. The aim of this study was to assess current contraceptive usage amongst students in University College Cork (UCC), as well as the factors influencing their choice of contraception, in particular the effect cost has on their contraceptive choices.

## Methods

This study was conducted in UCC, which has the second largest full-time undergraduate enrolment in the Republic of Ireland<sup>16</sup>, with nine colleges providing over 120 courses<sup>17</sup>. In this study, the colleges were grouped into; '*Science, Engineering and Food Science*', '*Medicine and Health*', '*Arts, Celtic Studies and Social Science*' and '*Business and Law*'. At the time of the study, UCC had 21,894 undergraduate and postgraduate students<sup>16</sup>. An online questionnaire was distributed to all students with an active UCC email in September 2018 via the UCC email modulator. The email contained information regarding the aim of the survey, the data that would be collected plus a link to complete the survey using SurveyMonkey®.

Contact information of the study co-ordinators was provided in the email and consent to participate was obtained by clicking the link to complete the survey. All data was collected anonymously. As an incentive, all students who completed the survey were entered into a draw for a €100 One for All® voucher to increase the response rate.

The survey consisted of twenty-eight questions divided into three sections. The first section collected demographic data including age, relationship status, area of study as well as whether the student had previously been sexually active or not. Students who reported previously being sexually active were asked if they had been so in the previous six months or not. Data surrounding students' funding of both medical bills and contraceptive costs was collected.

The second section assessed current contraception use, including reasons for their current contraceptive choice along with estimated annual contraceptive expenditure. The list of factors influencing contraceptive choices was based on previously published papers<sup>(11, 12)</sup>. Students were asked to rank the following factors; *'cost', 'efficacy', 'non-contraceptive benefits', 'side effects', 'having regular menses', 'STI prevention', 'availability', 'healthcare providers' opinion', 'partner's opinion', 'reversibility', 'forgettability', 'friends/family's opinion', 'not having an irregular period', 'nobody knows you're using it'*. Students were asked if they would change contraceptive if cost was removed. The response options included *'definitely change', 'consider changing' or 'would not change'*. If they elected to change, students were asked which of the following they would choose; *'combined oral contraceptive', 'Mirena®/Jaydess®', 'progesterone only pill', 'implant', 'diaphragm/ring', 'copper coil', 'patch', 'depo' or 'a form of long-acting contraception'*. This list was not exhaustive but contained the most popular long-acting and short-acting contraceptives in use in Ireland<sup>11</sup>.

Ethical approval was obtained from the UCC Clinical Research and Ethical Committee in May 2018(ECM (4)f 05/06/18). Online responses were collected over a period of a week following the distribution of the email containing the study information and survey. Data analysis was conducted using IBM SPSS Version 25®. Descriptive statistical analysis was performed to ascertain the demographics of the population that responded. Age was grouped into those aged 18-20, 21-24 and those aged over 25. Chi-squared tests were performed to assess the associations with cost, reliability, access on the students' choice.

## Results

In total, 2,079 students completed the online survey with 1,840 of them being sexually active, giving an overall response rate of 9.5%. Demographic data are outlined in Table 1. The majority of the respondents were female (73.7%, n=1,532), and were aged between 18-24 years (79.2%, n=1,664) with a relatively even distribution across the different areas of study.

**Table 1: Demographic Data.**

|  | Previously Sexually Active n (%) | Never Sexually Active (n) |
|--|----------------------------------|---------------------------|
| <b>Gender</b>                          |                                  |                           |
| Male                                   | 479 (26.2%)                      | 50 (21.6%)                |
| Female                                 | 1348 (73.8%)                     | 182 (78.4%)               |
| <b>Age in years</b>                    |                                  |                           |
| Under 18                               | 0 (0%)                           | 1 (0.4%)                  |
| 18-20                                  | 627 (34.2%)                      | 127 (53.6%)               |
| 21-24                                  | 818 (44.7%)                      | 90 (37.9%)                |
| Over 25                                | 388 (21.2%)                      | 19 (1.1%)                 |
| <b>Relationship Status</b>             |                                  |                           |
| In a relationship                      | 1,042 (56.8%)                    | 22 (9.3%)                 |
| Single                                 | 794 (43.2%)                      | 215 (90.7%)               |
| <b>Area of Studying</b>                |                                  |                           |
| Science & Engineering                  | 527 (28.7%)                      | 71 (29.9%)                |
| Medicine & Health                      | 452 (24.6%)                      | 71 (29.9%)                |
| Arts, Celtic Studies & Social Sciences | 528 (28.7%)                      | 64 (27%)                  |
| Business & Law                         | 332 (18%)                        | 31 (13.2%)                |
| <b>Type of Degree</b>                  |                                  |                           |
| Undergraduate                          | 1,432 (77.9%)                    | 213 (89.9%)               |
| Diploma                                | 42 (2.3%)                        | 0 (0%)                    |
| Apprenticeship                         | 0 (0%)                           | 1 (0.4%)                  |
| Masters                                | 227 (12.3%)                      | 15 (6.3%)                 |
| PhD                                    | 113 (6.1%)                       | 6 (2.5%)                  |
| Other                                  | 25 (1.4%)                        | 2 (0.8%)                  |

Students were asked to select all forms of contraception they currently used. Contraceptive choice among sexually active students based on age, gender and relationship status is demonstrated in Table 2, with the diaphragm, patch, Depo-Provera® and sterilisation grouped under ‘*other contraception*’. The main contraceptives used by sexually active students (n=1840), in order of popularity, were; condoms (55.4%, n=1,020), the COCP (39.6%, n=729) and coitus interruptus (9.1%, n=168). The use of LARCs (Implanon®/Copper Coil®/IUS (Mirena®/Jaydess®)) was low, only being used by 11.5% (n=213) of sexually active students. Emergency contraception was used by 4.4% (n=81) as contraception.

**Table 2: Contraceptive Choices based on age, gender and relationship status (\*=  $p<0.05$ ).**

|                                | Overall n (%) | Age n (%)  |            |            | Relationship Status n (%) |             | Gender n (%) |             |
|--------------------------------|---------------|------------|------------|------------|---------------------------|-------------|--------------|-------------|
|                                |               | 18-20      | 21-24      | Over 25    | In relationship           | Single      | Male         | Female      |
| <b>COCP</b>                    | 729 (39.6)    | 259 (35.8) | 342 (47.2) | 123 (17)   | 458 (63.0)*               | 269 (37.0)* | 143 (19.8)*  | 581 (80.2)* |
| <b>Condoms</b>                 | 1020 (55.4)   | 388 (38.2) | 452 (44.5) | 175 (17.2) | 508 (49.8)*               | 512 (50.2)* | 302 (29.8)*  | 712 (52.8)* |
| <b>POP</b>                     | 108 (5.9)     | 37 (34.3)* | 58 (53.7)* | 13 (12.0)* | 54 (50.0)                 | 54 (50.0)   | 21 (19.6)    | 86 (80.4)   |
| <b>Coitus Interruptus</b>      | 168 (9.1)     | 59 (35.1)  | 75 (44.6)  | 34 (20.2)  | 114 (67.9)*               | 54 (32.1)*  | 49 (29.2)    | 11 (70.8)   |
| <b>Implanon</b>                | 125 (6.8)     | 48 (0.7)   | 58 (0.1)   | 19 (0.9)   | 73 (58.4)                 | 52 (41.6)   | 22 (17.6)*   | 103 (82.4)* |
| <b>IUS</b>                     | 58 (3.2)      | 10 (17.2)* | 27 (46.6)* | 21 (36.2)* | 41 (70.7)*                | 17 (29.3)*  | 8 (14.0)*    | 49 (86.0)*  |
| <b>Copper Coil</b>             | 30 (1.6)      | 4 (13.3)*  | 14 (46.7)* | 12 (40.0)* | 20 (71.4)                 | 8 (28.6)    | 9 (30.0)     | 21 (70.0)   |
| <b>Other contraception</b>     | 38 (2.1)      | 8 (21.0)   | 10 (26.3)  | 20 (52.7)  | 30 (78.9)                 | 8(21.1)     | 8 (21.1)     | 30 (78.9)   |
| <b>Cyclical Method</b>         | 41 (2.2)      | 10 (24.4)  | 17 (41.5)  | 14 (34.1)  | 28 (68.3)                 | 13 (31.7)   | 12 (30.0)    | 28 (70.0)   |
| <b>Emergency Contraception</b> | 81 (4.4)      | 27 (33.3)  | 41 (50.6)  | 13 (16.0)  | 33 (40.7)*                | 48 (59.3)*  | 23 (28.7)    | 57 (71.3)   |
| <b>Unsure of which method</b>  | 16 (0.9)      | 5 (31.3)   | 5 (31.3)   | 6 (37.5)   | 6 (37.5)                  | 10 (62.5)   | 11(68.8)*    | 5 (31.3)*   |
| <b>No Contraception</b>        | 80 (4.3)      | 29 (36.3)* | 23 (28.7)* | 28 (35.0)* | 37 (46.3)                 | 43 (53.8)   | 29 (36.7)*   | 50 (63.3)*  |

Relationship status influenced the contraception used, with LARCs used more by those in relationships (63.3%,  $n=142$  versus 36.3%,  $n=81$ ). Students in relationships were also statistically more likely to use coitus interruptus as their method of ‘contraception’ (67.9%,  $n=114$  versus 32.1%,  $n=54$ ;  $p<0.001$ ). Condoms were more popular among single students (50.2%,  $n=512$  versus 49.8%,  $n=508$ ;  $p<0.001$ ), as was emergency contraception (59.3%,  $n=48$  versus 40.7%,  $n=33$ ;  $p<0.001$ ). Using no contraception was relatively evenly distributed between those in a relationship versus single students (46.3%,  $n=37$  versus 53.8%,  $n=43$ ,  $p<0.052$ ).

**Table 3: Reasons for using contraception.**

|                                       | Reasons              |         |                       |         |                            |         |
|---------------------------------------|----------------------|---------|-----------------------|---------|----------------------------|---------|
|                                       | Stop Pregnancy n (%) | p Value | Delay pregnancy n (%) | p value | Protect against STIs n (%) | p value |
| <b>COCP (n=729)</b>                   | 514 (70.5%)          | <0.001  | 233 (32%)             | <0.001  | 270 (37%)                  | <0.001  |
| <b>Condoms (n=1020)</b>               | 742 (72.7%)          | <0.001  | 267 (26.2%)           | <0.001  | 572 (56.1%)                | <0.001  |
| <b>IUS (n=58)</b>                     | 39 (67.2%)           | 0.12    | 15 (25.9%)            | 0.58    | 8 (13.8%)                  | <0.001  |
| <b>Implanon (n=125)</b>               | 88 (70.4%)           | 0.02    | 44 (35.2%)            | 0.02    | 34 (27.2%)                 | 0.19    |
| <b>Copper Coil (n=30)</b>             | 24 (80%)             | 0.01    | 8 (26.7%)             | 0.62    | 8 (26.7%)                  | 0.45    |
| <b>Cyclical Method (n=41)</b>         | 28 (68.3%)           | 0.15    | 9 (22%)               | 0.88    | 21 (51.2%)                 | <0.001  |
| <b>Coitus interruptus (n=168)</b>     | 118 (70.2%)          | <0.001  | 52 (31%)              | <0.001  | 68 (40.5%)                 | 0.02    |
| <b>No contraception (n=83)</b>        | 23 (27.7%)           | <0.001  | 6 (7.2%)              | <0.001  | 25 (30.1%)                 | 0.64    |
| <b>Emergency contraception (n=81)</b> | 61 (75.3%)           | <0.001  | 22 (27.2%)            | 0.34    | 48 (59.3%)                 | <0.001  |

Table 3 highlights the main reasons for using the most popular contraceptives. Prevention of unintended pregnancy was the main reason cited for using condoms (72.7%, n=742 of 1,020,  $p<0.001$ ), coitus interruptus (70.2%, n=118 of 168,  $p<0.001$ ) and emergency contraception (75.3%, n=61 of 81,  $p<0.001$ ). Delaying pregnancy rather than stopping pregnancy was cited more by students using the COCP (70.5%, n=514 of 729,  $p<0.001$ ). ‘STI Prevention’ was given as a reason for using emergency contraception by 59.3% (n=48 of 81,  $p<0.001$ ). Amongst those who relied on coitus interruptus, 40.5% (n=68 of 168,  $p<0.02$ ) of them believed it offered STI protection.

Personal monies were used by 70% (n=1,288 of 1,823) of students to finance their contraception, with only 11.8% (n=217 of 1,823) using a medical card. Gender influenced how students funded their contraception and their annual contraception costs. Male students were statistically more likely to pay for contraception using personal finances (89.1%, n=425 of 477 versus 63.8%, n=859 of 1,346,  $p<0.001$ ) but were also more likely to receive financial support from their partners (6.3%, n=30 of 477 versus 4.5%, n=60 of 1,346,  $p<0.001$ ). Female students were more likely to receive parental support in paying for their contraception (12.6%, n=170 of 1,346 versus 0.8%, n=4 of 477,  $p<0.001$ ). Statistically males were more likely to spend under €50 annually (47.6%, n=182 of 382,  $p<0.001$ ) and female students were more likely to spend over €100 on contraception (41.2%, n=470 of 1,141,  $p<0.001$ ).

Questions regarding whether students would change contraceptive if cost was removed, as well as selecting their preferred contraceptive were included in the survey. Of the 1,149 sexually active females who responded to the question, 34.3% (n=394) would definitely change and 21.8% (n=250) would consider changing. Older students were less likely to change contraception with 53.3% (n=121 of 227,  $p<0.001$ ) not changing. A third of those aged 18-24 would definitely change (36.2%, n=331 of 913,  $p<0.001$ ) while a further 22.6% (n=207 of 913,  $p<0.001$ ) would consider changing. The type of contraceptive students would choose is highlighted in Table 4.

**Table 3:** Contraceptive students would change to if the cost was removed.

| Current Contraception          | Contraception students would change to |           |               |                  |           |            |            |                         |             |
|--------------------------------|--|-----------|---------------|------------------|-----------|------------|------------|-------------------------|-------------|
|                                | COCP n(%)                              | POP n(%)  | Implanon n(%) | Copper Coil n(%) | IUS n(%)  | Depot n(%) | Patch n(%) | Diaphragm/<br>Ring n(%) | LARC n(%)   |
| COCP (n=723)                   |  | 18 (1.2%) | 214 (14%)     | 107 (7%)         | 61 (4%)   | 5 (0.3%)   | 30 (2%)    | 24 (1.6%)               | 134 (18.5%) |
| POP (n=108)                    | 6 (5.6%)                               |           | 16 (14.8%)    | 12 (11.1%)       | 5 (4.6%)  | 0 (0%)     | 1 (0.9%)   | 24 (1.6%)               | 26 (24.1%)  |
| Condoms (n=1003)               | 151 (15.1%)                            | 13 (1.3%) | 141 (14.1%)   | 71 (7.1%)        | 38 (3.8%) | 2 (0.2%)   | 19 (1.9%)  | 22 (2.2%)               | 167 (16.7%) |
| Copper Coil (n=29)             | 2 (6.9%)                               | 1 (3.4%)  | 2 (6.9%)      |                  | 0 (0%)    | 0 (0%)     | 1 (3.4%)   | 0 (0%)                  | 2 (6.9%)    |
| IUS (n=58)                     | 0 (0%)                                 | 0 (0%)    | 1 (1.7%)      | 0 (0%)           |           | 0 (0%)     | 1 (1.7%)   | 0 (0%)                  | 6 (10.3%)   |
| Implanon (n=121)               | 8 (6.6%)                               | 2 (2.5%)  |               | 6 (5%)           | 5 (4.1%)  | 0 (0%)     | 1 (0.8%)   | 0 (0%)                  | 14 (11.6%)  |
| Depo (n=12)                    | 0 (0%)                                 | 1 (8.3%)  | 0 (%)         | 2 (16.7%)        | 2 (16.7%) |            | 0 (0%)     | 0 (%)                   | 2 (16.7%)   |
| Coitus Interruptus (n=164)     | 19 (11.6%)                             | 2 (1.2%)  | 20 (12.2%)    | 21 (12.8%)       | 5 (3%)    | 0 (0%)     | 2 (1.2%)   | 2 (1.2%)                | 35 (21.5%)  |
| Emergency Contraception (n=81) | 15 (18.5%)                             | 0 (0%)    | 14 (17.3%)    | 9 (11.1%)        | 3 (3.7%)  | 0 (0%)     | 1 (1.2%)   | 1 (1.2%)                | 16 (19.8%)  |
| Cyclical Method (n=41)         | 6 (14.6%)                              | 3 (7.3%)  | 6 (14.6%)     | 2 (4.9%)         | 2 (4.9%)  | 0 (0%)     | 1 (2.4%)   | 2 (4.9%)                | 8 (19.5%)   |
| No Contraception (n=78)        | 16 (20.5%)                             | 0 (0%)    | 12 (15.4%)    | 6 (7.7%)         | 2 (2.6%)  | 0 (0%)     | 1 (1.3%)   | 0 (0%)                  | 8 (10.3%)   |

## Discussion

This study was one of the largest studies to date examining contraceptive use among Irish university students, including the factors influencing their contraceptive choices. Consistent with other studies of university students<sup>15, 18, 19</sup>, it shows that Irish students rely on either user-dependent or unreliable contraceptive methods. Prevention of pregnancy was the main reason for contraception use followed by STI protection, similar to other studies<sup>7</sup>.

Consistent with Irish<sup>7</sup> and international studies<sup>5, 15, 19</sup>, condoms and the COCP remain popular. UCC students' condom usage was lower, at 55.4%, compared to Lally et al's rate of 89%<sup>7</sup>. Irish students are no different to international students; approximately half of Finnish female students use the COCP<sup>15</sup> and 10% of Italian medical students use coitus interruptus as contraception<sup>19</sup>. In our study coitus interruptus was used by 9.1% of students. Misinformation among students remains a barrier to effective contraception use, especially IUDs<sup>(5, 20)</sup>. In our study, 40.5% of those using coitus interruptus, and 59.3% of those using emergency contraception falsely believed it offered STI protection. Similar misconceptions were highlighted by Lally et al in 2015<sup>7</sup>. This demonstrates, that despite several targeted public health campaigns misinformation on contraception and STI prevention still persists. The use of LARCs has not been shown to adversely impact students condom use versus other contraceptives for STI protection, overall dual-method contraception use remains low among young women<sup>21</sup>.

In our study, 34.3% of sexually active female students would definitely change contraception if the cost was removed, evidencing that cost is a barrier. Amongst 18-24 year olds, 61.8% would either definitely change or consider changing. It was within this age group that Gyllenburg et al demonstrated an unmet need for contraception<sup>14</sup> and, it is this cohort, that has the highest risk of an unplanned pregnancy in Ireland<sup>1</sup>. Even with subsidised student health services, the upfront cost of a Mirena<sup>®</sup> was €214 (€20 consultation fee<sup>22</sup>, €70 insertion fee<sup>22</sup> and €124 Mirena<sup>®</sup> with the Drugs Payment Scheme<sup>23</sup>). It is female students who are most vulnerable to these costs and who are more likely to use effective contraception when the cost was reduced<sup>13, 18</sup>. Female UCC students also had a higher financial burden associated with contraception, being significantly more likely to spend over €100 annually on contraception. With the introduction of terminations in Ireland, the cost of accessing contraception has come to the fore. The Citizen's Assembly raised their concerns regarding the prohibitive effect of cost in accessing contraception<sup>3</sup>. The previous Irish Health Minister, Mr Simon Harris, promised free contraception in 2021<sup>24</sup>, however this did not materialise in Budget 2021<sup>25</sup>.

One of our study's strengths is its sample size; it is one of the largest studies of Irish university students in recent times. However, its broadness, including students from various academic areas and levels of study, means it is not specific to a particular cohort within the University. Our study is one of the first examining university students as an individual population, and it is one of the most recent contraceptive studies after the introduction of abortion in Ireland.

The limitations of our study include its predominately female population. Other factors influencing contraception choices such as previous sexual health education, were not examined within this study. The definition of 'sexually active' was not specifically defined within the questionnaire and may have been misinterpreted by students. Our questionnaire also assumed that students had some basic knowledge of contraceptives and their indications. To reduce the effect of previous sexual education, where possible, colloquial terms were used (e.g. '*the bar*'), and questions were phrased in everyday language.

Students often use unreliable and user-dependent contraceptive methods to protect themselves against STIs and pregnancy. With prevention of unplanned pregnancies remaining a public health concern in Ireland<sup>3</sup>, removing the cost associated with LARCs may help to increase their uptake amongst students. The Government's delay in providing free contraception means financial barriers still exist in Ireland today limiting access to effective contraception.

#### **Declaration Conflicts of Interests:**

The authors have no conflicts of interest to declare.

#### **Corresponding Author:**

Roisin McConnell

Department of Obstetrics and Gynaecology,  
University College Cork.

E-mail: roisinmcconnell@gmail.com

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