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ARTICLE DETAILS

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<th>TITLE (PROVISIONAL)</th>
<th>Prescription contraception use: A cross-sectional population study of psychosocial determinants</th>
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<td>AUTHORS</td>
<td>Molloy, Gerry; Sweeney, Leigh-Ann; Byrne, Molly; Hughes, Carmel; Ingham, Roger; Morgan, Karen; Murphy, Andrew</td>
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VERSION 1 - REVIEW

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<th>REVIEWER</th>
<th>Dr Lucia Cea Soriano</th>
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<td></td>
<td>Senior Pharmacoepidemiologist Spanish Centre for Pharmacological Research (CEIFE). Madrid. Spain</td>
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<td></td>
<td>Assistant Professor. Department of Preventive Medicine and Public Health. Complutense University of Madrid. Spain</td>
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<td>REVIEW RETURNED</td>
<td>18-Feb-2015</td>
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GENERAL COMMENTS

The current work performed by Molloy GJ and colleagues evaluates the key determinants of prescription contraceptive use (OCP and LARCs, separately). For such purpose, they followed a cross-sectional population survey using a dataset constructed from a representative population based telephone survey of community designed to describe attitudes, knowledge and behavior relating to sexual health dwelling adults in the Republic of Ireland (RoI). They recruited a total of 1515 women aged between 18-45 years. As main results, they found a sociodemographic pattern on the use of prescription contraceptive being LARC users associated with lower income. Overall, 68% of women agreed with the statement that taking a break from long-term use of the contraceptive pill is a good idea while 37% of women agreed with the statement of OCP have dangerous side effects. This is a very interesting study describing determinants of prescription contraceptive use, although the cross-sectional studies have their limitations especially on drawing conclusions from findings. Below, there are some concerns and suggestions, mainly focused on methodology. And some questions that need to be clarified to correctly understand the results.

Comment 1: By oral contraception pill, you mean both combined oral contraceptives and progestrone only pill? Did the survey include indications or reasons for contraception uptake? If not, this should be addressed on limitations. In addition (and if possible), it would be useful for the reader to include the survey as supplemental material (although authors cited a study showing a detailed description) in order to fully understand how these questions were designed and the options of response to have an overall picture towards the study question.

Comment 2: It is not clear to me from the method section how...
authors categorize some of the variables of interest such as: concerns of OCP, which are 5 point scale from: 1 strongly agree to 5 strongly disagree. Authors dichotomized the variable into ‘Agree’ versus ‘other’ to preserve cases in the analyses, but it is not clear which score were used to cut off the variable into 2 categories, same applies for other variables such as access to contraception, embarrassed about access, etc. In addition, the variable “how difficult do you find it to get contraception” was measured as continuous variable. All these points make the interpretation of findings harder for the reader.

Comment 3: Tables 1 and 2: Out of your pool of women evaluated (N=1515), there were 536 (35.4%) OCP users, 152 (10.0%) intrauterine contraceptive users and 67 (4.4%) women using remaining LARCs (not mutually exclusive variables). The descriptive analyses showed two comparison groups non-users of OCP and non-users LARCs. Which comparator groups were used as reference when performing the multivariable logistic regression, same than table 1?. This important issue is not clear from table 2.

Comment 4: comment 4.1 Authors found as predictors associated with OCP and LARCs: age, married, general medical services, “OCP has dangerous side-effects-Other” and “Taking a break from the long-term use of the OCP is a good idea”. Results from general medical services are really interesting. Contrary to other studies were LARC users tended to be among higher income class or wealthy this study shows the opposite pattern. Could authors comment more on this? Could this be perhaps explained by the fact that wealthy women were not reporting prescription as attending private clinics not included in this survey, translating into a low generalisability of results? This should be added to limitations, together with the implications of the health care system in RoI (i.e. not universal coverage unlike other countries in EU but under fee payment?)

Comment 4.2 It would be interesting to comment further on the following finding: “The analysis also shows that the association between concerns and OCP use varied according to age, with the association being particularly strong among older women”. In addition, as authors pointed out in discussion: Contraception has been a controversial socio-political topic in the RoI, largely explained by the particular religious ethos that historically pervaded healthcare and politics in RoI. Could it be possible this could be one of the major reasons for older women to think OCP has dangerous “side-effects-Other” by a religious concern? Did the survey include any other item related with refusal to OCP?

Finally, limitations of the cross-sectional studies (as lack of temporality) should be addressed.

REVIEWER
Kate Grindlay
Ibis Reproductive Health, USA

REVIEW RETURNED
03-Apr-2015

GENERAL COMMENTS
This paper is well-written and on a topic of interest. I have just a few suggestions for improvement:
Some variables were missing that would have provided useful context. Do the authors have data on insurance coverage other than GMS? It would be helpful to know what % of women had other health coverage and what % were uninsured. Also it would be helpful to see data on other contraceptive methods women were using, in addition to the % who were non-contraceptive users mentioned on page 10.

I caution the authors against concluding that LARC use is associated with lower incomes based on GMS. GMS is used as a proxy for low-income, but I think the variable equally likely, and even perhaps more likely, reflects the impacts of having GMS coverage itself. As a health plan, it likely impacts women’s access to LARC methods, which have higher upfront costs than other options, which could be prohibitive for women without GMS. Additionally, there may be something about GMS services that impact women’s contraceptive choices—for example, might there be GMS-related programs that make LARCs first-line methods?

Page 10 – second sentence after [Table 1] beginning with “in this table, lower odds are associated…” – this line is confusing and should be rephrased.

In the first sentence page 19 (starting on page 18), the text “mentioned in the last paragraph” is a but ambiguous as to whether it refers to a specific paragraph in ICCP-2010 or the previous paragraph in the manuscript; I suggest removing.

**VERSION 1 – AUTHOR RESPONSE**

Reviewer Name Dr Lucia Cea Soriano
Institution and Country Dr Lucia Cea Soriano

Please leave your comments for the authors below

The current work performed by Molloy GJ and colleagues evaluates the key determinants of prescription contraceptive use (OCP and LARCs, separately). For such purpose, they followed a cross sectional population survey using a dataset constructed from a representative population based telephone survey of community designed to describe attitudes, knowledge and behavior relating to sexual health dwelling adults in the Republic of Ireland (RoI). They recruited a total of 1515 women aged between 18-45 years. As main results, they found a sociodemographic pattern on the use of prescription contraceptive being LARC users associated with lower income. Overall, 68% of women agreed with the statement that taking a break from long-term use of the contraceptive pill is a good idea while 37% of women agreed with the statement of OCP have dangerous side effects.

This is a very interesting study describing determinants of prescription contraceptive use, although the cross-sectional studies have their limitations especially on drawing conclusions from findings. Below, there are some concerns and suggestions, mainly focused on methodology. And some questions that need to be clarified to correctly understand the results.

Comment 1: By oral contraception pill, you mean both combined oral contraceptives and progesterone only pill? Did the survey include indications or reasons for contraception uptake? If not, this should be addressed on limitations. I in addition (and if possible), it would be useful for the reader to include the survey as supplemental material (although authors cited a study showing a detailed description) in order to fully understand how these questions were designed and the options of response to have an overall picture towards the study question.

Response: By the oral contraceptive pill we mean both the combined oral contraceptives and progesterone only pill. The survey did not differentiate between these two kinds of OCP and did not include reasons for contraception uptake. We now acknowledge this in the limitations section. The
survey is available on the web. We now make the direct link available in the data sharing statement to give direct access to the survey.

Comment 2: It is not clear to me from the method section how authors categorize some of the variables of interest such as: concerns of OCP, which are 5 point scale from: 1 strongly agree to 5 strongly disagree. Authors dichotomized the variable into ‘Agree’ versus ‘other’ to preserve cases in the analyses, but it is not clear which score were used to cut off the variable into 2 categories, same applies for other variables such as access to contraception, embarrassed about access, etc. In addition, the variable “how difficult do you find it to get contraception” was measured as continuous variable. All these points make the interpretation of findings harder for the reader.

Response: We now make it clearer how these continuous variables were categorised by adding text at the end of the ‘Concerns about the OCP’ section and the ‘Barrier to access’ section in the Method. For example, we now state that, “Those scoring Strongly Agree and Agree were classified as ‘Agree’ and all other responses were classified as ‘Other’.”

Comment 3: Tables 1 and 2: Out of your pool of women evaluated (N=1515), there were 536 (35.4%) OCP users, 152 (10.0%) intrauterine contraceptive users and 67 (4.4%) women using remaining LARCs (not mutually exclusive variables). The descriptive analyses showed two comparison groups non-users of OCP and non-users LARCs. Which comparator groups were used as reference when performing the multivariable logistic regression, same than table 1?. This important issue is not clear from table 2.

Response: We now clarify this for the reader by stating in the results that “The non-users of LARCs in column in Table 1 refers to participants who neither used intrauterine contraception use or sub-dermal contraceptive implants as a method of contraception in the previous year” and “In Table 2 intrauterine contraception use and sub-dermal contraceptive implants use are compared with non-use of these methods.”

Comment 4: comment 4.1 Authors found as predictors associated with OCP and LARCs: age, married, general medical services, “OCP has dangerous side-effects-Other” and “Taking a break from the long-term use of the OCP is a good idea”. Results from general medical services are really interesting. Contrary to other studies were LARC users tended to be among higher income class or wealthy this study shows the opposite pattern. Could authors comment more on this? Could this be perhaps explained by the fact that wealthy women were not reporting prescription as attending private clinics not included in this survey, translating into a low generalisability of results? This should be added to limitations, together with the implications of the health care system in RoI (i.e. not universal coverage unlike other countries in EU but under fee payment?)

Response: Participants from all socio-economic groups were included in this study, therefore we do not believe that we have a generalizability issue with our sample. As we state in the Method this was a, “representative sample of the general population within this age band”. We now add the following comment to fourth paragraph of our Discussion: “The socio-economic distribution of LARCs use in RoI is likely to reflect the non-universal coverage of prescription contraceptive costs for both the recipients and providers of contraceptive services.” In the limitations section we have added: “This is a unique health care context where funding models for contraceptive services differ from other health care systems.”

Comment 4.2 it would be interesting to comment further on the following finding: “The analysis also shows that the association between concerns and OCP use varied according to age, with the association being particularly strong among older women”. In addition, as authors pointed out in discussion: Contraception has been a controversial socio-political topic in the RoI, largely explained by the particular religious ethos that historically pervaded healthcare and politics in RoI. Could it be possible this could be one of the major reasons for older women to think OCP has dangerous "side-effects-Other" by a religious concern? Did the survey include any other item related with refusal to OCP?

Response: This is an interesting speculation that we now acknowledge in the fifth paragraph of our discussion. There were no other items related to refusal to use the OCP in the survey.
Finally, limitations of the cross-sectional studies (as lack of temporality) should be addressed.
Response: We add the issue of temporality to our previous acknowledgement of the limitations of the cross-sectional design in the ‘Limitations and strengths’ section. We state that “...temporality in the relationships between variables cannot be established.”

Reviewer Name: Kate Grindlay
Please leave your comments for the authors below:

This paper is well-written and on a topic of interest. I have just a few suggestions for improvement:

Some variables were missing that would have provided useful context. Do the authors have data on insurance coverage other than GMS? It would be helpful to know what % of women had other health coverage and what % were uninsured.
Response: The survey did not collect data on health insurance. In the Republic of Ireland health insurance does not cover prescription contraception costs, therefore it was not pertinent to the original ICCP-2010 study.
Also it would be helpful to see data on other contraceptive methods women were using, in addition to the % who were non-contraceptive users mentioned on page 10.
Response: As the focus of this study was on prescription contraception we chose not to examine this in detail. Also as this data is presented in detail in the ICCP-2010 report, therefore we want to avoid replicating that. We have however added that the following information to the results to give readers a better sense of the main methods that women were using: “...the three most widely used methods of contraception were condoms (39%), the OCP (35%) and the intrauterine contraception (10%)”
I caution the authors against concluding that LARC use is associated with lower incomes based on GMS. GMS is used as a proxy for low-income, but I think the variable equally likely, and even perhaps more likely, reflects the impacts of having GMS coverage itself. As a health plan, it likely impacts women’s access to LARC methods, which have higher upfront costs than other options, which could be prohibitive for women without GMS. Additionally, there may be something about GMS services that impact women’s contraceptive choices—for example, might there be GMS-related programs that make LARCs first-line methods?
Response: We agree with the reviewer that caution is needed in interpretation and as we state in the paper it is likely that “LARC use may predominate in those with lowest incomes who do qualify for GMS and those with higher incomes in RoI, where the initial higher cost is not a barrier.” There is no formal difference in how GMS and non-GMS receive contraceptive services in Ireland i.e. there is no recommendations or guidelines on what is prescribed or ‘first-line’ based on having GMS status, therefore we think that this explanation is unlikely.
Page 10 – second sentence after [Table 1] beginning with “in this table, lower odds are associated...” – this line is confusing and should be rephrased.
Response: We have changed this to read: “In this table, odds ratios less than 1 are associated with non-use of the method. For example, being married and having general medical services were associated with non-use of the OCP as shown in Table 2.”
In the first sentence page 19 (starting on page 18), the text “mentioned in the last paragraph” is a but ambiguous as to whether it refers to a specific paragraph in ICCP-2010 or the previous paragraph in the manuscript; I suggest removing.
Response: We agree that this could be confusing and have removed this from the sentence.
We have also added the following reference [30] which was omitted due to an error in the original manuscript:
**VERSION 2 – REVIEW**

**REVIEWER**
Dr Lucia Cea-Soriano  
Senior Pharmacoepidemiologist. Spanish Centre for Pharmacoepidemiological Research (CEIFE). Madrid. Spain  
Department of Preventive Medicine and Public Health. Faculty of Pharmacy. Complutense University of Madrid. Spain

**REVIEW RETURNED**
05-May-2015

**GENERAL COMMENTS**
I thank the authors for highlighting all the points raised during this review process. Manuscript seems to be more clear and complete now, especially the limitations section from the discussion. Yet, there is a minor issue:

Since determinants of prescription contraceptive use and behaviors towards its use could change across countries, before publication, I recommend to:
- Bullet points section: Please specify that your participants are dwelling adults in the Republic of Ireland (RoI), this would apply to bullet 1st or 3th.
- Abstract, Conclusion: Please include "in RoI" at the end of the first sentence.

**REVIEWER**
Kate Grindlay  
Ibis Reproductive Health

**REVIEW RETURNED**
04-May-2015

**GENERAL COMMENTS**
Thank you for addressing my comments.

**VERSION 2 – AUTHOR RESPONSE**

We have made the final two changes suggested by Dr Lucia Cea-Soriano.
Prescription contraception use: a cross-sectional population study of psychosocial determinants

Gerard J Molloy, Leigh-Ann Sweeney, Molly Byrne, Carmel M Hughes, Roger Ingham, Karen Morgan and Andrew W Murphy

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