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Interventions using social networking sites to promote contraception in women of reproductive age (Protocol)

Jawad A, Jawad I, Alwan NA

Jawad A, Jawad I, Alwan NA.
Interventions using social networking sites to promote contraception in women of reproductive age.
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[Intervention Protocol]

Interventions using social networking sites to promote contraception in women of reproductive age

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ABSTRACT

This is a protocol for a Cochrane Review (Intervention). The objectives are as follows:

To explore effectiveness of interventions using social networking sites to promote the uptake and adherence of contraception in women of reproductive age.

BACKGROUND

Description of the condition

Contraception is a key public health intervention due to the negative impact of unwanted pregnancies on women and children's health (Cleland 2012). Appropriate use in the population it can play a key role in reducing the rates of maternal mortality and abortion, as well as improve perinatal outcomes and child survival (Cleland 2012). Unplanned pregnancy has been shown to increase the risk of adverse family socioeconomic outcomes and family dysfunction (Boden 2015).

Globally rates of contraception usage are variable with the United Nations reporting an average of 64% of married or in-union women of reproductive age using some form of contraception. The rates are highest (75%) in North America and the lowest (33%) in Africa. The authors identified that around 1 in 10 married or in-union women worldwide are estimated to have an unmet need for family planning (United Nation 2015). Of particular note, the unmet need in the adolescent age group results in teenage pregnancies complicated by increased levels of morbidity and mortality, higher rates of abortion and "set the pattern for the rest of an individual's life"(WHO 2004). Contraception use and adherence in this age group is varied; a US study found an average delay of approximately one year between the onset of 'coital activity and the use of modern contraceptives (McCauley 1995). Resolving this unmet need for women who do not want to have children but are not using contraception is therefore a vital global public health measure (Alkemal 2013,Gold 2011).

With the rapid expansion of social networking sites (SNSs) they are now considered a component of daily life (Gold 2012, Xu 2012). Boyd and Ellison define SNSs as web-based services that allow individuals to construct a public or semi-public profile within a bounded system. They can be used to articulate with a list of other

users with whom they share a connection and view and traverse their list of connections and those made by others within the system (Boyd 2007).

American reports show 74% of internet users use SNSs with 18-29 year olds being both the heaviest users and more likely to use SNSs on their mobiles (Pew Research Centre 2013). Similarly, in the United Kingdom 81 % report using social media daily with 44% of 16-24 year olds visiting sites more than ten times a day (Ofcom 2015). Globally, SNS usage continues to grow with worldwide internet users spending 106 minute daily (GlobalWebIndex.n.d. 2015). Their use as a health intervention has become increasingly championed (Gold 2011; Guse 2012) and the popularity, widespread accessibility and ease of use makes them a key vehicle for health interventions.

Description of the intervention

There are a variety of SNSs with the focus ranging from social utility, such as Facebook, microblogging, such as Twitter, and business, such as LinkedIn. Facebook is considered the most popular (Gold 2012) and is the third most popular webpage worldwide with Twitter, LinkedIn and Instagram also being in the top (Alexa 2016). The definition of social media is broad and can include a diverse set of platforms; for this review we will focus SNSs which are unique in that they require the creation of a profile within a bounded system that allows users to share connections (Boyd 2007) .

SNS interventions are run in various ways with many studies using them as an add-on to the standard treatment. While their use is highly advocated by some (Gold 2012; Korda 2011), others argue social media is insufficient as a stand-alone for health promotion and pose a risk of providing misleading or inaccurate information (Balatsoukas 2015). A study on contraception used a Facebook account as an adjunct to in-office counselling and found improved patient contraceptive knowledge and increased preference for long acting reversible contraception (Kofinas 2014). Another study which aimed to reduce the display of risky sexual behaviour sent a physician email to targeted Myspace users and showed a reduction in reported risky sexual behaviour (Monero 2009). A large multidisciplinary study called the The FaceSpace Project (Nguyen 2013) used fictional interactive characters to present sexual health promotion messages. This review aims to summarise how SNS's can be effectively used as an intervention, in isolation, or in adjunct with other interventions to promote uptake and adherence of contraception.

How the intervention might work

Interventions run on SNSs can be broadly categorised as follows:

1) Interventions which create an account that participants chose to interact with.

This can be an account created with the aim of health promotion. Generally we would expect this to be an open account that users choose to follow or receive ongoing posts or discussions.

2) Interventions which create an account and directly contact participants through private messages or 'emails'.

In this approach the intervention would actively recruit participants and use private messaging or in-app email to directly target users of the SNSs.

3) Interventions which create character accounts that participants can chose to follow or interact with.

These interventions will place as an active account that generate a following, or interact with users in live-time to deliver the intervention.

4) Interventions which do not use an intervention account to deliver health promotion.

By discussion or sharing information in groups or networks the intervention may be carried out without any direct user contact and rely on peer-effect instead.

Interventions run on SNSs may work in isolation to educate or counsel patients or in adjunct to other interventions. They should aim to initiate or improve uptake of contraception methods and/or improve adherence.

In understanding how the intervention might work, the motivational theory is commonly used to describe the use of social media with intrinsic motivation characterised by the 'hedonic' enjoyment of using it, in addition to the extrinsic motivations of utilitarian gratification and perceived usefulness (Xu 2012). The extrinsic motivations were expanded on to explain that the network externality came from the number of members, number of peers, and perceived similarity which all interplay in the continued use of social media (Lin 2011). Thus use of SNS is a complex interplay of network externalities, usefulness, and enjoyment (Lin 2011).

Why it is important to do this review

The unmet need for contraception is unresolved especially in young women where unplanned pregnancy is associated with significant socioeconomic implications (Cleland 2014; United Nation 2015; WHO 2004). Women use SNSs more often and more extensively than their male counterparts (Ofcom 2015). The value of SNSs as a health intervention has been highlighted (Gold 2012; Guse 2012) and a comprehensive meta-analysis exploring the effect of SNS health interventions on non-communicable diseases found a positive effect on health related behaviour outcomes (Laranjo 2015). The link between SNS's and sexual health promotion has been reviewed and a positive response was found (Gold 2011).

We have not found any literature exploring the impact of SNS's interventions on the uptake of contraception specifically, and we argue that the breadth of sexual health promotion, is too wide a topic to be able to adequately assess interventions. We would also like to focus on SNS's as opposed to the umbrella term of social

media as it can encompass a variety of platforms with various accessibility and target audiences. By narrowing the scope and focusing solely on SNSs we can assess the impact of SNS interventions on the use and adherence of contraception and comment on the needs for future research.

OBJECTIVES

To explore effectiveness of interventions using social networking sites to promote the uptake and adherence of contraception in women of reproductive age.

METHODS

Criteria for considering studies for this review

Types of studies

We will consider interventional studies including randomised controlled trials (RCTs) and non-randomised studies (NRS) to include non-randomised controlled trials. We expect limited evidence from RCTs that utilise a SNS as an intervention hence NRS will broaden the evidence base to review the topic more thoroughly.

Types of participants

Women of reproductive age will be included in this review without any geographical restrictions. Participants may be initiating contraceptive use, switching to a different method, or continuing use of the same method. They may also include women who are postpartum or post-abortal.

Types of interventions

We will include studies where the intervention was delivered either solely via named SNS, or in adjunct with another method. The purpose of the intervention must be to improve use of, or adherence to, contraception compared to standard delivery of care or another intervention.
Interventions included should seek to fulfil one of the following aims:
-Improve uptake of contraception
-Promote use of specific contraceptive method
-Improve adherence with contraception.
Interventions may be targeted at both current and potential contraception users. Interventions must be delivered through named SNSs where the participant has a personal account that allows them to accesses the intervention. Although it is not an exclusion criteria we would expect selected SNSs to have a way for participants to interact with each other as well as the intervention. We will exclude any intervention delivered by an app or website where a personal account is not required, where the intervention can only be utilised when downloaded, or if participants cannot interact with the intervention directly. We will include SNSs available in a downloadable form only if they also have an open-access website.

Types of outcome measures

Primary outcomes

Contraception use (for three months after the intervention was initiated), will include:

- Initiation of a new method.
- Improved adherence to a method
- Increased uptake of long acting reversible methods.

Contraception use can be assessed in various ways and we will accept the method used by the investigator.
The time frame for assessment will be three months or more for the initiation of a new method, improved adherence and continuation of an existing method.

Secondary outcomes

Outcomes regarding a change in attitude or knowledge about contraception will be included. Outcomes regarding attitudes towards the use of SNS's as an intervention, the format of the intervention and how trustworthy participants felt it was will be included.

Search methods for identification of studies

Electronic searches

We will search for eligible studies in the following databases. Searches will start from 1997 which is when the first SNS by the definition outlined earlier was created (Boyd 2007). Please refer to search strategy for the complete list of search terms Appendix 1.
Medical database:
- Medline
- Embase
- The Cochrane Central Register of Controlled Trials (CENTRAL)
Multidisciplinary database:
- Cumulative Index to Nursing and Allied Health Literature
- Web of Science

Computing database:
- Association for Computing Machinery (ACM)
- DBPL computer science bibliography

Searching other resources

We may write to the contact investigators of identified and included studies to request additional information about the study, or where appropriate, to identify trials not discovered. We will review abstracts of key sexual and reproductive health conferences. We will contact national organisations and topic experts where appropriate to obtain information about trials not discovered in our research.

Data collection and analysis

Selection of studies

We will assess for inclusion all titles and abstracts identified during the literature search. Search results will be exported into a bibliographic citation management software programme and duplicates excluded. Two review authors will independently and in duplicate screen the titles and abstracts of studies retrieved. Full articles will be retrieved for further assessment if the information suggests that the study:
1) Includes participants that are women of reproductive age and users, or potential users, of contraception
2) Has an intervention delivered by a SNS as a stand-alone intervention or as an adjunct with another method
3) Compares the intervention to routine standard of care or another intervention
If there is any doubt regarding these criteria from the information in the title and abstract the full article will be retrieved for clarification. The full text of potentially eligible studies will be retrieved and independently assessed for eligibility by two review authors. The authors will resolve discrepancies by discussion or by consulting the third author.

Data extraction and management

Two authors will independently and in duplicate conduct the data extraction. A summary findings table will be created to record general information about the study as well as the study characteristics, the SNSs the intervention used, risk of bias (described further below), and outcomes. We will focus on the primary and secondary outcomes for this review and resolve discrepancies through discussion.

Assessment of risk of bias in included studies

We will assess the studies' risk of bias in accordance with the Cochrane Handbook for Systematic Reviews of Interventions (Higgins 2011). For RCT's we will look at: sequence generation, allocation concealment, blinding, incomplete outcome data, selective outcome reporting, and other potential biases. For NRS's we will use the GRADE risk of bias framework (Guyatt 2011) which will report on the eligibility criteria, measurement of exposure, measurement of outcome, confounding and attrition rates. Two review authors will independently assess the risk of bias with any disagreement discussed by the authors and resolved through discussion.

Measure of treatment effect

Dichotomous outcomes will have odds ratios calculated to a 95% confidence interval (CI). Continuous variables will have means difference calculated to a 95% confidence interval (CI).

Unit of analysis issues

The unit of analysis will be the individual female of reproductive age. In cluster studies we will assess whether they are appropriately adjusted.

Dealing with missing data

Due to the varied nature of possible interventions we do not expect all studies to have addressed all the outcomes we are examining. To maximise our sources of data, where appropriate we will write to investigators to discuss if the missing outcomes were measured. For missing sample sizes and demographics we will request missing data.

Assessment of heterogeneity

The interventions are likely to be of variable designs so it is unlikely we will be able to conduct a meta-analysis. We will examine heterogeneity by comparing study design, target population and primary outcome measure. Additionally, we will consider whether the SNS and contraception method was easily accessible and provided free, or at a cost to participants.

Assessment of reporting biases

We aim to minimise reporting bias by using a comprehensive search strategy. If there is an outcome measure insufficiently reported we will aim to contact the authors to rectify this.

Data synthesis

A summary of findings table will be provided for the different types of studies if the results are insufficient to conduct a meta-analysis. Our results will be addressed based on the Cochrane Handbook for Systematic Reviews of Interventions (Higgins 2011) for RCT's and for NRS's we will use the GRADE risk of bias framework (Guyatt 2011) to report on the quality of the evidence.

Subgroup analysis and investigation of heterogeneity

n/a

Sensitivity analysis

n/a

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* *Indicates the major publication for the study*

APPENDICES

Appendix 1. Search strategy (Protocol)

Search Strategy		
Database		[illegible]rch terms
Medline		
	1	C[illegible]NTRACEPTION/ EXP
	2	CONTRACEPTION BEHAVIOR/
	3	CONTRACEPTIVE AGENTS/ EXP
	4	CONTRACEPTIVE DEVICES/
	5	FAMILY PLANNING SERVICES/
	6	CONDOMS/

(*Continued*)

	7	Contracept*
	8	Condom*
	9	Contraceptive agent
	10	Barrier contracepti*
	11	Family planning
	12	Emergency contracept*
	13	Intrauterine contracept* device*
	14	Postcoital contracept*
	15	OR 1-14
	16	SOCIAL MEDIA/ EXP
	17	SOCIAL NETWORKING/ EXP
	18	Social Media
	19	Social network*
	20	Facebook
	21	Twitter
	22	Instagram
	23	Snapchat
	24	Myspace
	25	OR 16-24
	26	15 AND 25
Embase		
	1	CONTRACEPTION/ EXP
	2	CONTRACEPTIVE/
	3	CONTRACEPTIVE AGENT/
	4	CONTRACEPTIVE BEHAVIOUR/

(*Continued*)

	5	CONTRACEPTIVE DEVICE
	6	FAMILY PLANNING/
	7	Contracept*
	8	Condom*
	9	Contraceptive agent
	10	Barrier contracepti*
	11	Family planning
	12	Emergency contracept*
	13	Intrauterine contracept* device*
	14	Postcoital contracept*
	15	OR 1-14
	16	SOCIAL NETWORK/
	17	SOCIAL MEDIA/
	18	Social Media
	19	Social network*
	20	Facebook
	21	Twitter
	22	Instagram
	23	Snapchat
	24	Myspace
	25	OR 16-24
	26	15 AND 25
CENTRAL		
	1	CONTRACEPTION/ EXP
	2	CONTRACEPTION BEHAVIOUR/ EXP

(*Continued*)

	3	CONTRACEPTIVE AGENTS/ EXP
	4	CONTRACEPTIVE DEVICES/ EXP
	5	FAMILY PLANNING SERVICES/ EXP
	6	Contracept*
	7	Condom*
	8	Contraceptive agent
	9	Barrier contracepti*
	10	Family planning
	11	Emergency contracept*
	12	Intrauterine contracept* device*
	13	Postcoital contracept*
	14	Or 1-13
	15	SOCIAL MEDIA/
	16	Social Media
	17	Social network*
	18	Facebook
	19	Twitter
	20	Instagram
	21	Snapchat
	22	My space
	23	Or 15-22
	24	14 AND 23
CINAHL		
	1	CONTRACEPTION/ EXP
	2	REPRODUCTIVE CONTROL AGENTS/ EXP

(*Continued*)

	3	CONTRACEPTIVE DEVICES/ EXP
	4	Contracept*
	5	Condom*
	6	Contraceptive agent
	7	Barrier contracepti*
	8	Family planning
	9	Emergency contracept*
	10	Intrauterine contracept* device*
	11	Postcoital contracept*
	12	OR 1-11
	13	SOCIAL NETWORKING/
	14	SOCIAL MEDIA/
	15	Social Media
	16	Social network*
	17	Facebook
	18	Twitter
	19	Instagram
	20	Snapchat
	21	Myspace
	22	OR 13-21
	23	12 AND 22
Web of Science		
	1	TS=contracept*
	2	TS=contracepti* agent*

(*Continued*)

	3	TS=emergency contracepti*
	4	TS=postcoital contraception
	5	TS=contracept* devices*
	6	TS=condom
	7	TS=barrier contraception
	8	TS=family planning
	9	OR 1-8
	10	TS=Social Media
	11	TS=Social network*
	12	TS=Facebook
	13	TS=Twitter
	14	TS=Instagram
	15	TS=Myspace
	16	TS= Snapchat
	17	OR 10-16
	18	9 AND 17
Association for Computing Machine		
	1	Contracept*
	2	Condom*
	3	Contraceptive agent
	4	Barrier contracepti*
	5	Family planning
	6	Emergency contracept*
	7	Intrauterine contracept* device*

(*Continued*)

	8	Postcoital contracept*
	9	OR 1-8
	10	Social Media
	11	Social network*
	12	Facebook
	13	Twitter
	14	Instagram
	15	Snapchat
	16	Myspace
	17	OR 10-16
	18	9 AND 17
DBPL computer science bibliography		
	1	Contracept*
	2	Condom*
	3	Contraceptive agent
	4	Barrier contracepti*
	5	Family planning
	6	Emergency contracept*
		Intrauterine contracept* device*
	8	Postcoital contracept*
	9	OR 1-8
	10	Social Media
	11	Social network*
	12	Facebook

(*Continued*)

	13	Twitter
	14	Instagram
	15	Snapchat
	16	Myspace
	17	OR 10-16
	18	9 AND 17

FEEDBACK

Reply to comments from Dr Lopez (30/06/16), 25 October 2016

Summary

Comment 1:

Abstract: Is this new for Protocols? Previously only for full reviews. Check with editorial office.

· Terminology: 'developing and developed' are often criticised; other terms are more acceptable these days, e.g. middle and low income countries vs higher, low-resources areas, or even less developed vs more developed.

· Search methods: list of sources does not match that in Methods. For CENTRAL, better to remove 2007 lest anyone think the authors would search that issue (rather than the latest issue)

· Selection criteria: types of studies are listed with outcomes in a running phrase; please clarify which is which. What does the 'nature of the contraception' mean in this context.

· Data collection and analysis: for the full review, this should be summary from Methods. Insufficient to say 'procedures expected.'

Reply 1: Thank you for bringing this to our attention, this was a preliminary draft left in error; the abstract is not needed at the protocol stage.

Comment 2:

Main text

General: Please have a colleague edit for grammar and punctuation. Please use standard English; phrases and clauses should be consistent and the subject and verb should be readily identifiable and should match. Examples:

· Description of condition, para 2, sentence 3 (Furthermore…)

· Description of intervention, para 2, sentence 1: second phrase may need to be 'risk of providing misleading…'

· Secondary outcomes, sentence 2: Does not seem to be a complete sentence. What are the subject and verb? Sentence 3, what is the subject for 'was conducted'?

Reply 2: Thank you for this comment, we will ensure the manuscript is edited further for grammar and punctuation. We have edited the description of condition passage taking the above comments into account (Pg. 1, lines 3-35).

Comment 3: *References*: In most cases, references should be at the end of a sentence. Don't really need to mention the author(s) in text, unless particularly notable. Please see Cochrane Style Guide.

Reply 3: Thank you for this comment; we have changed our referencing style to match this.

Background, Description of condition, para 2, last sentence

Smith et al 2015 is a Cochrane review of mobile phone interventions. Please find more substantial references for the importance of contraception.

Reply 4: Thank you, we have included references from Alkema et al and Gold et al to highlight the importance of contraception (Pg. 1, line 20).

Why it is important to do this review, para 2

Sentence 1: Please provide references for 'The majority of reviews'. Also, 'effect of social media' is not really a concept; do the authors mean the topic of social media?

Sentence 2: Why would the variety of platforms and different audiences 'have limited impact' on future interventions? Some may have an effect and some may not. Hard to synthesize perhaps, but that does not alter the potential effect they may have. Would the para be clearer if sentence 3 came first?

Reply5: Thank you for your comment, we have re-written the paragraph to clarify the points mentioned above (Pg. 3, lines 16-31).

Objectives: I suggest something like 'examine associations' rather than 'assessing effectiveness' since the authors are unlikely to find many RCTs.

Reply6: Thank you for your comment, we have decided to limit our study to interventional studies and hence will exclude observational studies (Pg. 3, lines 33-34).

Methods

Criteria for considering

Earlier, the authors mentioned including case-control studies, which are often observational. Please be consistent. Also, some people use 'observational' in lieu of 'non-randomized' (I am not among them.) May be better to list the types of studies or clarify the study design issues, such as prospective and comparative. This will also help with examining studies for eligibility.

Reply 7: As mentioned above, the preliminary abstract was left in error, we will only be considering interventional studies in our review.

Types of interventions lists 'aims' or possible outcomes. However, for 'promote specific methods', do the authors mean promote use of specific methods, such as LARC? Otherwise, only the process of 'marketing' could be measured.

If interventions must be delivered solely through named SNSs, how do we relate to the intervention potentially being an adjunct to another intervention (Background, How the intervention might work).

Reply 8: Thank you, we have changed the sentence to 'Promote use of specific contraceptive method', and have clarified that interventions can be used in adjunct (Pg. 4, line 18).

Types of outcomes: Regarding 'ideally', would the authors require this or not? Rather than 'compliance', please use 'adherence', which is more appropriate when people have a choice.

II) 'Named SNS' is not an outcome. This probably fits under 'types of interventions'.

Reply 9: Thank you we have removed the work ideally and changed the use of 'compliance' to 'adherence'. We have also deleted 'named SNS' as an outcome (Pg. 5, lines 4-13).

Electronic searches

Protocols normally provide draft/proposed search strategies in the Appendix. Otherwise, methods are incomplete.

Searching other resources: Regarding 'to obtain information about trials not discovered', authors may mean to 'to identify trials not discovered.'

Reply 10: Thank you, we have attached the completed search strategy and rephrased 'to obtain information about trials not discovered' to 'to identify trials not discovered' (Pg. 6, line 3).

Selection of studies: 'intervention that will be delivered' should be 'intervention delivered'

Reply 11: Thank you, we have changed the phrase as suggested above (Pg. 6, line 16).

Assessment of risk of bias: Handbook reference should be current; 2011 not 2008.

Criteria refer to RCTs. How will the authors assess quality for non-randomized studies?

Reply 12: Thank you, we have edited the handbook reference accordingly and stated we will use the GRADE risk of bias framework for NRS studies included in the review (Pg. 6, lines 34-36).

Unit of analysis: Please avoid vague language regarding analysis.

Reply 13: Many thanks, we have edited this paragraph for clarity (Pg. 7, lines 8-9).

Data synthesis: Again, how will the authors assess 'methodological integrity' of non-randomized studies?

Reply 14: Thank you, we have stated we will use the GRADE risk of bias framework for NRS studies included in the review (Pg. 7, lines 25-28).

Reply

Please see the relevant sections above

Feedback to Dr Lopez, 18 November 2016

Summary

1. The authors have edited the placement of references in the text. However, they did not really follow the Style Manual for citing references in text, i.e. punctuation and format (including avoiding 'et al'). E.g.: (Gold 2012; Korda 2013). Please use the August 2016 version of Style Manual for the review overall, although reference format has not changed.
2. Also, references at end of review do not follow Cochrane format. I mainly refer to authors' names (initials) and use of title vs sentence case. Regardless of publisher, authors are responsible for journal guidelines. Copy editors will require changes; the authors might as well fix these issues now.
3. Objectives
Regarding previous comments: 'effectiveness' doesn't really apply to NRS, only to RCTs. We can talk about associations for NRS, but we usually avoid causal statements.
4. Types of studies: quasi experimental may be a legitimate phrase but quasi random is a contradiction. Assignment is either random or not. Participants could be systematically assigned, i.e. alternately or by birth date.
5. Search strategy
This is apparently an early draft, as it only includes major terms. Without links such as 'AND' or 'OR', it is not really a strategy. I hope the authors are testing an actual strategy now so they can determine if they are identifying appropriate reports. The protocol would be more informative with a sample strategy, such as one for PubMed.

Reply

Reply 1, 2: Many thanks, the references have been reformatted according to the Style Manual.
Reply 3: Many thanks, we have changed the word 'assess' to 'explore' to account for this.
Reply 4: Many thanks, we have rephrased the above to 'and non-randomised studies (NRS) to include non-randomised controlled trials'
Reply 5: Many thanks we have updated your search strategy to a more comprehensive draft.

WHAT'S NEW

Last assessed as up-to-date: 26 October 2016.

Date	Event	Description
21 November 2016	Feedback has been incorporated	Final draft Protocol
25 October 2016	Feedback has been incorporated	Second Draft Protocol
21 June 2016	Amended	First draft Protocol

DECLARATIONS OF INTEREST

No conflict of interest.