PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (**http://bmjopen.bmj.com/site/about/resources/checklist.pdf**) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Comparing the effectiveness of a crowdsourced video and a social marketing video in promoting condom use among Chinese men who have sex with men: A study protocol
AUTHORS	Liu, Chuncheng; Mao, Jessica; Wong, Terrence; Tang, Weiming; Tso, Lai Sze; Tang, Songyuan; Zhang, Ye; Zhang, Wei; Qin, Yilu; Chen, Zihuang; Ma, Wei; Kang, Dianming; Li, Haochu; Liao, Meizhen; Mollan, Katie; Hudgens, Michael; Bayus, Barry; Huang, Shujie; Yang, Bin; Wei, Chongyi; Tucker, Joseph

VERSION 1 - REVIEW

REVIEWER	Wayne Johnson Centers for Disease Control and Prevention United States
REVIEW RETURNED	07-Mar-2016

GENERAL COMMENTS	3. The study design is good as far as it goes but the title and overall concept may be over-reaching what can be accomplished with this design. This study will compare only one crowd-sourced video with only one "standard" (professionally developed) social marketing video, so it can't broadly compare the effectiveness of the two categories. With only two videos, any observed difference in effectiveness could be due to numerous specific characteristics of the videos that might not be unique to crowd-sourced vs standard videos. But it is a great concept and pilot test. If effects could be compared among several crowd-sourced videos and standard videos it would be more plausible to attribute the difference to the source (crowd or professional). Videos in each category could be required to differ in various dimensions, e.g,. humor vs fear, language, setting, type of relationship, ages of characters, to (begin to) determine whether any differences are due to the source (crowd vs professional) as opposed to these other characteristics. 9. See #3. (Results are not actually available but because this is a protocol I am referring to the anticipated results.) 12. See #3. A further item: there is an extensive baseline survey (pages 29 to 53, maybe a little too long) but I found only a brief reference to the primary follow-up (outcome) data to be collected (page 13). The difference in proportions having condomless sex is a good primary outcome, but I think there are more important additional behavioral outcomes that should be considered before the listed secondary outcomes of social norms, negotiation, self-efficacy, and frequency of sex. In particular, could you add the number of different partners for condomless sex, specific to insertive and receptive roles, and

	separated by perceived HIV status, nature and duration of relationships. These are at least partially addressed within the baseline survey, but I would want to make sure they can be precisely measured with the above details at follow-up as well.

REVIEWER	G Anil Kumar Public Health Foundation of India, New Delhi, India
REVIEW RETURNED	07-Mar-2016

GENERAL COMMENTS	This is an interesting study protocol. This protocol that examines the contribution of crowds to enhance condom Use among Men who have Sex with Men and Transgender in China. It is a very interesting, logically developed and well thought of study. But, I have some major issue in method of this study. I think investigators could think of using only one type of social media as there is likely to be significant duplication of respondents between the sites. Also select some province and concentrate on those – or select metropolitan cities and compare the results. Age group is too broad – 20-35/40 years seems OK. I think, generally the older ones do not get much onto the social sites. But I am not sure in your country It is important to remember that the demographics listed on the social site are not necessarily correct. If investigators samples based on this, he may get into sample issues if the age is actually different. He should probably then stick with only the age on the site for analysis. For a self-administered questionnaire in English/Chinese, he would also need respondents who can read/write English or Chinese – that has to be selection criteria. Also for questionnaire – investigators will have to define what condom use as a risky behaviour they want to assess, and then design questions accordingly. I think, MSM who did not use condom for last 6 months is fine as most of the MSM may not do sex within 3 months. Considering these points, investigators can modify the methods for this protocol

VERSION 1 – AUTHOR RESPONSE

Reviewer #1:

Comment: “The study design is good as far as it goes but the title and overall concept may be over-reaching what can be accomplished with this design.”
Response: We agree that the title may be broad. We have changed the title to “Comparing the effectiveness of a crowdsourcing video and a social marketing video in promoting condom use among Chinese men who have sex with men: A study protocol."

Comment: “This study will compare only one crowd-sourced video with only one ‘standard’ (professionally developed) social marketing video, so it can't broadly compare the effectiveness of the two categories. With only two videos, any observed difference in effectiveness could be due to numerous specific characteristics of the videos that might not be unique to crowd-sourced vs. standard videos.”
Response: We agree with this reviewer that there are many factors that could influence the observed

outcomes of our study, and that it is generalizing to state one method is non-inferior or superior to the other based on only two videos. We do clarify that our conclusion is specifically whether or not the crowdsourcing video intervention is non-inferior to the social marketing video intervention, on page 13, line 8-9. We find it important to note that in a pragmatic RCT such as the one described here, there will always be external factors that may affect the outcomes. The recruitment methods, survey instrument, and video length will be the same between in the two study arms.

Comment: “The difference in proportions having condomless sex is a good primary outcome, but I think there are more important additional behavioral outcomes that should be considered before the listed secondary outcomes of social norms, negotiation, self-efficacy, and frequency of sex. In particular, could you add the number of different partners for condomless sex, specific to insertive and receptive roles, and separated by perceived HIV status, nature and duration of relationships. These are at least partially addressed within the baseline survey, but I would want to make sure they can be precisely measured with the above details at follow-up as well.”
Response: We agree with the reviewer’s point that there are many more behavioural outcomes that could be analysed, and that having a higher number of secondary outcomes would be useful. However, assessing each additional secondary outcome requires additional statistical power that would result in a much larger trial than planned. In addition, our trial, along with all secondary outcomes to be analysed, has already been formally registered on clinicaltrials.gov (NCT02516930).

Reviewer #2

Comment: “I think investigators could think of using only one type of social media as there is likely to be significant duplication of respondents between the sites.”
Response: We appreciate that there is an issue with duplication of participants, especially with an online survey. Though we would promote our trial on multiple types of social media platforms, participants must register with a valid mobile phone number, with which they would also receive their incentive of a mobile top-up. After the survey is completed, we will begin a data cleaning process involving removal of duplicate and invalid mobile numbers. This has been clarified in the Methods: Data collection section on page 9, line 21 -10, line 2.

Comment: “Also select some province and concentrate on those – or select metropolitan cities and compare the results. Age group is too broad – 20-35/40 years seems OK. I think, generally the older ones do not get much onto the social sites. But I am not sure in your country”
Response: We agree that a more narrow age range or geographical distribution would make for an interesting comparison of the results. However, there is a large MSM population in rural areas outside of major cities that is at risk, and we wanted to capture as complete a picture as possible of the current situation of MSM in China. Online MSM in China do tend to be younger, but we specifically did not set an upper age bound as previous research has shown that older MSM in China are at higher risk of syphilis and HIV [1]. Again, we thought it would be important to allow all at-risk participants to participate in our study.

Comment: “It is important to remember that the demographics listed on the social site are not necessarily correct. If investigators samples based on this, he may get into sample issues if the age is actually different. He should probably then stick with only the age on the site for analysis. “
Response: We only recorded participant answers to survey questions, and did not sample any data from any of the participants’ social media sites.

Comment: “For a self-administered questionnaire in English/Chinese, he would also need respondents who can read/write English or Chinese – that has to be selection criteria.”
Response: The survey was entirely in Chinese, as clarified on page 7, line 22, and all participants were required to be able to read Chinese. The selection criteria detailed in the Methods section has been revised to reflect this, on page 7, line 14.

Comment: “Also for questionnaire – investigators will have to define what condom use as a risky behaviour they want to assess, and then design questions accordingly. I think, MSM who did not use condom for last 6 months is fine as most of the MSM may not do sex within 3 months. Considering these points, investigators can modify the methods for this protocol
Response: We agree it is important to have a clear definition of what condomless sex and risky behaviour and have clarified this in the Methods: Primary Outcome section, on page 10, line 20.

VERSION 2 – REVIEW

REVIEWER	Wayne Johnson CDC Division of HIV/AIDS Prevention United States
REVIEW RETURNED	26-Apr-2016

GENERAL COMMENTS	Page 3 line 8 change "a" to "one" to emphasize this is only one specific crowd-sourced intervention, not crowd-sourced interventions in general. Page 9 add "public" on line 21 and "publicly" on line 22 so it says "Our team will delay public announcement" and "The winning video will be publicly announced..." I'm not completely convinced on the terminology of "crowd-sourced" vs "social marketing." Aren't both interventions intended to be delivered by the same mechanism, presumably social marketing? It seems to me that maybe the difference is in who designed them (crowd-sourced vs professionally designed), not how they are to be delivered (social marketing vs some other mechanism). If you agree you might change "social marketing" to "professionally designed" or something like that. The outcome variables are weak - not overall good measures of behavioral risk reduction. On page 25: You define frequency of sex acts as the percentage of men who report a decrease in number of sex acts (apparently regardless of condom use?). And there is a dichotomous measure of any condomless sex or none. Given the 30-page length of the questionnaire, this is far too little focus on the actual behavioral outcome. It will be more useful to know how many different male *partners* they have condomless receptive anal sex with, condomless insertive anal sex with, and how many times for each. Along with their HIV status, this will give you better information about their degree of risk. Frequency of condom use is not a good indicator of the accumulated risk. One respondent can use condoms "almost always" and still have several occasions of condomless sex, while another may use condoms "never" and have only one occasion with one partner. (That is, the frequency of condom use can be inversely related to the

	degree of HIV risk.) The number of occasions of condomless sex with male partners (by position) and the number of different male *partners* for condomless sex (by position) are better measures. To me, everything else (except HIV testing) in the 30-page questionnaire seems less important than the behavioral outcomes that reflect risk of HIV acquisition or transmission.

VERSION 2 – AUTHOR RESPONSE

Comment # 1: “Please leave your comments for the authors below Page 3 line 8 change "a" to "one" to emphasize this is only one specific crowd-sourced intervention, not crowd-sourced interventions in general.”
Response # 1: Thank you for catching this and we have changed “a” to “one” accordingly on page 2 line 6.

Comment # 2: “Page 9 add "public" on line 21 and "publicly" on line 22 so it says "Our team will delay public announcement" and "The winning video will be publicly announced..."
Response # 2: Added use of “public” and “publicly” accordingly on page 8 line 21 and page 9 line 1.

Comment # 3: “I'm not completely convinced on the terminology of "crowd-sourced" vs "social marketing." Aren't both interventions intended to be delivered by the same mechanism, presumably social marketing?”
Response # 3: Both videos will be delivered to MSM using the Internet. The terms “social marketing” and “crowdsourcing” refer to how the videos were developed and this has been clarified on Page 2, Line 13.

Comment # 4: “The outcome variables are weak - not overall good measures of behavioral risk reduction”
Response # 4: Our primary outcome variable on condom use and related secondary outcome variables are commonly used in a wide range of behavioral health research (references 1-4 below). The purpose of the intervention is to promote condom use (and not necessarily influence the number of male partners, sexual position, etc.) and this guided our selection of primary and secondary outcome variables.

Comment # 5: “To me, everything else (except HIV testing) in the 30-page questionnaire seems less important than the behavioral outcomes that reflect risk of HIV acquisition or transmission.”
Response # 5: Our survey length reflects several secondary outcomes, including condom use social norms (references 5, 6 below), condom use negotiation (references 4, 7 below) condom self-efficacy (references 1-3 below), which are all commonly used variables in condom-related RCTs and related behavioral health research. They are essential in better understanding the context of condom use behaviors and offer valuable information for future intervention development.

References:

1 Emetu RE, Marshall A, Sanders SA, Yarber WL, Milhausen RR, Crosby RA, Graham CA. A novel, self-guided, home-based intervention to improve condom use among young men who have sex with men. Journal of American College Health. 2014 Feb 17;62(2):118-24.
2 Jemmott III JB, Jemmott LS, O’Leary A, Icard LD, Rutledge SE, Stevens R, Hsu J, Stephens AJ. On the efficacy and mediation of a one-on-one HIV risk-reduction intervention for african american men who have sex with men: a randomized controlled trial. AIDS and Behavior. 2015 Jul 1;19(7):1247-62.
3 Miranda J, Côté J, Godin G, Blais M, Otis J, Guéhéneuc YG, Fadel G, Barton L, Fowler S. An Internet-based intervention (Condom-Him) to increase condom use among HIV-positive men who have sex with men: protocol for a randomized controlled trial. JMIR research protocols.

2013;2(2):e39.
4 Van Rossem R, Meekers D. An evaluation of the effectiveness of targeted social marketing to promote adolescent and young adult reproductive health in Cameroon. AIDS Education and Prevention. 2000 Oct 1;12(5):383.
5 Fishbein M, Middlestadt SE, Trafimow D. Social norms for condom use: implications for HIV prevention interventions of a KABP survey with heterosexuals in the Eastern Caribbean. Advances in Consumer Research. 1993 Jan 1;20(1).
6 Kelly JA, Murphy DA, Sikkema KJ, McAuliffe TL, Roffman RA, Solomon LJ, Winett RA, Kalichman SC, Collaborative TC. Randomised, controlled, community-level HIV-prevention intervention for sexual-risk behaviour among homosexual men in US cities. The Lancet. 1997 Nov 22;350(9090):1500-5.
7 Li J, Lau JT, Gu J, Hao C, Lai CH. Event-Specific Risk Factors Predicting Episodes of Unprotected Anal Intercourse with Male Nonregular Partners among Men Who Have Sex with Men Using Case-Crossover Study Design. BioMed research international. 2014 Jul 20;2014.

VERSION 3 - REVIEW

REVIEWER	Wayne Johnson CDC, USA
REVIEW RETURNED	22-May-2016

GENERAL COMMENTS	Best wishes with your research.