Reviewer's report

Title: WhatsApp embedded in routine service delivery for smoking cessation: Effects on abstinence rates in a randomized controlled study

Version: 0 Date: 28 Dec 2018

Reviewer: Hayden Mc Robbie

Reviewer's report:

This study examines the effect of adding text and picture cessation support messages, delivered via WhatsApp, to usual care. Usual care is a relatively intensive clinical smoking cessation programme delivered in an outpatient session. The control group received usual care only.

There are some good elements in this study, but also some weaknesses. I have made comments on issues as they appear in the paper.

Abstract

This needs some attention.

Line 30: You need to clarify that the intervention was added to an outpatient smoking cessation service (usual care) and compared to usual care alone.

Line 34: You may wish to revise how the content was developed here. I don't think that the Transtheoretical model (TTM) is the correct theoretical basis for development (see my comments below).

Lines 36-37: This could be deleted.

Line 37: State what the primary outcome measure is. Based on your power calculation this is self-report abstinence rate at 1 month post target quit day (TQD). The abstinence rates at 3 and 6 months are secondary outcomes. The abstinence rates at 3 and 6 months are not really point prevalence measures, but instead sustained abstinences rates.

Line 44: The sentence starting "The intervention was…" needs revision. I think you mean here that when controlling for all other factors in the multivariate logistic regression, only the intervention was associated with abstinence.

Line 50: I don't think that you can claim that the intervention was equally as effective in those from lower socio-economic groups (SEGs) as those from higher SEGs. This study was not adequately powered to look at this.
Lines 53-55: I see that this trial is Registered online (https://clinicaltrials.gov/ct2/showrecord/NCT03714971). This should be added to the manuscript.

Introduction

Line 58: Information regarding the global effect of tobacco use is not needed. Instead focus on giving the readers some background to tobacco use and tobacco cessation in Turkey.

Line 63: You quote that "…1,848,462 quitting services were offered…” Do you mean the number of individuals that were provided with cessation treatment?

Lines 65-69: I am unclear of the relevance to the TTM here. This study was undertaken in people who had enrolled in a smoking cessation services and were, presumably, already in the 'action stage' of quitting. I know that there is a 'preparation' stage in the TTM, but in this setting preparing for quitting is part of the treatment.

Lines 78-81: It is a little odd to cite the results of just one study in this way. There are other examples in the literature that explore smokers' preferences for cessation support.

Lines 84-86: It is good that you have looked at the use of WhatsApp, but it would be better if you could provide a summary of the use of WhatsApp for delivery of behavior change interventions. Are there any more studies that the one you cite? If not, you could say that you found only one published study.

Lines 87-89: The first sentence does not make sense to me. What studies are you referring to? Studies of text messaging or social media? Please clarify this.

Lines 89-91: I think that it would be useful if you can provide some rationale here as to why social media tools, such as WhatsApp, could add to face-to-face smoking cessation services. Then you can state what you planned and your hypotheses.

Methods

I think that this section would benefit from some revision. Consider reorganising with the following sub-headings: Trial design; Participants; Usual care; Intervention; Sample size; Randomization; Blinding; Measures and outcomes; Analysis; and Ethical issues.

Line 105: I was curious as to why you opted to use a 1:2 allocation. It's more usual, I think, to allocate more to the intervention group. Please provide the readers with some rationale here. The sentence on lines 133-134 can be included with this rationale.

Lines 105-110: I think that these should be included in a separate subsection titled 'Usual care'.
Lines 113-124 'Participants': It would be good to make it clear in this section how participants were recruited and what the inclusion and exclusion criteria were. You should include 'ready to quit smoking' or 'wanted help in quitting smoking' as an inclusion criterion.

Lines 136-142 should be included in at the beginning of the results section, along with Figure 1, and lines 145-151. Collectively, these lines should be re-written to clearly explain the participant flow.

Lines 152-158 belong under the 'Randomization' sub-heading.

Line 171: The 'Variables' section would be better labelled 'Measures and outcomes'. It should describe what was measured, and when, and then describe the primary and secondary outcomes.

Lines 172-182: There should be just one primary outcome. Given that your sample size was based on 1-month abstinence rates, this would be the primary. You should also state that this was a self-reported measure. If you have CO-validated abstinence rates at this time-point then this would add strength to your study. The other measures should be included as secondary outcomes.

Lines 177-179: Your description of the abstinence measure at 3 months is really a 'sustained abstinence rate', as is the 6-month abstinence measure. This makes the results a little stronger. Again, you need to clarify that these are self-reported.

Lines 182-204: These are a mix of measures and outcomes. Consider re-organizing these sentences to describe, first, what was measured, and when, and then describe the primary and secondary outcomes. The section on 'Data Collection' (lines 205-215) could be incorporated here.

Line 196: The correct terminology for the Fagerstrom Scale is the Fagerstrom Test of Cigarette Dependence. I also noted that in Table 2 you categorized the scores, so this should also be described here.

Line 197: Please describe when (i.e. at which time-points) CO was measured.

Line 229: It is not clear what you mean by "The advertisements occupying SMS message boxes..." I assume you don't mean paid advertisements, but the words or pictures.

Lines 232-255 'Development of the message contents': As noted above in my comments regarding the abstract, the use of the TTM to guide message development does not seem correct here as all participants were ready to quit. Is this really what you based your message development on? I think that it is OK to say that you based you draft messages on the expertise of smoking cessation specialists, or whoever it was that drafted the messages. The messages may have also covered the evidence-based behavior change techniques for smoking cessation (e.g. see https://www.ncbi.nlm.nih.gov/pubmed/20478957). The important point in your development is that you tested these messages again with experts and end-users and modified these based on feedback.
I would suggest deleting the end of the sentence from "...as non-response..." onwards.

What was the rationale for the two models used in logistic regression?

There was no information given on how weight was analyzed. Ideally you would look at change in weight in those who are abstinent only. Those who don't stop smoking are unlikely to have gained weight.

Results

I think that this section could be substantially shortened, referring readers to the tables for full results.

Was the total N the same for all outcomes? That is, for example, did you have weights for all participants?

Discussion

Overall the discussion is lengthy and I think that it could be shortened substantially.

consider re-wording this part of the discussion to reflect that the results showed a benefit of providing additional support via WhatsApp, above usual care alone at all follow-up points.

would be better placed with some of the limitations.

this section on the determinants of quitting is a little difficult to follow. It may be better to consider each determinant in a separate paragraph.

this section would benefit from re-writing to simply compare and contrast to what is known. The statement at the end of page 17 "The WhatsApp intervention in our study was found to be even more effective among these studies" is not justified. You need to be clear with what end-points you are comparing and the 95% confidence intervals overlap with those in the meta-analysis.

I don't think that you can say too much about the elimination of the effects of gender, unemployment and mood. I think that it is OK to say that you did not find an effect of these things on abstinence in the logistic regression, but that does not mean that your intervention was responsible for eliminating the effect of these factors, which are often seen in other studies.
Lines 442-450: I think that the conclusions that you are drawing here are also not justified. It will, of course depend on how the differences in change in weight were analyzed. Comparing change in weight among abstainers will help look at this a little closer. As you have more smokers in the control arm, there are likely to be fewer people to have gained weight.

Lines 455 and 457: The percentages of those continuing therapy are around the wrong way.

Lines 480 - 495; Limitations: these should be moved up before the conclusions, I think. You should also acknowledge that the control group did not receive any messages, so there may be some subject-expectancy effect.

Lines 484-486: I don't think that self-reported abstinence is a reliable as biochemically verified abstinence. You state that studies have proven this, yet cite none.

Table 3

Why are the effects of Social Class, Depression Score and Marital Status not assessed at 6 months? Perhaps the depression score was not collected, but data are available for the other factors.

Figure 3

Numbers need to be added here.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

No

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review
Quality of written English
Please indicate the quality of language in the manuscript:

Not suitable for publication unless extensively edited

Declaration of competing interests
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I have received honoraria for speaking at smoking cessation meetings and attending advisory board meetings that have been organised by Pfizer and Johnson & Johnson.

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal