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Short communication

Do messages of scarcity increase trial recruitment?

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ABSTRACT

Introduction: Psychological theory suggests that participants may be more likely to volunteer to join a clinical trial if they perceive places in the trial are a scarce commodity.

Material and methods: We conducted a single blind, randomized controlled trial to test recruitment strategies within the larger txt2stop smoking cessation trial. 1862 people who were eligible for the txt2stop trial but had not yet consented to join were randomized to receive either A) a reminder about the txt2stop trial plus a message that there were only 300 places left, or B) a reminder about the trial only. The outcome was the participant's consent to join the txt2stop trial 3 days after messages were sent.

Results: Of 895 participants randomized to the intervention group, 90 (10.1%) had consented to join the txt2stop trial. Of the 967 participants randomized to the control group, 67 (6.9%) had consented to join the txt2stop trial (OR = 1.50, 95% CI 1.07–2.12).

Discussion: Scarcity messages were an effective way to increase recruitment into the txt2stop trial and could be relevant to other trials.

Conclusions: Communicating scarcity is an effective way to increase trial recruitment.

1. Introduction

Up to one-third of clinical trials fail to achieve recruitment targets [1], which can result in underpowered studies, possible failure to detect important treatment effects, and in worse-case scenarios, abandonment of the research [2].

Two recent Cochrane reviews of methods to increase recruitment identified only 27 studies evaluating strategies to increase recruitment into clinical trials [2,3]. Effective strategies include pre-warning participants of upcoming trials, changing trial design to make participation more acceptable (eliminating a placebo-only arm, for example), and providing telephone follow-up reminders; providing monetary incentives appeared to increase recruitment in a hypothetical trial. We previously found that sending reminder messages that included personalized quotes from other trial participants increased recruitment [4]. Other strategies to increase participation in postal surveys that may be applicable to trial research include personalizing materials and printing materials on colored ink [5].

Psychological and marketing research suggests additional possible avenues to increase recruitment. Commodity theory, for example, posits that people are more likely to desire unavailable things [6]. In the context of trial research, if people perceive that trial places are scarce, will they be more likely to join?

2. Background to the txt2stop trial

Txt2stop is a trial of a mobile-phone based smoking cessation program [7]. Participants are recruited via adverts on radio stations, in newspapers, on the internet (including the QUIT website) and via flyers and posters in GP surgeries,

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pharmacies and smoking cessation services. Adverts direct potential participants to text a short code number (65151) if they are interested in obtaining further information about the trial. Research assistants based at the trial co-ordinating centre then call those who have sent a text message of interest in the study and ask eligibility questions. Those who are eligible are sent further information about the trial by post or email, and asked to send back a text message stating either 'I consent' or "I do not consent". Once consent is received, the participant is called a second time (Fig. 1). The research assistants collect baseline data at this second call and a computer-based randomisation program allocates the participant to the intervention or control group.

In the txt2stop trial, a number of people who texted to indicate initial interest failed to send a subsequent message indicating whether or not they consented to participation in the study. On June 1 2009, there were 1862 potential participants on the 'eligible' participants list (Fig. 1), who had been there from anytime between one day and 18 months.

We hypothesized that a text message designed to communicate that places in the trial were scarce would increase consent to join the txt2stop trial among people on the eligible participants list. We designed a randomized controlled trial within the context of the larger txt2stop trial to test our hypothesis.

3. Methods

A single blind randomized controlled trial, with those assessing outcome blinded to intervention status. Fig. 1 summarizes the recruitment procedure.

3.1. Ethics

Ethical approval for the study was received from the London School of Hygiene and Tropical Medicine Ethics Committee.

3.2. Eligibility

All people on the list of 'eligible participants' in the larger txt2stop trial were eligible to participate in this trial. All on this list had consented to be contacted by the txt2stop trial team by texting in their interest to a code number 65151, but had not yet texted a message consenting to join the txt2stop trial and thus were not randomized. Participants were able to withdraw at any time by texting 'stop' to 65151.

3.3. Procedures

1862 participants were randomly allocated to intervention and control groups using a web-based random number

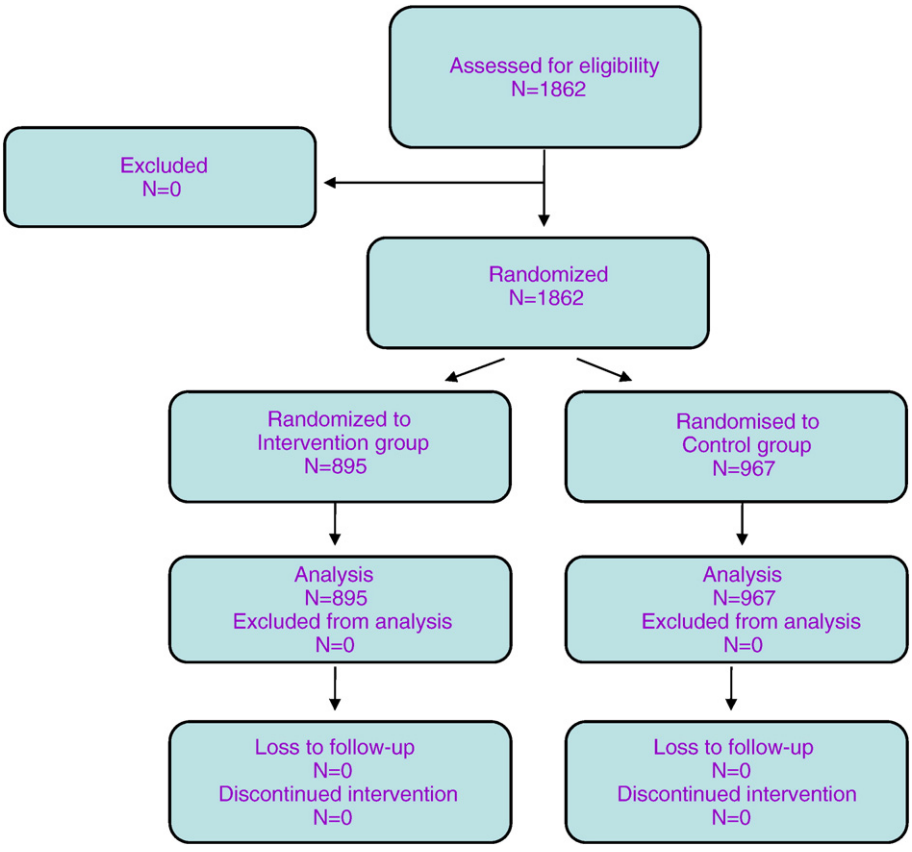

Fig. 1. Flow chart of the participants in the recruitment trial.

generator. Allocation was concealed and outcome assessors blinded. Text messages were sent simultaneously to both groups, who then replied by texting either 'I consent' or 'I do not consent', or did not reply at all.

3.4. Control group

The control group received a text message reminding them that they could consent or not consent to joining the txt2stop trial by texting 65151.

3.5. Intervention group

The intervention group received a text message reminding them that they could consent or not consent to joining the txt2stop trial (identical to the control group message), plus the following statement: "Join txt2stop-only 300 places left!" At the time of the message, there were only 300 places left (there was no deception involved).

3.6. Confounders

Potential participants' birthdates were collected as part of eligibility assessments; thus all those participating in this recruitment trial had data on age available. Age on the close of the trial (May 18 2009) was measured in years.

3.7. Outcome

Consent to join the txt2stop trial, at 3 days after the recruitment trial text messages were sent.

3.8. Power

We calculated a sample size of at least 900 people in each arm to have 80% power to detect a 3–4% difference in consent, with alpha = 0.05 (calculated using a normal approximation to the binomial distribution).

3.9. Statistical analysis

All analyses were conducted in Stata 10.0 [8]. The unadjusted OR of consent in the intervention versus the control group is presented. 95% confidence intervals were calculated using Fisher's exact test.

4. Results

The 1862 participants ranged from 16 to 79 years old, mean = 36 years in both the intervention and control groups ($p = 0.572$). The flow chart for the trial is presented in Fig. 1. Of the 895 people randomized to receive the intervention texts, 90 (10.1%) had consented to join the trial 3 days later. Of the 967 randomized to receive the control text messages, 67 (6.9%) had consented to join the trial at 3 days follow-up. Those in the intervention group had one and a half times the odds of consenting at follow-up, which was a statistically significant difference (OR = 1.50, 95% CI 1.07–2.12, $p = 0.0152$). Those who consented to join txt2stop had been on the 'eligible participants list' for considerably less time than those who did not consent to join txt2stop (20 days versus 168 days, $p < 0.0001$).

5. Discussion

We found evidence that scarcity messages were more effective than simple reminders for increasing consent to join the txt2stop trial. Consent rates were higher in those who had more recently indicated interest in the txt2stop trial. This strategy helped enable us to fully recruit to the txt2stop trial from our existing lists without placing further adverts. Only people who had initially indicated interest in the trial but had failed to either consent or not consent to participation were contacted.

To our knowledge there are no other trials of the impact of scarcity messages on trial recruitment [2]. The Cochrane reviews of strategies to increase response to postal surveys and electronic surveys also did not find any studies testing messages of scarcity [5,9]. Psychological research suggests several possible mechanisms of action — commodity theory suggests that people may want to grab scarce resources for themselves so that they are sure they will gain any possible benefit, or have the resource (knowledge of techniques used in the txt2stop trial in this case) as a bargaining chip in power negotiations [6]. Perceived scarcity has been shown to increase desire to attend sporting events and increase the amount of money people are willing to pay to do so [10]. In the literature on survey participation, researchers suggest that due to 'social validation' people may be more willing to comply with a request if they believe that others have already done so [11]. The text messages we sent could have communicated indirectly that joining the trial was 'popular' — if there are 'only' a certain number of places left, then others must be joining. Deadlines have also been shown to be an effective way of increasing response [5] — communicating scarcity also implies there is a deadline for responding after which joining the trial will not be possible.

Whatever the mechanism, this technique has the potential to be widely applied to increase recruitment in trials of diverse ranges of interventions advertising using a range of media. However, this method would not be appropriate or relevant for some trials due to ethical concerns. Further evaluation is needed to determine numbers of places and which types of preamble wording communicate scarcity most effectively, and also to determine the effects of using different media. It may be that targeting potential participants to communicate these messages in a personalized way (on their personal mobile, or perhaps by letter) could be more effective than less targeted advertisements.

5.1. Strengths and limitations

Because participants in the present trial had not yet been randomized into the txt2stop trial, no baseline data (with the exception of age) were available; thus we were unable to make extensive comparisons between the control and intervention groups. The participant IDs were not linked to any personal or identifying data so allocation was well concealed. The trial participants had been on the 'eligible participants list' for txt2stop for any period from first to up to

18 months; further research is needed to examine strategies to increase recruitment among people who had indicated interested less recently.

6. Conclusions

Messages communicating scarcity are a promising strategy for increasing recruitment into clinical trials. This technique warrants investigation in further trials, among samples of potential participants who have recently indicated interest in joining.

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