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Factorial trial found mixed evidence of effects of pre-notification and pleading on response to Web-based survey

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Abstract

Objectives: To evaluate the effectiveness of pre-notification and pleading invitations in Web surveys by embedding a randomized controlled trial (RCT) in a Web-based survey.

Study Design and Setting: E-mail addresses of 569 authors of published maternal health research were randomized in a 2×2 factorial trial of a pre-notification vs. no pre-notification e-mail and a pleading vs. a non-pleading invitation e-mail. The primary outcome was completed response rate, and the secondary outcome was submitted response rate (which included complete and partial responses).

Results: Pleading invitations resulted in 5.0% more completed questionnaires, although this difference did not reach statistical significance [odds ratio (OR) 1.23; 95% confidence interval (CI): 0.86, 1.74; $P = 0.25$]. Pre-notification did not increase the completion rate (OR 1.04; 95% CI 0.73, 1.48; $P = 0.83$). Response was higher among authors who had published in 2006 or later (OR 2.07; 95% CI: 1.43, 2.98; $P = 0.001$). There was some evidence that pre-notification was more effective in increasing submissions from authors with recent publications ($P = 0.04$).

Conclusion: The use of a ''pleading'' tone to e-mail invitations may increase response to a Web-based survey. Authors of recently published research are more likely to respond to a Web-based survey.

Keywords: Web survey; Prenotification; Pleading invitations; Response rates; Maternal health research; Factorial trial

1. Introduction

Non-response to surveys and losses to follow-up in trials reduce the effective study sample sizes and can introduce bias [1]. Effective strategies for increasing response to postal and electronic questionnaires have been identified, but uncertainty remains for many strategies, particularly for the relatively new medium of Web-based surveys [2]. There is some evidence that response rates differ between Web-based and postal questionnaires [3] and that there may be differences in who responds to Web-based surveys compared with postal questionnaires [4]. This suggests that it may not be possible to generalize the findings from postal or other questionnaire media to Web-based surveys. The embedding of randomized controlled trials (RCTs) of data collection strategies within research studies improves the evidence base, and by using a factorial trial design, two questions can be answered at once [5].

We identified two strategies for which effectiveness in Web-based surveys is uncertain. First, although there is reasonable evidence that contacting participants before sending postal questionnaires can increase response [odds ratio (OR) 1.46; 95% confidence interval (CI): 1.29, 1.63], the evidence from trials of pre-notification by e-mail in Web surveys is currently less conclusive [6,7]. Second, although use of a ''pleading'' tone in the invitation to participate, or stressing the benefits of responding, do not appear to increase response to a postal questionnaire [2], there is currently no evidence from randomized trials in Web

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Authors' contributions: H.B. wrote the protocol, obtained ethics committee approval, devised the survey questionnaire, collected the participants' e-mail addresses, conducted the survey using SurveyMonkey, and revised drafts of the manuscripts. L.F. conducted the randomization, sent prenotification e-mails, and drafted the manuscript. P.E. suggested the study and design, entered and analyzed the data, and revised drafts of the manuscripts. All authors read and approved the final manuscript.

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What is new?

- This trial evaluated the effectiveness of pre-notification and a pleading tone of invitation in Web-based surveys among health professionals.
- We found weak evidence that ''pleading'' invitations increase completion in a survey of maternal health researchers.
- Authors who have recently published in a peer-reviewed journal are more likely to respond to a Web-based survey compared with those who published several years earlier.

surveys. The theoretical basis for how pre-notification and tone of request to participate may influence individual behavior in the context of questionnaire surveys has been reviewed elsewhere [8]. There have been two RCTs of adding a ''plea for help'' in the subject lines of e-mails, which did not find evidence for an effect on response (OR 0.84; 95% CI: 0.70, 1.01) [2]. One other trial evaluated the effect of personalization contained within the body of an invitation letter and did not find any evidence for an effect on response (OR 0.95; 95% CI: 0.55, 1.64) [9]. We, therefore, conducted a factorial trial embedded within a Web-based survey of maternal health researchers to evaluate the effect on response of pre-notification by e-mail and a ''pleading'' invitation e-mail.

2. Methods

2.1. Participants

A survey was conducted to investigate the perceived usefulness of maternal health research for policy. We obtained e-mail addresses of authors who had published research on maternal health. The sampling frame comprised authors who had published articles in English on public health (i.e., nonclinical) aspects of maternal health. A systematic search was conducted to identify authors of articles published since 2002. Using Medline and Embase, the e-mail address of the corresponding author for each included article was extracted. Where none was given, a further search was conducted in Medline for e-mail addresses provided for other articles by the same author. If this was not successful, searches were conducted using Google to find e-mail addresses through the author's institution or elsewhere. During these searches, if e-mail addresses were identified for other authors of the article (e.g., second author), these were also added. No attempt was made to check whether researchers were still using the e-mail addresses. If an e-mail address was found to be invalid, further searches were not made to identify a current address.

2.2. Survey

The Web-based survey included 23 questions (five open-ended) on perceptions of the ''generalisability of maternal health research from one setting to another in low income countries.'' The topic was expected to be highly salient and personally relevant to participants. During piloting, the survey took about 10 minutes to complete.

2.3. Objectives

Our aims were to test two hypotheses:

Hypothesis 1: Consistent with mail survey research, a pre-notification e-mail will result in a higher overall response to a Web survey;
Hypothesis 2: Participants receiving an invitation with a pleading component, expressing gratitude by the researcher for their participation, are more likely to respond.

In addition, we explored differences in the proportions responding according to ''order of authorship'' (whether first or subsequent author) and ''years since publication'' (''recent'' indicates publication in 2006 or later; ''earlier'' indicates publication before 2006). We also explored whether response by intervention condition (pre-notification/pleading) differed according to order of authorship and years since publication.

2.4. Interventions

Participants were allocated to one of four groups:
(i) pre-notification e-mail and pleading invitation e-mail
(ii) pre-notification e-mail and non-pleading invitation
(iii) no pre-notification e-mail and pleading invitation
(iv) no pre-notification and non-pleading invitation

The ''pleading'' e-mail invitation included the two sentences: ''*I would greatly value your participation in a short online survey*'' in the opening sentence and ''*Your views on this topic are highly valued and I would greatly appreciate your co-operation"* as an additional phrase just before providing the survey link (See Appendix 1 on the journal's Web site at www.elsevier.com).

2.5. Outcomes

The primary outcome was the completed response rate (RR1), where the respondent provided an answer to every survey question and submitted the completed questionnaire via the Internet [10]. The secondary outcome was the submitted rate (RR2) that included both fully and partially completed survey questionnaires [10].

2.6. Randomization

2.6.1. Sequence generation

One author (L.F.) conducted the randomization using the RANDBETWEEN() command in Microsoft Excel. This