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Prenotification had no additional effect on the response rate and survey quality: a randomized trial

Yaojie Xie[a,*], Suzanne C. Ho[b]

[a]*Department of Community Medicine, School of Public Health, The University of Hong Kong, 3/F William M.W. Mong Block, 21 Sassoon Road, Pokfulam, Hong Kong*

[b]*Centre of Research and Promotion of Women's Health, The Jockey Club School of Public Health and Primary Care, The Chinese University of Hong Kong, 4/F, Lek Yuen Health Centre, 9 Lek Yuen Street, Shatin N.T., Hong Kong*

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Abstract

Objectives: To determine the effect of prenotification package on survey quality, including response rates, response time, percentage of nonresponse items, and cost.

Study Design and Setting: Participants were randomized into two groups. In the first round mailing, participants in prenotification group received a prenotification package, whereas direct questionnaire mailing group participants received a questionnaire with prepaid return envelope only. In the second round mailing, both groups received the questionnaires. The trial was integrated into a study among 35−65-year-old female nurses in Hong Kong.

Results: A total of 367 nurses were included in the trial. A total of 362 mails were successfully delivered. The initial response rate in the first round mailing were 8.79% and 8.89% for prenotification and direct questionnaire mailing groups, respectively. After the second round mailing, the final response rate in prenotification and direct questionnaire mailing groups were 17.58% and 17.22%, respectively; no significant difference was found between the groups. There were no differences with respect to percentage of nonresponse items or response time, but the cost of prenotification group was HK$ 15.11 per response higher than direct mailing group.

Conclusion: Prenotification had no additional effect on the response rate and other survey quality compared with direct questionnaire mailing in a Hong Kong population.

Keywords: Mail survey; Prenotification; Response rate; Response time; Randomized trial; Hong Kong population

1. Introduction

The mail survey has been extensively used in epidemiological studies for its efficiency in reaching a large number of the target population at a relatively low cost [1]. It is a particularly attractive method compared with some intensive methods such as face-to-face interviews [2]. However, the reported response rates have decreased rapidly in recent years [3]. A high level of nonresponse reduces the effective sample size and may lead to selection bias [4]. Evidence [5,6] suggests that prenotification is one of the effective strategies that can improve the response rate. However, some studies [7−9] argued the effect of prenotification on response rate. Furthermore, whether strategies that are useful in one study population will be equally useful in another remains uncertain [10]. Another expert pointed out that reminders in mail surveys may result in more mail that leads to higher costs [11]. Hence, comprehensively evaluating the response quality of the prenotification strategy in mail surveys is more important than simply focusing on response rate.

Given the lack of recent, applicable evidence of the impact of prenotification on survey quality in the Chinese population, the aims of this study were, namely (1) to determine the effect of prenotification on measures of survey quality, including response rates, response times, percentage of nonresponse items, and survey cost and (2) to determine whether sending a prenotification in advance is better than sending a questionnaire directly.

2. Methods

2.1. Sample and setting

A randomized trial was conducted, which was a pilot study in a survey among 5,500 Hong Kong female nurses

Conflict of interest: none.

* Corresponding author. Department of Community Medicine, School of Public Health, The University of Hong Kong, 3/F William M.W. Mong Block, 21 Sassoon Road, Pokfulam, Hong Kong. Tel.: +852-2819-2655; fax: +852-2855-9528.

E-mail address: yjxie@hku.hk (Y. Xie).

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What is new?

Key findings

- Prenotification package had no additional effect on the response rate and survey quality among health care professionals in Hong Kong.

What this adds to what was known?

- Compared with direct questionnaire mailing twice, prenotification followed by questionnaire mailing had no additional effect on the response rate and survey quality.

What is the implication and what should change now?

- Further study is needed to identify whether this finding is applicable to other study populations.

aged 35−65 years. The preliminary estimated response rate for direct questionnaire mailing was 20%. We proposed to detect an increase of 15% in response rate by using the prenotification strategy, with a power of 90% and at the 95% level of statistical significance. After calculations, a required sample of 185 nurses in each group of the trial was determined. With the help of the Association of Hong Kong Nursing Staff (AHKNS) in conducting a systematic sampling, 370 nurses were selected from the AHKNS membership database; 3 nurses were excluded from the sample because of incorrect names and contact information. Random allocation was done by an independent research assistant and an AHKNS staff; the investigators and participants remained unaware about the group allocation.

2.2. Experimental design

The survey questionnaire included 153 items that collected information about demographics, work status, lifestyle factors, reproductive information, and dietary habits. The questionnaire was printed on a four-page, double-sided booklet with a cover page that provided a brief introduction to the study. An informed consent form was also attached. Two rounds of mailing were conducted. In the first round of mailing, nurses in the direct questionnaire mailing group received the questionnaire with a prepaid return envelope, whereas those in the prenotification group received a prenotification package that included an introduction leaflet with a reply slip, a tape measure, and a prepaid return envelope. The complimentary tape measure was included in the package for the nurses to use in measuring their waist circumferences, which were highlighted in the introduction leaflet as one of our study points (central adiposity). Nurses were asked to send back their reply slips that would serve as confirmation of their participation. They were also given the preference to write down their waist circumference on the reply slip. On receipt of the reply slips, we would mail the questionnaires to the nurses. A brief cover letter attached to all the mailed packages reminded the recipients to provide their responses within 3 weeks. After 3 weeks, the second round of mailing was conducted. For the nonresponders from both groups, the questionnaires were sent to them directly (Fig. 1).

2.3. Measures

The primary outcome was the response rate, which is defined as the number of returned valid questionnaires divided by the number of eligible respondents in the sample. Questionnaires were considered valid if at least 50% of the questions were answered. The eligible respondents were the potential recipients, excluding those who refused to participate. Response rates were calculated thrice. The initial and the second response rates were calculated in the first and second rounds of mailing, respectively. The final response rate was calculated as the total response after two rounds of mailing. The second outcome included the response time that measured in calendar days from when the mails were sent out to when the reply slips or questionnaires were received. The percentage of nonresponse items was calculated as the number of missing items divided by the total number of items in the entire questionnaire. Survey cost was defined as the postage fee plus material fees (questionnaire, envelope, introduction leaflet, and tape measure).

2.4. Analysis

Demographics of respondents between groups were assessed. The odds ratio with 95% confidence interval was calculated to determine the effectiveness of the response rates. The distribution of the response time, the average percentage of the nonresponse items, and the cost between groups were compared using Mann−Whitney U test or independent t-test where appropriate. A P-value lower than 0.05 was regarded as statistically significant.

3. Results

A total of 367 mail packages were distributed in the first round of mailing. Among these mail packages, 183 and 184 were sent to the pre-notification and the direct questionnaire mailing groups, respectively. Five undeliverable mail packages were returned. Respondents' age, marital status, educational level, and income were not significantly different between groups (all $P > 0.05$). No significant differences were observed in the response rates between groups (all $P > 0.05$). A similar distribution of response times was found in both groups (median response time, $P > 0.05$), except for the relatively longer time of the last response in the direct questionnaire mailing group. The