# Differences in the contents of two randomized surveys of GPs' prescribing intentions affected response rates

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## Abstract

**Objective:** We investigated the differences in response rates and the presence of response bias in two randomized surveys of prescribing intentions for statins and asthma.

**Study Design and Setting:** We conducted the surveys of British general practitioners (GPs) in 2002. The two surveys had similar designs, formats, administration time, administration methods, and target populations. We compared the response rates to the two surveys while controlling for the characteristics of respondents with nonrespondents. We also compared early respondents with late respondents and assessed heterogeneity in the answers of early and late respondents to two key questions.

**Results:** The response rates to the two surveys were significantly different (statins: 27%; asthma: 19%; $P = 0.002$). We found no interaction between the survey type and any of the GP and practice characteristics we examined. The GPs' answers to the key questions did not differ regardless of the timing of the responses.

**Conclusion:** We demonstrated that the surveys' contents significantly influenced the response rates. We found no evidence that the nonrespondents would have answered the key questions differently. Future studies should investigate the mechanisms by which contents of surveys may influence response rate. © 2008 Elsevier Inc. All rights reserved.

*Keywords:* Response bias; Response rate; Survey; General practice; Prescribing; Questionnaire study

## 1. Introduction

The response rate of general practitioners (GPs) to surveys has fallen in recent years [1–3]. Because of selective response, the results of the surveys may not be representative of all GPs, a phenomenon known as response bias. It is important to identify variables that predict nonresponse. If predictors of nonresponse are known, then the representativeness of the findings is better understood and statistical methods can be used to remedy some of the limitations caused by nonresponse [4,5]. Despite abundance of surveys, our understanding of nonresponse behavior is limited [3,6–9].

Previous studies have examined demographic and practice characteristics as potential predictors of nonresponse to GP surveys. Different studies have found different predictors of nonresponse, suggesting that the effects of these variables are moderated by other factors—for example, survey content, questionnaire length, administration method, or target population [2,3,6–9]. To understand these effects, it is necessary to manipulate such factors systematically, holding some variables constant while varying others [10]. This study is a step in that direction.

We compared the response rates to two surveys, which were similar in their administration methods, sampling frames, question formats, and were conducted simultaneously, but differed in their contents. We also examined the existence of any interactions between survey type and certain GP and practice characteristics obtained from routine data sources and survey data.

It should be noted that nonresponse does not necessarily result in response bias. Therefore, in each survey, we compared the responses of early respondents to two key questions with the responses of late respondents to assess the possibility of response bias. The first question asked whether the respondents considered themselves as

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**What is New?**

- The response rates to two randomized surveys that had different contents but similar designs, formats, administration time, administration methods, and target populations were significantly different.

- The contents of the surveys' questionnaires significantly influenced response rates to the surveys.

- The contents of the surveys did not significantly affect the degree of association between response rates and GP and practice characteristics.

- Future studies should investigate the mechanisms by which contents of surveys may influence response rate.

evidence-based practitioners. This question was considered important because the surveys were designed to assess the GPs' intentions for "evidence-based prescribing." The second question was the surveys' primary outcome variable. It asked whether the respondents intended to follow guidelines' recommendations for prescribing statins or prescribing drugs for asthma. We hypothesized that if the early and late respondents gave different responses to these two key questions, it was more likely that nonrespondents held different views compared with respondents.

## 2. Methods

### 2.1. Conduct of the surveys

Our study used the results of two surveys that explored the ability of a psychological theory to explain why some GPs did not adhere to certain clinical guideline recommendations [11]. Two self-administered questionnaires were sent to two groups of GPs. One survey focused on GPs' opinions about guideline recommendations for prescribing statins to prevent coronary heart disease and whether GPs intended to follow those recommendations. The other survey did the same for prescribing drugs for asthma. We used multistage stratified random sampling to identify 510 GPs per survey. We have reported elsewhere on the methods we used for identifying the sampling frameworks and calculating the sample sizes [12].

We used qualitative interviews and local pilot surveys to develop the questionnaires. Both questionnaires were four pages long and included Likert-style items about prescribing intentions, attitudes, and beliefs. There were no open-ended questions. We avoided questions that some GPs might have found too time consuming to answer (e.g., exact list size). We also included questions on the GPs' age and gender and practice characteristics. Questionnaires were printed on good-quality paper using colored ink. We

conducted both surveys at the same time in January 2002 and offered a lottery prize of a digital camera [13−15]. The mailings included prepaid reply envelopes, covering letters, and study information sheets [13,16]. We also asked the respondents whether they would give us permission to access their prescribing data [17]. We asked them to return the questionnaires, even if they did not consent.

We followed nonrespondents by two reminders that included all the materials at 20-day intervals [1,13,16]. We changed the content of the covering letters for each reminder. All the letters were personally addressed and hand signed by two investigators.

### 2.2. Routine data sources

We obtained routine data from the General Medical Service (GMS) statistics. The GMS statistics included demographic characteristics of GPs in England and their practices. We used data on the following variables for all the individual GPs and practices selected for participation in the surveys: number of GPs working in the practice, whether GPs were graduated in the UK, list size (per GP), and whether GPs worked in a training or dispensing practice. GMS provided data about the age and gender distribution of GPs in practices (e.g., number of female, 40- to 50-year-old GPs in a practice). Hence, we used GMS data on age and gender for single-handed practices only.

### 2.3. Analysis

First, we compared the response rates to both surveys. Then, we examined the existence of any interactions between survey type and certain GP and practice characteristics in two different sets of multivariate logistic regression analyses: comparing respondents with nonrespondents, and comparing respondents to the first mailing (early respondents) with those who responded after at least one reminder (late respondents). We analyzed those GP and practice characteristics that had contributed to nonresponse in previously published studies.

For the comparison of early and late respondents, we also focused on responses to two key questions in each survey. Both questions were measured on a scale from 1 (strongly disagree) to 7 (strongly agree). We compared early respondents with late respondents by assessing whether there was heterogeneity in the responses to these two questions [18].

## 3. Results

GPs selected for participation in the two surveys were drawn randomly from a unique sampling frame. No significant differences existed between the two samples: in both surveys there were about 2,000 patients registered per GP, most GPs were trained in the UK, about 30% worked in training practices, about 20% worked in a single-handed