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Using computer-assisted survey instruments instead of paper and pencil increased completeness of self-administered sexual behavior questionnaires

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Abstract

Objectives: To compare the data quality, logistics, and cost of a self-administered sexual behavior questionnaire administered either using a computer-assisted survey instrument (CASI) or by paper and pencil in a primary care clinic.

Study Design and Setting: A self-administered sexual behavior questionnaire was administered to 16−29 year olds attending general practice. Questionnaires were administered by either paper and pencil (paper) or CASI. A personal digital assistant was used to self-administer the CASI.

Results: A total of 4,491 people completed the questionnaire, with 46.9% responses via CASI and 53.2% by paper. Completion of questions was greater for CASI than for paper for sexual behavior questions: number of sexual partners [odds ratio (OR), 6.85; 95% confidence interval (CI): 3.32, 14.11] and ever having had sex with a person of the same gender (OR, 2.89; 95% CI: 1.52, 5.49). The median number of questions answered was higher for CASI than for paper (17.6 vs. 17.2; $P < 0.01$). CASI was cheaper to run at $8.18 per questionnaire compared with $11.83 for paper.

Conclusion: Electronic devices using CASI are a tool that can increase participants' questionnaire responses and deliver more complete data for a sexual behavior questionnaire in primary care clinics.

Keywords: Survey design; Electronic devices; Sexual health behavior questionnaires; Paper and pencil questionnaire; CASI; Chlamydia

1. Introduction

Sexual behavior questionnaires are important in understanding how sexual risk practices change over time. Some studies have shown that the method of delivery may encourage or discourage the validity of responses of sexual behavior questions [1−3]. Traditionally, self-administered paper and pencil questionnaires (referred to from here on as paper) have been used to collect such questionnaire data. In recent years, electronic devices called computer-assisted survey instruments (CASIs) have become an alternative way of collecting questionnaire data and can be administered using handheld computer technology such as personal digital assistants (PDAs), tablet computers, iPads, and laptop computers [4−6]. These devices have been used in diverse settings including developing countries, remote areas, schools, universities, and primary care clinics [4,7−11].

CASIs administered using PDAs or tablet computers (including iPads) are useful tools as they can streamline the questionnaire process from development to analysis. CASIs can be further split into two groups, those that rely on the Internet to administer the questionnaire and those that can be done without an Internet connection and downloaded into a database later. The questionnaire is designed on a computer using a questionnaire development program and then transferred onto the PDA or tablet computer or uploaded to a Web site application. Web-based questionnaires require an Internet connection to complete, but PDAs

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What is new?

- Computer-assisted survey instruments (CASIs) can be an affordable method of obtaining good quality sexual behavior data, especially for questions of a more socially sensitive nature, in a large-scale study.
- Data completeness is greater for sexual behavior questionnaires delivered with CASIs compared with paper questionnaires.
- Using CASIs to implement a sexual behavior questionnaire can increase participants' questionnaire responses and deliver better quality data.

and some iPad applications can complete the questionnaire offline and do not require an Internet connection. Completing the questionnaire offline is an advantage when administering the questionnaire in the field where Internet connection may be unreliable.

Electronic questionnaires can increase usability for participants and accuracy of responses. This is particularly the case where a questionnaire does not require every question to be answered, and skip options are used to direct participants' responses to relevant portions of the questionnaire. This is very relevant in sexual behavior questionnaires when participants may not need to answer all questions, depending on their sexual practices. They can also be programmed with internal checks to ensure consistency with previous answers [1,4,11]. Electronic questionnaires can also deliver questions tailored to specific subgroups within a study, such as men and women, thereby removing the necessity for separate questionnaires to be designed [4,7]. Once a questionnaire is completed, the data can be transferred into a database for analysis, eliminating the need for manual data entry and minimizing the introduction of inaccuracies that can arise with multiple data-handling steps [4,11].

We undertook a large sexual behavior questionnaire of 16- to 29-year-old men and women attending primary care clinics in Australia as part of a large clinical trial [12]. We used both paper and CASIs to self-administer the questionnaire. This article aims to investigate whether the mode of delivery (self-administered CASI vs. paper) resulted in any differences in terms of completeness of the sexual behavior data obtained and to assess the logistics and costs of using CASIs or paper in the primary care setting.

2. Methods

2.1. Recruitment

Further details on recruitment are described elsewhere [13], but in brief, men and women aged 16–29 years were recruited from 134 general practice clinics in 54 rural and regional towns in four Australian states (Victoria, New South Wales, Queensland, and South Australia) as part of a large cluster randomized controlled trial of a chlamydia testing intervention in primary care clinics between May 2010 and December 2012. Participants were eligible for participation if they were attending the clinic for a consultation for their own health and had ever had vaginal or anal sex. A University of Melbourne–employed research staff member was placed in each clinic for up to 6 weeks and invited consecutive eligible patients to participate. A total of 80 University of Melbourne–employed research staff were used to conduct this study. Participants were asked to sign a consent form, complete a self-administered questionnaire using either a CASI or paper, and provide a urine specimen for chlamydia testing. Our CASI was administered on a PDA. Wherever possible, the questionnaire was completed before the participants' consultation with the general practitioner. The choice of whether the questionnaire was administered by CASIs or paper depended on the situation at the clinic or the research staffs' preference. In a number of larger clinics, it was not possible to have sufficient numbers of CASIs (most clinics had one or two PDAs only) for the number of potential participants. In these situations, paper questionnaires were used as a backup if a PDA was unavailable at the time. Factors influencing the research staff's use of paper rather than CASIs included them being uncomfortable using the technology or poor Internet or IT facilities in the rural location limiting the use of the CASIs. CASIs only were used in 34 clinics, paper only in 35 clinics, and both CASIs and paper were used in 65 clinics.

2.2. Questionnaire content

The questionnaire was divided into three sections: part A—demographic questions; part B—sexual practice questions; and part C—questions about health care access, sexual health, and some general knowledge questions about sexually transmitted infections (STIs). Part A included nine demographic questions to be answered by all participants. Part B included questions about the three most recent sexual partner of the opposite sex and the three most recent same sex partners, including frequency of sexual activity and condom use. Questions for subsequent partners were identical to the first partner questions and were not included in the analysis. Some questions in part B were skipped depending on a participant's previous answer. These questions were excluded from the analysis. Part C asked about different medical and sexual health issues, as well as general knowledge questions about sexual health issues. Any questions that relied on memory, such as name of an antibiotic or when they had a test, were excluded from the analysis.

2.3. Research staff training

A total of 40 one-day training sessions were held to train 80 research staff on patient recruitment and how to