IN PRACTICE

A randomised controlled trial comparing computer-assisted with face-to-face sexual history taking in a clinical setting

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Aim: To compare computer-assisted self-interview (CASI) with routine face-to-face interview (FTFI) for sexual history taking from patients in a clinical setting.

Methods: A randomised controlled trial was undertaken at the Melbourne Sexual Health Centre, Melbourne, Victoria, Australia, in 2005. New, walk-in patients triaged into the centre were eligible for the study. Those who consented to the study were randomly allocated (initially at a ratio of 2:1, then 1:1) to either CASI or FTFI. Those randomised to CASI also subsequently undertook FTFI.

Results: During the study period, of 713 patients approached, 611 agreed to participate in the study; 356 were randomised to FTFI and 255 to CASI. Overall, the responses to questioning using CASI and FTFI were similar except that women undertaking the CASI reported a significantly higher median number of male partners for the preceding 12 months (3 v 2, $p=0.05$) and the CASI participants reported previous hepatitis B vaccination more often (50% v 37%, $p=0.01$). Most participants found the CASI either easy (31; 13%) or very easy (193; 82%) to complete; 83 (35%) were comfortable and 121 (51%) were very comfortable with it.

Conclusions: CASI may be a reliable, efficient and highly acceptable method for the screening of sexual risk in clinical sexual health settings and could be used routinely to improve the efficiency of clinical services.

Sexual history taking is a routine yet important component of any sexual health consultation. The accuracy of information obtained is important, as it ultimately determines how patients are tested and managed. Research in the general population indicates that sensitive information may be more reliably reported using computer-assisted self-interviews (CASI) than using face-to-face interviews (FTFI).¹ The use of CASI may have definite advantages in sexual health clinics, not only in the accuracy of the information obtained but also in possibly reducing the time needed for a clinical consultation.

To date, however, relatively little research has been carried out using CASI in sexual health clinics.^{2–5} In three of these studies, the comparison of interview methods was only part of a larger study that was not specifically designed to deal with the utility of CASI in replacing a clinical consultation.^{2–4–5}

Our aim was to test a narrow set of predefined questions using a randomised design to determine if CASI was at least as good as routine FTFI for eliciting a sexual history from patients attending a sexual health centre.⁶ If such an assessment could be made reliably using CASI in a clinical setting, consultations could be shortened considerably, improving the overall efficiency of service provision.

METHODS

A randomised controlled trial was undertaken to compare patient responses using CASI and FTFI. The study was conducted at the Melbourne Sexual Health Centre, the main public sexual health centre in Victoria, Australia, between January and June 2005. Triage nurses referred new, walk-in patients seen at the centre to an investigator (RLT or MS), who then invited them to participate in the study. Recruitment for the study was undertaken during 25% of the clinics hours during the study period. Patients were ineligible for the study if they had insufficient English to complete the CASI independently.

Those who consented to participate in the study were randomised to one of the two methods for sexual history

taking: CASI or FTFI. The questions in the CASI were identical to those asked in the FTFI. The questions in both these interview methods were derived from previous work on what questions constituted routine sexual history taking among clinicians in Australasia.^{6–7}

FTFI was the pre-existing, routine method for sexual history taking and clinical assessment at the centre. This involved written completion of proforma medical notes by the interviewing clinician, who then transferred the same data into the clinic's database via a desktop computer in the consulting room immediately after the FTFI.⁸ Clinicians were not asked to use any specific oral "script" when asking the questions. All participants who undertook the CASI were also subsequently interviewed by FTFI. Clinicians conducting the FTFI were not aware that these patients had undergone the CASI.

The CASI questionnaire was written using Quask (<http://www.quask.com/en/home.asp>). Participants completed the CASI using a laptop computer placed in a private section of the clinic waiting room. The data collected were stored in ACCESS. Data for the FTFI were obtained from the clinic's database, and from a review of the written medical records if the data were not contained in the database.

The questions used in the CASI and the FTFI related to recent sexual behaviour, use of injecting drugs and relevant history. The last few questions on the CASI asked participants how easy or difficult they found the CASI to use, and how comfortable or uncomfortable they were with it. The CASI questionnaire took participants about 5 min to complete.

Initially, participants were randomised to FTFI and CASI at a ratio of 2:1 as there were concerns that use of the CASI might delay clinical services. When this was not the case, the randomisation ratio was changed to 1:1 after 148 female and 181 male participants had been recruited.

Abbreviations: ACASI, audio-assisted computer interviews; CASI, computer-assisted self-interview; FTFI, face-to-face interview; STD, sexually transmitted disease

Figure 1 The number of participants seen through each stage of the randomised study. CASI, computer-assisted self-interview; FTFI, face-to-face interview.

Data analysis was performed using SPSS V. 11. The study was designed to have 80% power to detect a difference of >0.9 for the mean number of sexual partners reported by men or women in the previous 12 months, compared with the clinical mean of 2.5 (standard deviation (SD) 3.7), assuming 250 men and 250 women participated, using a significance of 0.05. Ethical approval for the study was obtained from the Alfred Hospital Human Research Ethics Committee (Australian Clinical Trial Registry Number ACTRN012605000606684).

RESULTS

Figure 1 shows the number of participants in each stage of the study. During the time when the study was carried out, 2961 new clients attended the centre, of whom 713 were approached. The 611 who were randomised into the study were young (31 ν 29 years, $p = 0.01$) and more likely to be men who had sex with men (35% ν 26%, $p = 0.002$). Men who had sex with men who

were recruited into the study had similar numbers of male partners (mean 14 ν 16, $p = 0.82$), and men and women had similar numbers of opposite sex partners (mean 3.9 ν 4.5, $p = 0.14$) compared with those not recruited into the study.

Table 1 compares the characteristics of the study participants randomised to FTFI and CASI. The two groups did not differ significantly in their mean age, sex, number of reported sexual partners, and the proportion who were men reporting sex with men or the proportion diagnosed with chlamydia or gonorrhoea.

Of the 255 patients randomised to the CASI, data for the CASI were not available for 19 patients because they were called for their clinic appointment before they could begin the CASI. Table 2 compares the responses of patient to the sexual health questions using CASI and FTFI. Women reported a significantly higher median number of male partners for the preceding 12 months when interviewed by CASI compared with FTFI ($p = 0.05$). Also, participants randomised to CASI were significantly more likely to report that they had previously been vaccinated for hepatitis B (odds ratio (OR) 1.8, 95% confidence interval (CI) 1.2 to 2.7).

The consistency or repeatability of responses of patients to questions using the CASI and the FTFI was assessed by comparing the responses from the 236 people who were randomised to the CASI and who subsequently undertook the FTFI (table 3). The only significant difference in response rates using the two interview methods was for a self-reported history of hepatitis B vaccination, where more participants reported previous vaccination using the CASI ($p = 0.05$). No significant difference in the median number of recent sexual partners was reported using the CASI compared with the later FTFI ($p = 0.24$ – 0.95). The κ statistic was high for most assessments (range 0.58–0.95) and significantly different from zero for all characteristics. The percentage agreement was also high, particularly for sensitive questions.

Most participants found the CASI easy (31; 13%) or very easy (193; 82%) to complete, with only 4 finding it difficult and 1 finding it very difficult. Similarly, 83 (35%) were comfortable and 121 (51%) were very comfortable with it, with only 5 being uncomfortable and 1 being very uncomfortable. The proportions of participants who found the questionnaire easy or comfortable did not differ for men or women ($p = 0.13$ and 0.48, respectively).

DISCUSSION

Our study is the first randomised study comparing FTFI with CASI in a sexual health setting outside the US. We found that responses of participants to CASI and FTFI were similar, except that women reported more male partners using the CASI. Previous studies undertaken in sexually transmitted disease

Table 1 Comparison of the characteristics of patients randomised to face-to-face interview and computer-assisted self-interview

Characteristic	FTFI (n = 356)	CASI (n = 255)	OR (95% CI) or p value
Mean (SD) age (years)	29 (9)	29 (8)	$p = 0.48$
Male (%)	197 (55)	139 (55)	1
Female (%)	159 (45)	116 (45)	1.0 (0.7 to 1.5)
MSM (%)	66 (33)	50 (36)	1.1 (0.7 to 1.6)
Median number of male partners of women in the previous 12 months (range)	2 (0–60)	2 (0–15)	$p = 0.9$
Median number of female partners of men in the previous 12 months (range)	2 (0–30)	1 (0–30)	$p = 0.5$
Gonorrhoea or chlamydia (current; %)	24 (7)	19 (7)	1.1 (0.8 to 1.4)

CASI, computer-assisted self-interview; FTFI, face-to-face interview; MSM, men reporting sex with men. Data were obtained from FTFI for all behavioural comparisons.

Table 2 Comparison of responses of patients from computer-assisted self-interview and face-to-face interview in a sexual health setting

Characteristic	Response*	FTFI (n = 356)† n (%)	CASI (n = 236)† n (%)	Crude OR (95% CI) or p value
Sex with a man or a woman‡	No	10 (3)	10 (4)	0.7 (0.3 to 1.9)
	Yes	331 (97)	223 (96)	
Man reporting sex with a woman‡	No	59 (31)	41 (31)	1.0 (0.6 to 1.6)
	Yes	132 (69)	90 (69)	
Median number of female partners reported by men (range)‡		3 (1–30)	3 (1–30)	0.69
Condoms use always for men with female partners‡	No	112 (85)	77 (86)	
	Yes	20 (15)	13 (14)	0.9 (0.4 to 2.1)
Man reporting sex with a man‡	No	126 (66)	81 (63)	
	Yes	66 (34)	47 (37)	1.1 (0.7 to 1.8)
Median number of male partners reported by men (range)‡	No	6 (1–99)	6 (1–159)	
Condom use always for men with male partners‡	No	41 (62)	31 (67)	0.8 (0.3 to 2.2)
	Yes	25 (38)	16 (33)	
Woman reporting sex with a man‡	No	10 (7)	9 (9)	1.2 (0.5 to 3.0)
	Yes	138 (93)	96 (91)	
Median number of male partners reported by women‡		2.0 (1–60)	3.0 (1–20)	0.05
Condom use always for women with male partners‡	No	126 (91)	83 (86)	
	Yes	12 (9)	13 (14)	1.6 (0.7 to 4.1)
Woman reporting sex with women‡	No	140 (95)	94 (90)	
	Yes	7 (5)	11 (10)	2.3 (0.8 to 7.0)
Median number of female partners for women‡		2 (1–3)	2 (1–3)	
Ever injected drugs	No	320 (96)	220 (94)	1.5 (0.6 to 3.3)
	Yes	14 (4)	14 (6)	
History of STI (%)	No	212 (66)	149 (67)	1.0 (0.7 to 1.5)
	Yes	107 (34)	75 (33)	
Previous HIV test	No	155 (50)	114 (50)	1.0 (0.7 to 1.4)
	Yes	156 (50)	113 (50)	
Ever vaccinated for hepatitis B	No	119 (47)	60 (34)	1.8 (1.2 to 2.7)
	Yes	132 (53)	117 (66)	
Previous cervical smear test	No	27 (20)	23 (22)	0.9 (0.4 to 1.7)
	Yes	111 (80)	80 (78)	

CASI, computer-assisted self-interview; FTFI, face-to-face interview; STI, sexually transmitted infection.

*"No" includes missing data, patient declined to answer or not recorded.

†131 men and 105 women were randomised and completed the CASI; 203 men and 153 women were randomised to FTFI. Incomplete data in the CASI indicate that clients answered "unsure" and incomplete data in FTFI indicate that data were present neither in the patient's electronic nor in the paper record.

‡Questions about sexual behaviour refer to the 12 months preceding the interview.

(STD) clinics in the US comparing video-assisted or audio-assisted computer interviews (ACASI) with FTFI have generally shown that many socially undesirable behaviours were under-reported using FTFI.^{2–5} These studies indicated that computer assisted interviews were at least as good or even better than FTFI, and that they have the potential to increase the quality of data collected and the clinical efficiencies.

Our study does have limitations. Firstly, participants who were recruited into the study were different from the new clients who attended the centre during the study period. They were more likely to be MSM and slightly older, although they had similar numbers of partners in the preceding 12 months. This may limit the generalisability of the findings if these differences influenced the potential responses of individuals to CASI and FTFI. If they were different, however, they probably would not over-report sensitive behaviours at FTFI, and hence would not invalidate the study's findings and implications for the utility for CASI. Secondly, 7% of participants who were randomised to the CASI did not actually undertake it as they were called for their clinical consultation before they could do it (fig 1). This second group was relatively small and would be unlikely to have considerably affected the results.

There have been four other studies in STD clinics assessing FTFI with other forms of computer-assisted interviewing, all of them in the US.^{2–5} The first involved 280 participants from Louisiana who had been diagnosed with chlamydia and answered both FTFI and video-assisted computer interviews.⁴ The second was carried out in Seattle and involved 609 participants answering ACASI followed by FTFI.³ The third was carried out in Washington, DC and involved 1350

participants who were non-randomly assigned to ACASI or FTFI.⁵ The fourth was carried out in Baltimore and involved 671 participants who sequentially undertook CASI followed by FTFI.² In general, these studies found that participants reported higher risk behaviours by computer-assisted interviews than by FTFI.^{2–5}

We are uncertain as to why our study found that nearly all reported risk behaviours were similar in FTFI compared with CASI, in contrast with these US studies. Our patient population was probably not substantially different from those attending STD clinics in the US. To some extent, the differences between the findings of the US study and our study may reflect cultural differences, such as the general level of openness in discussing sexual issues. We did not collect demographic information on our clients, but the demographic descriptions in the US studies indicate that their patients were, on the whole, considerably disadvantaged compared with ours. We did not consider ACASI—as has been used in some US studies—as we thought that the level of literacy in our patient population on the whole would be adequate for the purposes of completing the CASI. It is unlikely that study designs explain the differences in the studies, as our randomised study was specifically designed to avoid repeatability bias that is associated with repeating the same questions shortly after one another.

Several aspects of our study set it apart from previous studies. Firstly, it used a randomised design in addition to an analysis of participants who sequentially answered both CASI and FTFI. A randomised design has the advantage that it does not have repeatability bias, because the analysis involves only participants who undertake either CASI or FTFI for the first time. The

Table 3 Consistency of responses of patients to questions by computer-assisted self-interview and by face-to-face interview (n = 236)*

CASI	FTFI		κ (95% CI)	p Value
	Yes	No		
Sex with a man or woman†				
Yes	216	0		
No	5	5	0.66 (0.52 to 0.80)	0.06
Man reporting sex with a woman†				
Yes	87	2		
No	1	38	0.95 (0.91 to 0.98)	1.0
Median number of female partners reported by men (range)†	2 (0–30)	1 (0–30)		0.83
Man reporting sex with a man†				
Yes	46	1		
No	2	81	0.95 (0.92 to 0.98)	1.0
Median number of male partners reported by men (range)†	5 (1–100)	6 (0–200)		0.24
Woman reporting sex with a man†				
Yes	93	1		
No	0	5	0.90 (0.80 to 0.99)	1.0
Median number of male partners reported by women†	1 (1–20)	1 (1–15)		0.95
Woman reporting sex with women†				
Yes	4	6		
No	0	85	0.58 (0.40 to 0.72)	0.13
Ever injected drugs				
Yes	13	1		
No	2	207	0.89 (0.77 to 1.0)	1.0
History of STI				
Yes	53	15		
No	15	123	0.67 (0.61 to 0.72)	1.0
Unsure	3	5		
Previous HIV test				
Yes	93	8		
No	15	93	0.78 (0.78 to 0.82)	0.21
Ever vaccinated for hepatitis B				
Yes	89	13		
No	4	43	0.75 (0.69 to 0.81)	0.05
Previous cervical smear test				
Yes	75	2		
No	3	18	0.85 (0.78 to 0.92)	1.0

CASI, computer-assisted self-interview; FTFI, face-to-face interview; STI, sexually transmitted infection.

*Cells include only Yes or No answers. Missing, unsure and declined to answer responses are excluded.

†Questions about sexual behaviour refer to the 12 months preceding the interview.

similarity in responses between the two interview methods in our study also supports the validity of our findings. Secondly, our study was carried out in a community where the level of social disadvantage and health discrepancies were not as marked as in some of the US study populations discussed earlier. In this context, the results may be more applicable to other similar communities.

Only one sexual risk was reported more commonly in participants who undertook the CASI. Women in our study reported a considerably higher number of recent male sexual partners using CASI compared with FTFI. Moreover, although it did not reach statistical significance, women were also more likely to report recent sex with another woman. This suggests that women may be somewhat reticent about disclosing sensitive personal information in an FTFI and that CASI may be superior in eliciting such information.

Among those who undertook CASI followed by FTFI, responses were, on the whole, consistent. The differences in responses of patients to questioning about previous hepatitis B vaccination probably reflect uncertainty on the part of patients regarding their vaccination status, and suggest that more

complex lines of questioning may be more suited to FTFI than CASI. Kurth *et al*³ also concluded that CASI may be better limited to relatively simple questions that do not involve considerable interpretation by the clinician.

The results of this study indicate that CASI can be a reliable, efficient and highly acceptable method for screening of sexual risk in a clinical setting. The implication is that CASI could be routinely used before a clinical consultation, saving the clinician time and improving the overall efficiency of clinical services. Currently, we are in the process of introducing computers into the reception area in clinical settings so that patients can register and enter their own data while waiting to be seen, saving time for both them and the service. Similar studies should be conducted in other services to ensure that the same applies in differing sociocultural contexts.

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Key messages

- Few studies have assessed whether clients provide the same answers to sensitive sexual history questions by computer-assisted sexual history taking compared with face-to-face interview in a sexual health clinic.
- The responses of clients attending a sexual health centre to sensitive sexual history questions were similar in those randomised to a computer-assisted interview or a usual face-to-face interview.
- The use of computer-assisted interviews may increase the clinical efficiency of sexual health consultations without affecting the accuracy of the information.

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