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Original article

A pilot of audio computer-assisted self-interview for youth reproductive health research in Vietnam

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Abstract

Purpose: Several recent adolescent health studies in Vietnam have shown low levels of premarital sex among youth compared to neighboring countries and other regions of the world. One possible explanation for these findings is that adolescents in Vietnam are less willing to reveal their true behaviors. This study aims to assess the level of reporting of sensitive behaviors/events using three methods of survey data collection: face-to-face interviewer-administered (IA), paper-and-pencil self-administered (SA) and AudioComputerAssisted Self Interview (ACASI).

Methods: A randomized experiment was undertaken in Gialam, a suburb of Hanoi, among a sample of 2,394 youth ages 15 to 24 years. Respondents were randomly assigned to one of three interviewing methods, with females and males evaluated separately.

Results: ACASI showed certain advantages with regard to respondent attitudes and perceptions of sensitive topics. ACAI also revealed higher prevalence rates for sensitive and stigmatized behaviors. Among those in the pencil and paper survey group it is estimated that 12.9% of unmarried males and 3.4% of unmarried females have had premarital sex. The rate found by using ACASI is higher at 17.1% in males (95% CI: 13.5-21.4) and 4.5% in females (95% CI: 2.7-7.3). Using ACASI, unmarried males also reported higher levels of risky sexual relations. For example, 7.8% confirmed visiting sex workers compared with only 1.2% in SA group and 3.9% in IA group. Additionally, ACASI respondents reported having had more sex partners by age group, gender and marital status.

Conclusions: When coupled with the emerging data from around the world, the present findings suggest that researchers should consider using ACASI for future studies dealing with sensitive and stigmatized topics. © 2006 Society for Adolescent Medicine. All rights reserved.

The 1999 Vietnamese census data indicated that 53% of the 80 million inhabitants were under the age of 25 years, and 32% were between the ages of 10 and 24 [1]. Given the large youth population, coupled with increasing exposure to, and influences from, nontraditional forces (e.g., internet, media, travel, tourism, education), there is growing concern that Vietnamese youth are increasingly exposed to a wide range of health-compromising behaviors. If policy and programs are to be effective, they will require accurate information on the array of reproductive health practices [2,3].

One methodology that has recently received attention for collecting sensitive information among youth in the United States and elsewhere is audio computer assisted self-interview (ACASI). Instead of providing answers directly to interviewer questions, the respondent reads the questions displayed on the computer screen while concurrently listening to the question through audio-headphones. The respondent

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enters responses on an external mini keypad, out of the immediate presence of the interviewer. In the United States, ACASI has been used in both the National Longitudinal Study of Adolescent Health (Add Health) and the National Survey of Adolescent Males (NSAM). In both of these studies, ACASI has been well received and is considered to provide more reliable information than other data collection methods [4]. To date, applications of ACASI in developing countries has been limited [5]. This study aims to compare ACASI technology with the traditional interviewer and self-administrated survey interviewing among adolescents and young adults, with an emphasis on reproductive health risk and protective factors.

Methods

The Sample

Youth aged 15 to 24 years from *Gialam* district, a suburb of Hanoi, were randomized into three groups: face-to-face personal interview administration (PI), pencil-and-paper self-administered (SA), and ACASI. Each group was further analyzed by gender and marital status.

The target sample size for each analytic domain of interest was based upon the following: significance = 95%; power = 80%; difference to be detected = 10 percentage points, assuming a population proportion for premarital sexual behavior of the groups being compared of 50%; the design effect of 1.1, and an allowance for nonresponse of 5%. The target sample size for the experiment was rounded to 2700 youth 15–24 years of age, equally divided among the six experimental groups of 450 youth each. Sample collection was based on a one-stage cluster sample of sub-communes. The study used three towns within the suburban district and the sub-communes of each town served as the primary sampling units (PSU). Systematic-random sampling was used, resulting in the selection of 25 sub-communes. A youth roster was obtained within each sub-commune to assure all eligible youths in all households were randomized into the three study samples. This individual selection process guaranteed the random assignment and also assured their privacy.

Instrument design and data collection

The questionnaires were initially designed for face-to-face interview; then instructions were edited for self-administered paper-pencil questionnaire format. Subsequently, they were transferred to a database and installed on laptop computers. The questionnaires were also voice recorded and integrated into the ACASI interview software, which is based on Visual Basic programming language, using Microsoft Access database. The estimated survey completion time was 60 minutes. For basic questions on household facilities and living conditions, both SA and ACASI method used the same self-administered form. All the questions in ACASI were designed so that the answers were numerically coded and the respondent answered questions by clicking on to a color-coded, numerical keypad. For each of the three data collection methods, interviewers/data collectors were matched by gender with study participants. The age range of those interviewers/data collectors is 20–30 years old. All data collection was obtained at the respondent's home after written informed consent was obtained. For those who were under age 18, verbal parental consent was obtained at the time of data collection. The study protocol was approved by the Hanoi School of Public Health, Committee on Human Research.

Data analysis and interpretation

Interview and self-administered paper-pencil questionnaire data were merged with ACASI into a single data-set. All the data were managed by MS Access (Microsoft Inc., Redmond, Washington) and MySQL database (MySQL Inc., Seattle, Washington). SPSS statistical package version 12 (SPSS Inc., Chicago, Illinois) was used for data analysis allowing for cluster-sampling adjustment. Decriptive analysis, bivariate and multivariate statistics were applied. The comparison among three data collection methods was based on a comparison of the rates of adolescents involved with high-risk behaviors or the comparison of the mean values (for continuous variables). Logistic regression models were applied to predict and analyze protective and risk factors related to various behaviors. Factor analysis was used (based on the data of this sample) to build measurement scales for household economic status, adolescents' perceptions and attitudes, as well as risk and protective factor scales. The reliability tests were also performed and Cronbach alpha was reported.

Results

Sample comparability

Investigators identified 2761 potential study participants in the participating towns. Overall, 86.7% of the chosen sample (2394 young people) were interviewed, 2.3% refused to participate, and 11% of the sample were unreachable. There were no significant differences in the nonresponse and absence rates among the three data collection methods. The rate of successful interviews in the three survey methods is 88.7% for personal interview, 86.3% in self-administered interview, and 85.1% for ACASI.

Comparing across the three groups (Table 1), the average age in each was about 20 years; the different age groups (adolescents and youth), gender and marital status distribution in all three methods were similar. The majority of the sample was unmarried (92.3%); and most still lived with their parents (72.1%). The only difference identified among the three samples was that the economic status of the ACASI group was slightly higher than the other two groups.

Table 1
Basic characteristics of study sample

Characteristics	Methods of survey data collection			
	PI	SA	ACASI	Total
Sample size (n)	821	802	771	2394
Mean age	19.8	19.9	19.7	19.8
Age group				
Adolescent (15–19 years)	44.9%	42.5%	45.9%	44.4%
Youth (20–24 years)	55.1%	57.5%	54.1%	55.6%
Gender				
Male	356 (43.4%)	361 (45.0%)	378 (49.0%)	1095 (45.7%)
Female	465 (56.6%)	441 (55.0%)	393 (51.0%)	1299 (54.3%)
Marital status				
Married	66 (8.0%)	73 (9.1%)	45 (5.8%)	184 (7.7%)
Unmarried	755 (92.0%)	729 (90.9%)	726 (94.2%)	2210 (92.3%)
Household SES status[a]				
Below average	272 (33.1%)	312 (38.9%)	214 (27.8%)	798 (33.3%)
Average	241 (29.4%)	225 (28.1%)	314 (40.7%)*	780 (32.6%)
Above average	308 (37.5%)	265 (33.0%)	243 (31.5%)	816 (34.1%)
Live with family				
Live with parents	600 (73.1%)	542 (67.6%)	584 (75.7%)	1726 (72.1%)
Other	221 (26.9%)	260 (32.4%)	187 (24.3%)	668 (27.9%)
Education level				
Less than high school	93 (11.3%)	97 (12.1%)	60 (7.8%)	250 (10.4%)
High school	394 (48.0%)	367 (45.8%)	209 (27.1%)	970 (40.5%)
University/college/higher	334 (40.7%)	338 (42.1%)	502 (65.1%)*	1174 (49.0%)

PI = face-to-face personal interview; SA = pencil-and-paper self-administered; ACASI = audio computer-assisted self interview.
* $p < .05$.
[a] Household socioeconomic status score was developed based on the main valuable household facilities, the final scale was tested for realiability (Cronbach's alpha = .702), then categorized into three levels as above with approximately equal frequency.

Additionally, a slightly higher educational level among the ACASI group was found that reached the level of statistical significance.

Comparison of target sample response questionnaire's forms

Survey questions included 12 sections: (a) Personal background and household information; (b) Sexual attitudes/social norms; (c) Sexual experiences and risk exposures; (d) Perceived self-efficacy about using condoms and sexual relationships; (e) Pregnancy and childbearing; (f) Sexually transmitted diseases (STDs)—awareness and experience; (g) Human immunodeficiency virus (HIV) awareness; (h) Community; (i) Family; (j) School; (k) Work; (l) Peers.

Our hypothesis was that, with the more sensitive questions related to sexual attitudes and behaviors, affirmative responses would increase with the use of less personal and more confidential data collection methods. Specifically, affirmative rates would be lowest for interview, intermediate with pencil-and-paper questionnaire, and highest with ACASI. Secondly, we anticipated the differences to be greatest among females across the three data collection methods; and third, we hypothesized that as age increased, differences among the three methods would decline for both males and females. In order to evaluate discrete variables, we used significance test for proportions and especially logistic regression. By estimating odds ratios (OR), we were able to compare the three methods of survey data collection. With the continuous variables (such as the number of close friends, the number of sexual partners, etc.), the mean value would be the indicator showing the degree of effectiveness of each data collecting method. In those cases, we used ANOVA to identify mean differences.

A selected set of questions of three levels of sensitivity are presented in Table 2. With the discrete variables, the results presented as OR are from logistic regressions of six different models: 1) the younger age group: from 15–19 years old; 2) older age group (20–24 years); 3) males; 4) females; 5) married; 6) unmarried. These models were separately analyzed; and for odds ratios, interviews (PI) was used as the comparison group (OR = 1). Dependent variables of each logistic regression model are the questions in the questionnaire for data collection. All the models were analyzed separately for each question. According to the results of Table 2, questions 1 and 2 are the nonsensitive type; and there are no differences of statistically significance among the three methods.

We can see that youth 20–24 years old report more close friends compared to the 15–19 years age group; males have more friends than females; and the unmarried group has more friends than married youth (with no significant differences noted across all three methods of data collection). The

Table 2
Different reponses to selected questions

	Age (years)		Gender		Marital status	
	15–19	20–24	Male	Female	Married	Single
Q1 to Q3: Continuous variables (presented as mean value, CI 95% in the brackets)						
Q 1: How many people live in your family?						
PI	4.3	4.6	4.3	4.6	4.9	4.4
SA	4.3	4.4	4.3	4.5	4.5	4.4
ACASI	4.4	4.4	4.4	4.5	4.8	4.4
Q 2: How many close friends would you say you have?						
PI	4.6	5.3	5.3	4.8	4.6	5.0
SA	4.7	5.3	5.7	4.5	3.8	5.2
ACASI	5.1	5.9	6.2	4.9	6.0	5.5
Q 3: How many sexual partners have you had in your life?						
PI	1.00 (1.00–1.00)	1.28 (1.11–1.44)	1.46 (1.20–1.72)	1.06 (.94–1.18)	1.03 (.97–1.09)	1.63 (1.34–1.92)
SA	1.00 (1.00–1.00)	1.48 (.91–2.04)	2.26 (.93–3.59)	1.02 (.98–1.05)	1.02 (.98–1.05)	2.30 (1.04–3.56)
ACASI	2.43[a] (1.23–3.64)	2.90[a] (2.25–3.55)	3.46[b] (2.60–4.32)	1.92[a] (1.45–2.39)	1.69[a] (1.11–2.26)	3.46[a] (2.76–4.15)
Q 4 to Q 9: Discrete variables (presented as OR, PI is reference category)						
Q 4: Who do you live with? (0 = biological parents/1 = other)						
PI	1.00	1.00	1.00	1.00	1.00	1.00
SA	1.37	1.24	1.44*	1.26	NA	1.34*
ACASI	.99	.80	1.05	.81	NA	.94
Q 5: A woman should not have sexual intercourse until she gets married (0 = agree/1 = disagree)						
PI	1.00	1.00	1.00	1.00	1.00	1.00
SA	1.09	.77	.75	1.07	.71	.90
ACASI	2.57***	1.33	2.13***	1.15	1.78	1.77***
Q 6: A man should not have sexual intercourse until he gets married (0 = agree/1 = disagree)						
PI	1.00	1.00	1.00	1.00	1.00	1.00
SA	.91	.83	.67*	1.20	.59	.91
ACASI	1.97***	.95	1.43*	.97	1.17	1.32*
Q 7: It is embarrassing to buy or ask for condoms? (0 = agree/1 = disagree)						
PI	1.00	1.00	1.00	1.00	1.00	1.00
SA	.91	1.10	1.03	1.05	1.01	1.05
ACASI	1.02	.88	.85	1.00	.59	.98
Q 8: Have you ever had sexual intercourse? (0 = no/1 = yes)						
PI	1.00	1.00	1.00	1.00	NA	1.00
SA	1.36	1.02	.70	1.55*	NA	.98
ACASI	2.79*	1.09	1.16	1.17	NA	1.77**
Q 9: Have you ever had sexual intercourse with a sex worker? (0 = no/1 = yes)						
PI	1.00	1.00	1.00	1.00	1.00	1.00
SA	1.05	.23*	.30*	NA	NA	.30*
ACASI	4.88	2.05*	2.33*	NA	NA	2.08*

NA = Nonapplicable.
[a] Significant at $p < .05$ compared to both PI and SA.
[b] Significant at $p < .05$ compared to PI only.
* $p < .05$; ** $p < .01$; *** $p < .001$.

question of number of sexual partners was limited to those who had reported having had sexual intercourse; and as can be seen, youth surveyed using pencil-and-paper questionnaires (SA) reported somewhat higher numbers of sexual partners compared with those using PI method, although this difference was not statistically significant. On the other hand, those who answered the question using ACASI reported significantly more partners than the other two data collection methods; and this finding was consistent across age, gender, and marital status. Specifically, the ACASI group reported twice the number of sexual partners as that of the interview group. Another noteworthy finding is that, as anticipated, the number of sexual partners increased with age, was higher in males than females; and unmarried youth reported a greater number of sexual partners than the married group.

As is true for the first two factual questions, the fourth question noted in Table 2 (Who do you live with?) is likewise nonsensitive; and responses indicate no significant differences among the three methods of data collection. The one exception was for comparisons made between gender and marital status; for both males and those who were single, those in the SA group were more likely than the PI group to report living with *others*. For this type of factual question, ACASI does not show any advantage.

On the other hand, the final three questions in Table 2

refer to attitudes toward sex. For one question (Question 7: It is embarrassing to buy or ask for condoms?), no significant differences were found for the three methods of data collection. However, the results of the other two attitudinal questions showed that for adolescents (aged 15–19 years), males, and for the unmarried group who responded to the questions using ACASI, they expressed a more liberal attitude compared to the PI and SA respondents. On the issue of women having sexual relationships before marriage, adolescents aged 15–19 responding with ACASI were twice as likely to say that it was okay than those answering the question using the other two modes of data collection ($p < .001$). The difference of perception in the 20–24-year-old group existed as well, but it was not found to be statistically significant. Similarly, males who responded to this question via ACASI were also twice as likely to endorse female premarital sex compared to their counterparts using traditional methods of data collection. The same trend was found in the unmarried group (OR = 1.77, $p < .001$). On the issue of male premarital sex, we found the same trend: male adolescents, people under age 20, and those who were single and who answered using ACASI again showed a more liberal attitude than their peers responding via other modes of data collection.

The final two questions in Table 2 explore personal sexual behaviors. In both cases, ACASI appeared to elicit higher numbers than the other two data collection methods, especially among the under-20 age group and unmarried respondents. On the question of having had sexual relationships with sex workers, ACASI respondents were more likely to respond affirmatively; however, differences reached statistical significance only for the 20–24-year-old age group of males. Males, those who were single, and the under-20-year-old group all reported having experienced sexual relationships with a sex worker at twice the rate using ACASI compared with personal interviews.

Interestingly, and contrary to what was hypothesized, males consistently showed greater differences responding with ACASI than their female counterparts [4].

Sexual perceptions, attitudes, and behaviors of adolescents

Condom use. The questionnaire included five questions related to condom self-efficacy: 1) If you want to use a condom, how confident are you in buying or finding one? 2) If the person who has sexual intercourse with you does not want to use condoms, how confident are you in convincing that person to use condoms? 3) How confident are you to tell the person you have been having sex with: "next time, no condom no sex"? 4) How confident are you in your skills of using a condom properly? 5) If you do not want to have sexual intercourse, how confident are you to refuse engaging in such activity?

Overall, questions 2, 3, and 5 did not show any significant differences among the three methods of data collection.

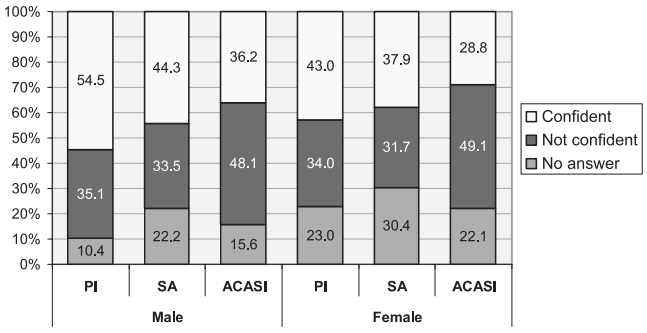

Figure 1. Rate of feeling confident to get condom by interview methods (percent).

However, answers to questions 1 and 4 revealed some interesting differences.

Consistent with expectations, males were more confident than their female counterparts that they would be able to find or purchase a condom (Figure 1). However, report of confidence in being able to purchase or find a condom was lowest among the ACASI group and highest among the interview group. This was true for both males and females ($p < .01$).

Similar gender differences were found for the question regarding the appropriate use of a condom. Specifically, males responding via ACASI were significantly more likely than peers to indicate a lack of confidence that they know the correct way to use a condom: 23% in personal interview reported lacking confidence that they really knew how to properly use a condom compared with 29% in the self-administered mode and 42% in ACASI ($p < .01$). This pattern is similar in females: 21% reported lacking such confidence with SA, 29% responding with PI, and 47% responding via ACASI lacked confidence that they know the correct use of condoms. Interestingly and importantly, when asked about the correct use of condoms, more females than males refused to answer; however, the refusal rate was significantly higher in personal interview and the self-administered group compared to the ACASI group (42%, 44%, and 28%, respectively).

Premarital sex. Although the sample of married youth was small (148 females, 41 males), 29.4% of females reported having had sexual intercourse before marriage (males not reported due to very small sample size). Looking at reports of premarital sex among those who had never been married, we found the overall reported rate of premarital sexual experience in males to have been 18.3% (ACASI), 15.2% (PI mode), and 10% (SA mode). The rates reported by females were 7.4% for ACASI, 5.2% for PI, and 6.3% for SA. Among unmarried youth, the average rate is 12.9% among males and 3.4% among females. Again, ACASI has shown a higher rate of respondents who reported having had sexual relationships before marriage compared to other methods of data collection (Figure 2).

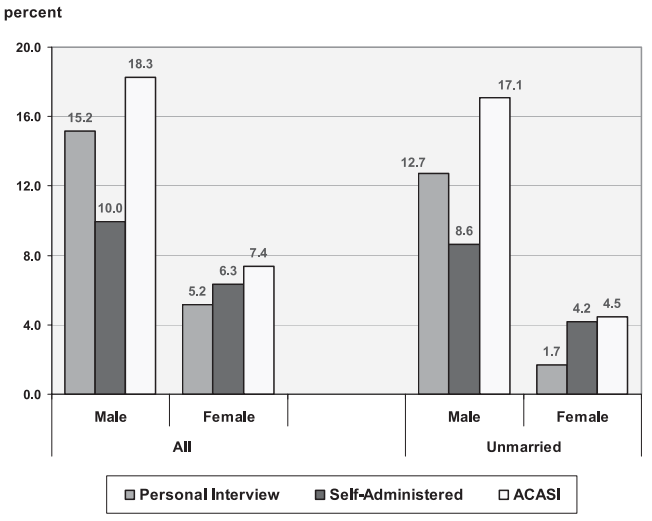

Figure 2. Rate of pre-marital sexual experience by interview modes (percent).

Among never-married males, the rate of ever had sexual intercourse was 17.1%, significantly higher than the 8.6% rate reported in the SA group, but not significantly higher than the PI group rate of 12.7%. The rate in the unmarried female adolescents also tended to be higher in the ACASI group compared to the other two groups; however, this difference was not found to be statistically significant.

Factors associated with premarital sex. In order to explore the role of ACASI in increasing the affirmative response rate of adolescents with regard to premarital sex and to identify the factors associated with premarital sex, several logistic regression models were developed. The logistic regression models were analyzed separately for males and females (Table 3).

The multivariate model for *males* indicated that after controlling for confounding factors, those responding via ACASI were twice as likely as those in the interview group to report having had premarital sex. Besides the data col-

Table 3
Logistics regression model of ever had sex among unmarried males and females

Independent variables	Males				Females			
	Coefficient (B)	Standard Error	*p* Value	OR	Coefficient (B)	Standard Error	*p* Value	OR
Data collection mode								
PI*	–	–	–	1	–	–	–	1
SA	−.4695	.3402	.1676	.6253	1.0312	.5389	.0557	2.8043
ACASI	.6878	.3087	.0259	1.9894	.3737	.5782	.5181	1.4530
Age group (years)								
15–19*	–	–	–	1	–	–	–	1
20–24	1.6477	.3411	.0000	5.1951	.0777	.4552	.8645	1.0808
Education level								
12th grade or below*	–	–	–	1	–	–	–	1
University/college or higher	−.4986	.2537	.0494	.6074	1.1381	.5056	.0244	3.1209
Living with family								
Living with parent*	–	–	–	1	–	–	–	1
Living with others	.2768	.2921	.3434	1.3189	−.6653	.5989	.2666	.5141
Work for income								
No*	–	–	–	1	–	–	–	1
Yes	−.2561	.2817	.3633	.7741	−.5641	.4811	.2410	.5689
A woman should not have sexual intercourse until she marries								
Agree*	–	–	–	1	–	–	–	1
Disagree	−.7033	.3539	.0469	.4949	.5580	.7521	.4581	1.7472
A man should not have sexual intercourse until he marries								
Agree*	–	–	–	1	–	–	–	1
Disagree	1.4665	.3374	.0000	4.3341	1.7715	.6992	.0113	5.8798
Confident to buy/get condom								
Confident*	–	–	–	1	–	–	–	1
Refuse to answer	−1.2592	.6435	.0504	.2839	−.5048	.8286	.5424	.6037
Not confident	−.6629	.2849	.0200	.5153	.6197	.4763	.1933	1.8583
Peer social deviant	.6416	.2040	.0017	1.8996	.7884	.3696	.0329	2.2000
Statistics	Sample size (n) = 761 Hosmer & Lemeshow goodness of fit test χ^2 = 4.2703; df = 8; p = .832.				Sample size (n) = 751 Hosmer & Lemeshow goodness of fit test χ^2 = 12.0680; df = 8; p = .148.			

* Reference category.
– = nonapplicable.

lection mode, age group and level of education were related to the likelihood of reporting sexual behavior before marriage. Additionally, perception was associated with reporting having had premarital sex among males. Unmarried males who approved of sex before marriage were four times more likely to report that they engaged in sexual intercourse than their disapproving peers. However, male adolescents who indicated that women should keep their virginity until marriage were also twice as likely to have had premarital sex, although this difference was of borderline significance ($p = .0469$). With regard to behavioral issues, young people who reported confidence in purchasing condoms were two times more likely to report having had a sexual relationship before marriage compared to those who did not report comparable confidence. Importantly, negative peer pressure (measured as peer social deviance) also increased the likelihood that young males would engage in sexual relationship before marriage.

Three variables were found to be related to sexual behavior before marriage for females: education level higher than high school, permissive attitude toward premarital sex among males, and negative peer influences.

Concerning the experience of sexual relationship with commercial sex workers, the analysis of a sub-sample of 1030 unmarried males showed that 4.4% of the sample reported having had sex with prostitutes (95% confidence interval [CI] 3.2–6.0). The ACASI respondents reported higher rates compared to the other two data collection methods, e.g., 7.8% compared with 1.2% in the self-administrated questionnaire.

Limitations

There are a number of limitations inherent in a study of this kind. First, the sample is drawn from a single community, thus, the data cannot be generalized to Vietnam as a whole. Secondly, although the three samples were randomly drawn using youth rosters, it is evident that there were some differences among the three groups; and the higher socioeconomic level of the ACASI group may have affected the results. Third, the low prevalence of some sexual behaviors limits the possibilities both in making comparisons and disaggregating data (e.g., between married and unmarried youth) in the sample. Despite the limitations, however, this is the first study reported from Vietnam using ACASI as a methodological tool for data collection.

Discussion

In Vietnam, questions about sexual behaviors and attitudes are still considered sensitive. Such sensitivity is rooted in Confucian culture, where conservative sexual mores have predominated. In such a context, discussion of sexual behaviors has, until recently, been taboo. Thus, the central hypothesis of the present study was that those responding to sensitive questions (e.g., those related to sexual attitudes and behaviors) would be more likely to provide affirmative/less traditional responses using ACASI compared with other data collection methods. This hypothesis was based both upon previous research using ACASI in other contexts and the belief that a methodology that provided greater anonymity than conventional data collection methods were more likely to yield higher affirmative response rates. Secondly, we hypothesized that younger youth and females would be more likely to report sexual behaviors and to express more liberal sexual attitudes via ACASI when compared with other data collection modes. Like the first, this hypothesis was based upon previous research, much of which was undertaken in the United States. In addition, Confucian traditions reinforce female modesty to an even greater extent than males.

In general, our hypotheses were confirmed. However, although we hypothesized greater differences in the reporting among females, such was not the case. Rather, in general, it was among males where the greatest differences were found. These findings are consistent with the findings of Turner et al who found that, in the United States, adolescent males using ACASI were more likely to respond affirmatively to what were sensitive questions of men having sex with men, sharing needles, and interpersonal violence [4]. The findings lead the authors to conclude that ACASI provided more accurate data than other data collection methods.

The same was also seen in the National Survey of Family Growth, in which Duffler et al found a higher prevalence of unsafe sexual practices using ACASI when compared with face-to-face interviews [6]. The central issue appeared to be confidentiality and privacy afforded by ACASI.

In 2003, Mensch et al reported the first large-scale trial of ACASI in a developing nation where they collected data on more than 6000 adolescents from two districts in Kenya [5]. That study included both adolescent males and females aged 15 to 21 years. Much like the present study, the Mensch et al study had three arms: traditional interview, pen-and-paper questionnaire, and ACASI. Like us, they did not find significantly larger rates of premarital sexual intercourse among adolescent females, but they did report significantly higher rates among very high-risk sexual behaviors such as having sex with strangers. Boys were more than twice as likely to report such behavior (18% vs. 8%), and for girls it was more than a threefold difference (14% vs. 4%). In the present study, the prevalence of high-risk sexual behaviors among Vietnamese adolescent females was so low in each of the groups as to obviate meaningful comparisons. For males, however, there was a substantial difference in reporting having had sex with commercial sex workers using ACASI.

Conclusion

Researchers, policymakers, and program planners have long feared that adolescent sexual and reproductive health interventions have been developed on less than accurate information. The evidence from the United States over the past decade has substantiated the improved response rates to sensitive questions using ACASI. Increasingly, the same is being seen in developing nations given the risks of HIV/AIDS, unplanned pregnancies, and sexually transmitted infections. ACASI offers a promising methodology for improving the accuracy of our data in both developing and industrialized nations.

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