Getting a High Response Rate of Sexual Behavior Survey Among the General Population in Japan: Three Different Methods of Survey on Sexual Behavior

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The purpose of this study was to specify the most accurate, reliable, and valid technique for a general sexual behavioral survey in Japan. This pilot study was conducted to assure a high response rate and to keep respondents' privacy confidential by using an anonymous questionnaire survey technique.

The sample (360 potential respondents) was selected randomly from basic resident registers in two geographically different areas. From the registries, 90 residents, aged 20 to 49 years old, were randomly selected to represent each sex from each area. The subjects were randomly assigned to three groups each having a different procedure of requesting the completion of the survey and providing the questionnaires: (1) Postal Group, (2) Telephone Group, and (3) Face-to-face Group. The survey was carried out from October 1995 to February 1996.

Effective response rates for the above mentioned three groups were 69.2%, 69.2%, and 55.8%, respectively. It is difficult to determine the best method when only considering the effective response rates. However, judging from our effort and expense, the mail survey is the best possible procedure and would be a reasonable method for a national sexual behavior survey.

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In Japan, at the end of 1997, human immunodeficiency virus (HIV) cases and acquired immune deficiency syndrome (AIDS) cases were 3,985 and 1,684, respectively. The main method of transmission of HIV in Japan until the 1990's was tainted through blood coagulation factors. The proportion of exposure in this category until the end of 1997 were 37.5% for received blood coagulation factors, 30.6% for hetero sexual contact, 14.4% for men who had sex with men (MSM), 0.4% for intravenous drug user (IVDU), 0.5% for mother to child (MTC), 1.2% for others (includes cases from blood transfusion, tissue/organ transplant and cases with more than one possible mode of expose to HIV), and 15.4% for unknown methods of transmission HIV. Recently, however, HIV transmission modes have been changing. Now sexual contact has become the major transmission mode, as is common in many other countries. In 1997, 77.3% of HIV cases and 64.4% of AIDS cases in Japan were contracted through sexual contact.

Sex-related issues are of a great public health concern in the face of the current AIDS era. Accurate data on sexual behavior and habits are extremely important in establishing guidelines to prevent HIV infection. Previous research has identified that having multiple sexual partners and/or unprotected sexual contact as risk factors for sexually transmitted diseases (STD), including HIV infection. Studies of the transmission dynamics of HIV indicate that rates of sexual partner change are particularly important determinants of the extent of viral spread within a population. The prevalence of high risk behavior, those having multiple sexual partners and/or engaging in unprotected sexual intercourse, is much less known in
the general population. Therefore in the era of the current spread of HIV infection, the data on sexual behavior in the general population is of considerable importance. Yet such reliable accurate data on sexual behavior of the Japanese people possibly does not exist. Since the time the first AIDS case was reported, many surveys on sexual behavior have been conducted. However, many of the samples were subgroup specific and therefore do not provide an accurate representation of the general population. The existing data on sexual behavior are from a specific population, such as college students, adolescents, homosexual men and recruited volunteers. It may be difficult to collect accurate data on sexual behavior, especially from the general population, because sexual behavior is a very private matter and a sensitive one. And often times people feel embarrassed or threatened when they are asked about their sexual activities.

The study of sexual behavior undoubtedly presents certain methodological challenges and a number of methodological issues that has to be resolved before the survey may be conducted. It may be a high hurdle to collect the sensitive information such as sexual behavior from the general population, while maintaining privacy and a high response rate. Therefore we conducted a pilot study to compare three different methods to assure a high response rate for a sexual behavior survey. This was a pilot study to determine the best method for operationalization of a future national sexual behavior survey in Japan.

This paper presents the major results of this pilot study.

**METHODS**

**Subjects and Procedure**

The investigation was conducted in two geographically different areas in Japan: one selected area was a rural town (Oono-Town, Gifu Prefecture) and the other selected area was a metropolitan ward (Nakano-ku, Tokyo).

The overall sample (360 people) was selected randomly from basic resident registers. All households in these areas had an opportunity to be selected. From the registries, 90 residents, aged 20 to 49 years old, were randomly selected to represent each sex from each area. The same number of female and male samples (180 each) were selected. In order to maximize effectiveness of the pilot study, we had to consider different approaches to request the completion of the survey from the subjects. Therefore, the subjects were randomly assigned to the three groups (Table 1): (1) Postal Group, (2) Telephone Group, and (3) Face-to-face Group. These three different approaches were employed to compare the response rate of participation on the sexual behavior survey, always keeping respondents' confidentiality a priority.

First, we sent an announcement to all of the selected subjects. In the announcement, we explained that HIV infection had been spreading in Japan and the aim of this pilot survey. Also we mentioned how the samples were selected and ensured them of their complete confidentiality.

The "Postal Group" received a self-administered questionnaire by mail two or three days after they had received the announcement. This group had no further explanation nor instruction for completion of the survey.

The "Telephone Group" received a self-administered questionnaire by mail two or three days after they had received the announcement in the mail. Then the subjects of this group were called to be given instructions and an explanation for the survey by a surveyor two or three days after the questionnaire had been delivered. Each area had one male surveyor and one female surveyor. The surveyors were matched to the subjects by sex; a female surveyor called a female subject and a male surveyor called a male subject.

The surveyors telephoned the "Face-to-face Group" to provide an explanation of the survey and to make an appointment to meet with the surveyor in order to provide a self-administered questionnaire two or three days after they received the announcement in the mail. As same as the "Telephone Group", the surveyors were matched to the subjects by sex.

For this survey, the surveyors were all public health workers. The public health workers all have a solid foundation in HIV/AIDS related issues and did not need extensive training in order to deliver the survey. So that it was enough just to provide them with the general information and procedures of the survey.

When we provided the questionnaire, we also provided an anonymous prepaid envelop printed with a return address, a post-card with the subject's name for identification purposes, and directions on how to complete the survey. The post-cards allowed the survey team to perform follow-up initial refusers.

| Table 1. Difference of 3 methods |
|----------------------------------|
| **Announcement** | **Request and explanation** | **Delivery of questionnaire** |
| Postal group | Mail | Mail | Mail |
| Telephone group | Mail | Telephone | Mail |
| Face-to-face group | Mail | Telephone * | Hand |

* At the time telephoned, an appointment was made in order to hand the questionnaire.
In no way was the post-card matched with the actual questionnaire, thereby maintaining strict confidentiality.

One month after finishing each basic procedure, we sent the second announcement to the subjects whose named post-cards had not returned yet. If there was no reply, we sent them the questionnaire again.

The telephone numbers were identified from a telephone directory or from a telephone information service. Even though the telephone numbers had not been found, we sent a letter to ask the subjects to return the post-card with his/her telephone number or to give us a telephone call. The surveyors kept calling until they reached the targeted respondent.

All subjects were asked to return the self-administered questionnaire by using the enclosed envelop without any identification in order to ensure confidentiality. Besides that, the participants were also asked to send the post-card at the same time they mailed the questionnaire in order to identify who had replied.

All the subjects received a letter of appreciation for their cooperation. At the time the subjects received the letter of appreciation, it had been a week since we had sent the questionnaire and we reminded them to respond to the questionnaire if they had not yet replied.

The "Postal Group" and the "Telephone Group" were given a 1,000 yen (about $10) valued prepaid telephone card regardless whether or not they responded. The prepaid telephone card was enclosed in the letter of appreciation. The "Face-to-face Group" was given the choice of a 1,000 yen valued prepaid telephone card or a 1,000 yen valued coupon for books at the time when they received the questionnaire.

The self-administered questionnaire had eighty-one questions including the followings; (1) knowledge of HIV transmission, (2) the questionnaire aimed at measuring the prevalence of various sexual practices and risk factors (such as multiple sexual partners, prostitution, casual sex, anal intercourse, oral sex, and condom use, etc.), (3) experience of having an HIV antibody test, (4) experience of traveling to foreign countries and of having sex with a prostitute there, and (5) basic demographic information of the participants.

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The survey was carried out from October 1995 to February 1996.

RESULTS

The survey received 233 of the 360 subjects responded to the questionnaires (Table 2). We received 229 post-cards, which showed who had participated in the survey. The overall response rate was 64.7%.

The response rate (See Chart 1.) of the "Postal Group" was the same as the "Telephone Group" (69.2%). The response rate of the "Face-to-face Group" (55.8%) was a little lower than the other groups.

When we see the effective response rate (See Chart 2.), the overall percentage was 68.1%. The effective response rate of the "Postal Group" was 70.9%, of the "Telephone Group" was 70.3% and of the "Face-to-face Group" was 62.6% (Table 2).

The 81 questions in the questionnaire took approximately 10 to 15 minutes to complete. This information was collected from the respondents in the questionnaire (number 44) and analyzed. This survey was intended to select the best method of delivery. The results of this questionnaire will be evaluated in a later report.

Differences in response rate by area and sex

The relationship between area and sex of the three different groups is illustrated in Table 3.

Rural:

Among male respondents in the rural area, the "Postal Group" had the highest response rate. And the rest of the groups had almost the same response rate. If we excluded these samples, the effective response rate (See Chart 2.) of the "Face-to-face Group" was higher than the "Telephone Group" (See Table 3).

Among the female respondents in the rural area, the "Postal Group" and the "Telephone Group" showed the same response rate and effective response rate. The "Face-to-face Group" was the lowest in both response rate and in effective response rate (See Table 3).

Metropolitan:

Among the male respondents in the metropolitan area, the "Telephone Group" demonstrated the highest, followed by the "Postal Group" with the lowest being the "Face-to-face Group" in both response rate and in effective response rate (See Table 3).

In the case of the female respondents in the metropolitan area, the "Postal Group" and the "Telephone Group" had the same response rate, and the lowest was the "Face-to-face Group." However, when we see the effective response rate, the "Postal Group" was the highest, next the "Telephone Group" and the lowest was the "Face-to-face Group" (See Table 3).

Respondent availability for the "Telephone Group"

We had difficulty in finding the telephone numbers of some of the respondents. We could not find a total of 29 telephone numbers; 5 males in the rural area, 8 males and 16 females in the metropolitan area. Even though we could contact the targeted respondents in order to explain the purpose of the survey, some subjects did not respond to the questionnaire. The surveyors made great efforts to reach all the targeted people. The
Table 2. Response rate from each group (%)

|                  | Sample | Unknown* | No. of post-cards | No. of questionnaires | Controlling for unknown* subjects |
|------------------|--------|----------|-------------------|-----------------------|----------------------------------|
| Postal Group     | 120 (100.0) | 3       | 80 (66.7)         | 83 (69.2)             | (68.4) (70.9)                    |
| Telephone Group  | 120 (100.0) | 2       | 81 (67.5)         | 83 (69.2)             | (68.6) (70.3)                    |
| Face-to-face Group | 120 (100.0) | 13      | 68 (56.7)         | 67 (55.8)             | (63.6) (62.6)                    |
| Total            | 360 (100.0) | 18      | 229 (63.6)        | 233 (64.7)            | (66.9) (68.1)                    |

* Mail was returned due to incorrect address or other unspecified reasons.

Chart 1. Formula For Response Rate.

Potential Sample Size = X
Effective Sample Size = Y
% of Response Rate = Z
Y / X x 100 = Z (%)

Chart 2. Formular for Effective Response Rate.

Potential Sample Size = X
Effective Sample Size = Y
% of Effective Response Rate = Z
Y / (X-U) x 100 = Z (%)

Table 3. Response rate by area, sex, and group for study by the questionnaires

|                  | Male | Female |
|------------------|------|--------|
| Postcard         |      |        |
| Rural            |      |        |
| Sample           | 30 (30) | 30 (30) |
| Returned questionnare | 24 | 20 |
| Response rate, % | 80.0 (80.0) | 66.7 (66.7) |
| Postal           | 30 (24) | 18 |
| Telephone        | 70.0 (70.0) | 70.0 (70.0) |
| Face-to-face      | 60.0 (75.0) | 56.7 (60.7) |
| Metropolitan      |      |        |
| Sample           | 30 (28) | 30 (28) |
| Returned questionnare | 17 | 21 |
| Response rate, % | 56.7 (60.1) | 70.0 (75.0) |
| Postal           | 30 (27) | 15 |
| Telephone        | 63.3 (65.5) | 19 |
| Face-to-face      | 50.0 (55.6) | 15 |

( ) is the effective sample which excluded returned mails due to incorrect address or other unspecified reasons.

average number of attempted calls to reach the targeted individual was once or twice. The surveyors called the targeted individuals not only during week-days or during the day time, but also on week-ends and during the evening. The length of the telephone calls were approximately 10 minutes (10 cases). The shortest were only for one minute (7 cases) and the longest were for 15 minutes (4 cases).

Respondent availability for the "Face-to-face Group"

We had more difficulty in accessing the targeted respondents in the "Face-to-face Group". We could not find a total of 38 telephone numbers; one male and five females in the rural area, and twelve males and twenty females in the metropolitan area. In addiction, we found that more subjects in the rural area as compared with the metropolitan area did not live at their registered addresses. The residents were still registered at the address, but the respondents lived apart from their families. Even though we could contact the targeted respondents, many of them refused to meet us. The female respondents from both areas were extremely small (one female from each). So that the overall response rate of this group was low (Table 4).

However, once success was made in meeting the subjects and they were handed the questionnaires, the effective response rate became relatively high (rural male and female 100%, and metropolitan female 100%. See Table 4).

The average length of the "Face-to-face" meeting was approximately five minutes. This involved providing the questionnaire and an explanation for the survey to the subjects. In some cases, however, the surveyors spent 20 minutes or more to answer questions about the survey from the subject.

Persuading reluctant targets to participate

Some subjects expressed a desire to refuse to participate in the survey. The largest number of negative respondents was in the "Face-to-face Group" (17 people among 120.
Table 4. Results of the "Face-to-face Group" by sex and area

|               | Rural                  | Metropolitan            |
|---------------|------------------------|-------------------------|
|               | Male  | Female | Male  | Female |
| Sample        | 30(11)| 30(1)  | 30(9) | 30(1)  |
| Returned问卷 | 11    | 1      | 8     | 1      |
| Response rate, % | 36.7(100.0) | 3.3(100.0) | 26.7(88.9) | 3.3(100.0) |

() is the actual numbers of targeted people who were contacted by telephone or were met. The response rate were extremely low in both rural and metropolitan areas.

Table 5. Number of people expressed desire to refuse to participated in the survey and number of responses after sending second request

| Sample      | Express to refuse (%) | Response after the second request (%) |
|-------------|-----------------------|---------------------------------------|
| Postal group | 120                   | 4 (100.0)                             |
| Telephone group | 120               | 3 (100.0)                             |
| Face-to-face group | 120            | 17 (100.0)                            |

Table 6. Response timing by groups

|               | After sent questionnaire (%) | After sent reminder (%) | After sent 2nd reminder (%) | After sent 2nd questionnaire (%) | After expressed refusal (%) | Total (%) |
|---------------|------------------------------|-------------------------|-----------------------------|----------------------------------|-----------------------------|-----------|
| Postal group  | 47 (56.6)                   | 28 (33.7)               | 3 (3.6)                     | 5 (6.0)                          | 0 (0.0)                     | 83 (100.0) |
| Telephone group | 71 (85.5)               | 3 (3.6)                 | 0 (0.0)                     | 7 (8.4)                          | 2 (2.4)                     | 83 (100.0) |
| Face-to-face group | 47 (70.1)           | 3 (4.5)                 | 5 (4.5)                     | 7 (10.4)                         | 5 (7.5)                     | 67 (100.0) |

DISCUSSION

There are some surveys on sexual behavior among the general population in the United States, France, Norway, and Great Britain. But this data is not always applicable to Japan due to the cultural differences. These countries conducted sexual behavior surveys through face-to-face interviews or via telephone. In Japan, telephone surveys or face-to-face interview surveys are not common. As sexual behavior is a very sensitive personal issue, it is essential to keep a respondents' privacy confidential. On the other hand, we have to ensure maximum participation response rates to enhance response rate. The response rates of similar sexual behavior surveys in Europe and the United States were approximately 60-70%. Considerable efforts were made to maximize the participation in these surveys. The overall effective response rate of the targeted population was 67.9%. And the effective response rate of the "Postal Group" and the "Telephone Group" was over 70%. Even though the overall response rate was 64.7%, it was more than twice as high as the response rate of the WHO/Partner Relation Survey Phase I in Japan (31.4%, conducted from...
1989 to 1991)\textsuperscript{10}. It may be considered a satisfactory amount of a sexual behavior survey. These results should be seen in a favorable light based on a high respondent percentage.

For this study we wanted to make sure that a majority of the general population was concerned with HIV/AIDS and ready to respond to personal sexual behavior questions. Several studies have noted that the average non-response rate is not greater for sex research than for other sensitive issues \textsuperscript{8,11,14,15}. Willingness to participate in sexual behavior studies is not especially different from willingness to volunteer for other types of social and health surveys \textsuperscript{8,11}. A person's degree of motivation to perform the role of respondent may be an important source of measurement error. Highly motivated respondents may try harder to understand and answer questions, whereas less motivated participants may skip items or give less thoughtful answers \textsuperscript{8}. A response rate is critically dependent on understanding our efforts, seriousness of working, and thoroughness on this survey. Refusal rates are the most frequently reported index of measurement error in sexuality surveys \textsuperscript{8}. Refusal to take part is important if it is related to the subject-matter of the survey \textsuperscript{10}. Catania, Chitwood, Gibson and Coates \textsuperscript{9} pointed out in their studies the implications of nonparticipation in AIDS behavioral research are extremely worrisome. If people fail to volunteer because of the stigma of AIDS and AIDS-related transmission behaviors, then nonparticipants may be people who are more likely to practice high-risk sexual activities \textsuperscript{8}. The survey was conducted responded between 20 to 49. The ratio of response rate was evenly distributed across all age groups. However, the sample size was extremely small.

Based on survey results, we suspect male metropolitan residents are more likely to engage in high-risk sexual activities. But it is difficult to encourage them to participate in the survey. This is one of our future themes, how to encourage that target population to participate in the study in order to collect critical information on their sexual activities. This population has the highest rate of HIV infection.

From the result of this survey, it is difficult to determine the best survey method when only considering the effective response rate. There was not a significant difference of effective response rates among these three methods. Judging from efforts and expense, the mail survey would be a reasonable model. The "Postal Group" needed only postal fees but the "Telephone Group" and the "Face-to-face Group" needed postal fees and telephone fees. These two approaches needed much more time and effort to reach the targeted subjects. People refused to participate in the survey, especially in the "Face-to-face Group." The reason may be because people are afraid and embarrassed to be associated with others on matters concerning personal sexual issues.

From this pilot study, we found difficulty in accessing the selected subjects from the basic resident registers. Many people did not live at their registered addresses. So those questionnaires were not delivered to the selected persons. It increased the number of drop-out subjects.

We have to mention that it is also difficult to judge the validity of this study. Because the data on sexual behavior from this pilot survey is limited, since they were based on self-administered questionnaires and the number of the subjects were relatively small. Self-presentation bias in sex research reflects the underlying values, that culture or specific subcultures place on revealing sexual experiences to others. Because people wish to present themselves in a positive light, self-presentation bias may lead to either over- or underreporting of a particular sexual behavior, depending on whether that behavior has a positive or negative social value \textsuperscript{9}. However, we believe that this pilot survey is valuable when considering the methodology for future surveys in Japan.

In conclusion, we found that the postal survey was the most reasonable type of survey method on sexual behavior in Japan. Based on the pilot study results and factoring in cost and means of delivery, we decided the postal survey is the best possible technique for a larger N survey.

We do not show the data analysis of the questionnaire in this paper. The aim of this pilot survey was to try to identify the best way of conducting future sexual behavior surveys in Japan. Analysis of the data will be considered in a later report.

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