CHAPTER 8

The Sealed Envelope Method of Estimating Induced Abortion: How Much of an Improvement?

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The focus of this chapter is on a particular direct but anonymous method of collecting data on induced abortion to estimate its prevalence—the Sealed Envelope Method (SEM). Despite some attractive features, the method, which directly asks women whether they have had an abortion, has rarely been used, possibly because it has not been widely disseminated and researchers do not know that it exists. Thus, the objective of this chapter is to describe the advantages and disadvantages of the method and explain its application in one country in detail, including that application's benefits and drawbacks. It also validates results from the SEM by comparing them with estimates of abortion from face-to-face interviews, which are highly likely to underreport abortion prevalence, as well as with those generated by a method that is commonly accepted as robust, the Abortion Incidence Complications Method (AICM).

Since the SEM yields estimates of abortion prevalence (the proportion of women who have ever had an abortion in their lifetime) and the AICM generates estimates of abortion incidence (the annual number of abortions per 1,000 women of reproductive age), a second objective of the chapter is to develop a technique to convert prevalence into rates to directly compare resulting data. That technique proposed here will be useful in assessing the validity of future applications of the SEM.

Description of the SEM

The method described in this chapter is also known as the "Secret Ballot Approach." Its overwhelming advantage is its anonymity, as responses to questions on abortion are sealed in an envelope (or ballot box) and cannot be linked in any way to individual women. An essential part of the methodology is the respondent's trust in an interviewer's guarantee of anonymity. Not having to admit to an abortion in front of an interviewer frees up the respondent to openly report on any abortions she has had. The method can consist solely of a short, self-reported questionnaire or be part of a longer community-based survey interview that includes a face-to-face component.

The self-reported component asks about the respondent's abortions, typically in a recent time period. The respondent puts the completed, confidential questionnaire into an envelope and seals it, then puts the envelope into a ballot box or gives it to the interviewer, who puts it into a bag or box with other envelopes. To increase the likelihood that respondents will report their abortions, it must be clear to them that the interviewer has no way of identifying the information as being specific to any individual respondent. The data collection approach also allows for all individual-level information from the main interview to be linked with the sealed envelope data and analyzed jointly. Each survey questionnaire has a unique identification code that can be matched with the identification code on the sealed envelope questionnaire. Thus, analysis of the SEM data can be enhanced by data on the respondent's characteristics and behaviors from the community survey.

The SEM can be particularly useful in countries where abortion is illegal or highly stigmatized because of religious or moral beliefs, such as in countries with strong Catholic influence at both the population and government levels. The method has been applied in only a few instances and relatively little is known about its potential. However, results of a 1994 study in Metro Manila, the Philippines (Raymundo et al. 2001) and a 1992 study in urban areas of Colombia (Zamudio et al. 1994; Zamudio et al. 1999) suggest that the method has promise and should be more widely applied.

For the 1992 application in Colombia, the method was applied in a nationally representative, large-scale survey of urban households. Women self-administered a short questionnaire, sealed their response in an envelope, and then placed it in a special box. The Colombia application generated an annual rate of 24.6 abortions per 1,000 women aged 15–49 for the period a few years before 1992. This rate was 73% of the rate estimated for all of Colombia for the year 1989 based on an application of the AICM using hospitalization data (Singh and Wulf 1994). Since the secret ballot approach was used in urban areas only, which generally have higher abortion rates than rural areas, the gap in results from the secret box application and the nation-wide AICM application is likely wider than 27% (100%–73% =27%). The SEM was similarly used in the Philippines in conjunction with a 1994 community survey in Metro Manila, in which a short separate questionnaire was administered and then collected in a

sealed envelope. That application obtained a prevalence of induced abortion of about 17% for all women of reproductive age (Raymundo et al. 2001).

In 2004, we conducted a national-level Community-Based Survey of Women (CBS) among women of reproductive age (15–49) in the Philippines and used the same sealed envelope approach as in 1994. The 2004 nationwide application differed from the 1994 application in Manila in the use of a very short questionnaire of just four questions that would fit onto a single page. The reduction from the 20–30 questions in the 1994 Manila survey was made to increase data quality. Because the 1994 survey was conducted with urban women only, we applied the wider 2004 survey nationally to assess how well the method works with women in the general population.

Data Needs

Data Collection

The sealed envelope questionnaire is an add-on to a community survey; thus, the overall data collection approach is one of a community survey. The main survey that provides the entry point for the sealed envelope questionnaire may investigate abortion-seeking behavior and the health consequences of unsafe abortion; assess general reproductive health issues; or research general aspects of the population. To take full advantage of the data generated through the sealed envelope technique, it would be best if the community survey collected supporting data, such as women's background characteristics and, if possible, relevant reproductive health data, such as contraceptive use, history of unplanned pregnancy, abortion-seeking behavior, etc.

The main community survey questionnaire is administered through face-to-face interviews, while the sealed envelope questionnaire is self-administered in private. The main questionnaire contains a filter question to identify literate women who are eligible to respond to the sealed envelope questionnaire. The filter usually uses two questions:

"Do you know how to read and write?"

"Are you able to read a newspaper?"

When planning the length of the sealed envelope questionnaire, it is important to weigh the advantages of asking many detailed questions against asking just a few. A short, self-administered questionnaire can improve the quality of the data collected by making it easier for women to answer the items, especially after they have finished participating in a likely tiring face-to-face interview as part of the main survey. Another important aspect to consider is the simple phrasing of questions and the attractive presentation of the questionnaire. The technique can be applied with as few as three simple questions: one question to identify whether a women had ever been pregnant and not carried to term; for those who had, a second question to identify women who had ever had an induced abortion; and a third question to ask women who had had an abortion when that abortion took place (preferably within the recent past). Examples of these questions follow.

Have you ever had any pregnancy that was not carried to full term? Yes/No

Did you or a doctor or anyone else do something to cause the premature termination of your pregnancy? Yes/No

When did this happen? Month and Year

There are many ways of asking for the timing of an abortion—for example, for abortions occurring in the last three years, the response categories could be "month and year," "in the "last year" or a "Yes/No" question to whether the woman had had an induced abortion "in the last three years."

Research on the quality of fertility data has shown that it is better to ask about births that occurred over the past three or five years rather than in just the last year. When questions ask about births in the past year only, respondents typically shift births either into or out of the last year, which results in underreporting for one year and overreporting for the other (United Nations 1983). We assume that these results on the reporting of fertility events would apply to the reporting of abortions. Even though (to our knowledge) no studies have assessed the best way to obtain accurate information on the date of abortions. For the national 2004 CBS we decided to ask the date (month and year) of the abortion (and about the most recent abortion if a woman reported having had more than one pregnancy loss). In addition, for women who were unable to specify a date, we asked whether the abortion occurred before 1995, between 1995 and 2000, or after 2000. Whatever approach is used, wording asking about the timing of the event needs to make the reference period clear.

Sample Considerations and Study Population

The study population for abortion research is generally women of reproductive age (15–49 or 15–44), and we used the former age-group for the 2004 Philippines study. To obtain generalizable results, it is important that the community survey is based on a random sample. The sample could be representative at the national level, urban or rural level, or even at the level of a well defined area. One important criterion for applying the SEM is the literacy level of the population, since if too many illiter-

ate respondents (who cannot fill in the self-administered questionnaire) are in the sample, then the SEM would be highly nonrepresentative. Further, we want to avoid causing any embarrassment to women who are unable to read and write. Information on the proportion of women who are literate can be obtained from sources such as the census or representative surveys. Ideally, the proportion literate in the survey area should be 95% or higher.

Data Quality and Type of Estimate Obtained

Since the add-on SEM still involves a preliminary, face-to-face direct approach to obtaining information, the resulting data on induced abortion tend to be underestimated—but not to the same extent as data obtained in face-to-face interviews. As we will see in more detail, face-to-face questions on the 2004 Philippines national survey hugely underestimated the level of induced abortion, since only an extremely small proportion of women reported ever having had an induced abortion with that approach.

One aspect that affects the quality of the abortion estimates from the community survey is the selectivity of women who would admit to having had an abortion in a face-to-face survey. Such women are very different from the general population, which introduces a bias into the abortion data and analysis. In contrast, women who reported an abortion with the SEM have a similar age and socioeconomic profile to women in the general population, which means that their abortion behavior is more representative of the country, even if the absolute level of induced abortion is underreported in the SEM.

Ethical Issues

Respondents are asked about sensitive topics in both the CBS and SEM questionnaires, so special attention must be given to ethical issues. Much has been written on the ethical guidelines for good research practice in social data collection. Researchers should adhere to the following generally recognized ethical guidelines in all modes of data collection:

- Protect research participants and honor trust (should endeavor to protect the physical, social and psychological well-being of those whom they study and respect their rights, interests, sensitivities and privacy);
- Anticipate harms (should be sensitive to the possible consequences of their work and should endeavor to guard against predictably harmful effects);
- Avoid undue intrusion (avoid intrusive potential of some of their enquiries and methods);
- Assure that informed consent is freely given (the principle of informed consent expresses the belief in the need for truthful and respectful exchanges between social researchers and the people whom they study); and
- Respect the rights to confidentiality and anonymity (the right to privacy and confidentiality should be respected) (ASA 2008).

Before initiating the community survey questionnaire, informed consent must be given for both the personal interview and the sealed envelope questions. Even after consent has been granted at the beginning of the face-to-face survey, it should be reconfirmed at the beginning of the sealed envelope component (i.e., the women should be asked again if she wants to continue with the self-administered part). (See Appendix for an example of the informed consent wording used in the Philippines.)

Given the sensitivity of abortion and its legal restrictions in many countries, it is very important to make an extra effort to protect women's anonymity and confidentiality. With this idea in mind, in our study:

- Women were not requested to sign a consent form, but to give their consent verbally and the interviewer followed up by signing off that the woman gave her consent. An alternative procedure would be for the woman to sign with a fake name; however, we prefer to not use this more complicated approach.
- We removed the address of the respondent, the listed names of her children and any other information that could identify her from the information collected for the field work. During the field work, the supervisor eliminated any names and addresses by using a black marker after the questionnaire had been completed. The special cover page with information on the respondent's name and address was removed and destroyed. Therefore, no names (of respondents or their children) or addresses were kept once the interview was judged to be complete by the supervisor.

Training of Field Staff

The training of field staff is important for high quality community surveys. Although we do not describe training in detail here, some specifics on instruction in asking about the sensitive topic of abortions are important to mention. For example, training must include alerting interviewers to the importance of noting when a respondent is becoming distressed so they can stop the interview if necessary. Interviewers need to be trained to recognize and help women in difficult or dangerous situations, including providing them with support in cases of domestic violence or sexual abuse. Agreements should be made with nongovernmental organizations and government health departments to provide health services and psychological and legal support for any respondent with special needs. If a case is especially urgent, a supervisor needs to become

involved to ensure that the woman is assisted appropriately and adequately. The training manual should summarize these points.

As mentioned earlier, the self-administered SEM questionnaire is given to literate women only and filters to identify literate women are included in the community questionnaire; interviewers are trained to check the filter responses (see Appendix) so illiterate women will not be asked to complete the self-administered questionnaire.

Application and Verification of the SEM: The Case of the Philippines

Below we present findings on abortion prevalence in the Philippines from the two data collection approaches (community survey and SEM module), and assess them against data from the AICM. Since the AICM has been widely used and is recognized to provide relatively reliable estimates of the level of induced abortion, it can serve as a good yardstick for verifying accuracy.

We hope to answer the following questions: How do the proportions of women who report an induced abortion differ between face-to-face interviews and the sealed envelope questionnaire? Do women who report an induced abortion in one approach differ from those who do so in the other? What is the level of "positive negatives"—that is, what percentage of women report an abortion on the sealed envelope questionnaire but not in a face-to-face interview? Differences in the likelihood of reporting an induced abortion in each approach are analyzed according to women's demographic and socioeconomic characteristics.

Comparing SEM estimates with those generated by the AICM raises the challenge of making the measures comparable, since the SEM generates prevalence, while the AICM produces a rate. Thus, to assess the validity of SEM results against AICM results, we also propose a method of converting estimates of abortion prevalence into annual abortion rates.

The Philippines: Study and Methodology

The original data come from the 2004 CBS, which was conducted by the Guttmacher Institute and the University of the Philippines Population Institute. The survey, which was fielded with women of reproductive age, was designed to investigate how women obtained abortions in the Philippines and the impact of unsafe abortion on women's health; the survey purposefully used the two data collection approaches to be able to cross-check and validate the accuracy of the abortion data. The 2004 CBS was both nationally and regionally representative. Comparison with the 2000 census showed that the weighted age distribution of the CBS sample was similar to that of the census, with the exception of 15–19-year-olds, who account for 11% of the CBS sample but correspond to 20% of the population according to the 2000 census. This difference is likely caused by adolescents being missed in the CBS because they were away at school and were not captured in this household-based survey. Further, the distribution of 2004 CBS respondents by selected background characteristics is quite similar to that of participants in the 2003 Demographic and Health Survey (DHS) for the Philippines. Thus, we can conclude that the overall representativeness of the 2004 CBS sample is good.

Some 4,094 women aged 15–49, both single and married, were interviewed in the CBS and then filled out the sealed envelope module. Using the 2000 Philippine census as the sampling frame, a stratified, multistage sample was designed. The sample design used a cluster approach with *barangays* (administrative units) as primary sampling units. Barangays were randomly selected; households in the selected barangays were chosen by systematic sampling, and an eligible respondent in each chosen household was interviewed.

The CBS obtained information on several topics, including the respondent's demographic and socioeconomic characteristics; her history of fertility, pregnancy and fetal loss; her knowledge, attitudes and practices regarding contraception; her experience with unintended pregnancy and abortion; and detailed information on abortion-seeking behavior and the procedure's consequences. The fact that data obtained in the SEM can be linked to data obtained in the face-to-face interview allows us to assess and compare results from these two approaches. Once we bring in data on actual levels of abortion from the AICM, we can evaluate the relative levels of underreporting in face-to-face interviews and the SEM by women's characteristics.

The specific questions asked in the first two approaches and the data used to piece together abortion incidence in the AICM are listed in Table 1 (see end of the chapter). One important objective of the CBS was to improve the reporting of unwanted pregnancies and abortions using direct questions. A battery of questions was thus designed to take the respondent through the logical steps that lead to seeking an abortion (panel A of Table 1).

The first two questions ask women whether they were ever pregnant when they did not want to be, followed by a third question asking how often this had occurred. The next four items probe the reasons why the pregnancy was unwanted and other related issues. The following question directly asks if the woman or someone else *considered* doing something to interrupt that particular pregnancy; if the answer is yes, the next question asks whether the woman or someone else ever *did or used anything* to interrupt that or any other pregnancy. Finally, a question asks how many times the woman or someone

else did something to interrupt a pregnancy. This query is followed up later with detailed questions about individual attempts and final outcomes. Although this careful line of questioning helps women recall the abortion event(s), we recognize that direct questioning about abortion in settings where it is restricted is likely to suffer from high levels of underreporting.

Panel B lists the questions that were included in the one-page, sealed envelope module administered in the Philippines in 2004, which had fewer questions than the instruments used in Colombia in 1992 (Zamudio et al, 1994; Zamudio et al. 1999) and in the Philippines in 1994 (Raymundo et al. 2001). As mentioned earlier, the idea behind shortening the questionnaire was to make it easier and faster to fill out. The sealed envelope module starts out by asking the respondent whether she had ever not carried a pregnancy to term and, if so, how many times. The next question asks whether the respondent, a doctor or anyone else did something to cause the premature termination of the pregnancy and when (with several options for expressing the date of the event). Although these four questions would have been enough to establish that a woman had had an abortion, we used three additional items that asked whether a woman had ever induced "menstruation" because Filipinos commonly use the less stigmatized word "menstruation" instead of "induced abortion." (See Appendix for full questionnaire.)

Findings from the Face-to-Face Interviews and the SEM

Of the total sample of 4,094 women aged 15–49, 618 women (15.1%) reported that they have ever had an abortion in the SEM and 65 (1.6%) reported an abortion in their personal interview (although a total of 224 personal interview respondents, or 5.5%, acknowledged having attempted to abort a pregnancy; Table 2). The nearly tenfold difference between the two approaches in the proportion of women admitting to having had an abortion clearly shows the advantage of the SEM's secrecy and anonymity over face-to-face interviews, particularly in a very conservative environment.

It should be noted, however, that several factors might have contributed to this differential, although their specific effect cannot be determined. For example, the inclusion of a probe in the SEM (whether the respondent, a doctor or someone else did anything to induce menstruation) but not in the main survey may have increased women's likelihood of reporting an abortion in the SEM. Moreover, the need to omit illiterate women from the SEM likely lowered prevalence, since these women's abortions do not contribute to overall prevalence. Another element that might have raised women's willingness to report an abortion in the SEM was asking again for their consent before starting that component.

What Characterizes Women Who Admit to an Abortion in Each Approach?

Women reporting an abortion in the SEM are quite similar to the general reproductive-age population of the Philippines with respect to educational attainment and wealth and marital status (Table 3). The only small difference is with age, as a lower proportion are adolescents compared with women in the general population. This is unsurprising, since the proportion sexually active—and thus exposed to the risk of unintended pregnancy—is much lower among adolescent women than among older women in the Philippines.

However, marked differences emerged between women reporting an abortion in the face-to-face interviews and all women in the CBS sample. For example, those admitting having had an abortion to an interviewer were older than all women in the CBS (50.3% were aged ≥35 vs. 37.5%) and they were also less educated (48.8% had elementary or less vs. 31.3%). There was little difference according to economic status. However, among women reporting an abortion in a personal interview, virtually none were single, compared with 17% who were unmarried in the general CBS sample.

Since women admitting to an abortion in personal interviews differed more from the general population than did those reporting an abortion in the SEM, the former are clearly a more selective group and thus less representative of all women who have abortions. In the Philippines, women in this more selective group tended to have comparatively little education. In contrast to the personal interviews, the SEM seemed to capture the abortions of women of all educational groups, including more educated women. The broader range of women willing to report an abortion in the SEM may stem from the method instilling greater confidence in anonymity. The important finding from the SEM is that the experience of induced abortion is not restricted to any specific subgroup of women.

Women Who Report an Abortion in One Approach but Not the Other

Assessing the level of consistency in abortion reporting across the two approaches is important, as it demonstrates the sensitivity of the two interview modes. Overall, 574 women reported an abortion in the SEM but not in a personal interview, which means that face-to-face interviews resulted in a negative positive rate of 14% (574/4,094=14.0%, Table 4). And 22 women reported having had an abortion in a face-to-face interview did not report one in the SEM, which means that the SEM's positive negative rate is only 0.5% (22/4,094=0.5%). Since

personal interviews created a far higher rate of inconsistency (14% vs. 0.5%), they appear to be a far less reliable approach of estimating abortion prevalence than the SEM.

To explore both how attempts lead to actual abortions and possible differential reporting of the two measures, the information on abortion attempts collected in the personal interviews can be contrasted with information on those women's actual abortions reported in both approaches. In their personal interviews, 224 women admitted to making an abortion attempt, but only 65 of these women said they had actually had an abortion. Of the difference of 159 women admitting an attempt but not a successful abortion in a personal interview, 45 (or 28%) reported having had an abortion in the SEM. For actual abortions, two-thirds of those reported in the personal interviews were also recorded in the SEM (43 of 65, or 66%).

Results of Abortion Prevalence from the Two Methods

Next, we combine abortion prevalence results from the two interview approaches. This analysis adds a third estimate—which we call adjusted prevalence—to take into account the unexpected finding that 22 women reported having had an abortion in a personal interview but *not* in the SEM. Since it is highly unlikely for women to overreport abortions, we add these additional 22 abortions to the total, so the overall number of abortions in the CBS sample is 640 (618 from the SEM + 22 from the personal interviews).

The three abortion prevalence rates are 1.6% based on the personal interviews, and 15.1% (unadjusted) and 15.6% (adjusted), respectively, based on the SEM (Table 5, Columns 6, 7 and 8). The patterns in abortion prevalence by age are relatively similar between the SEM and the overall sample, but the exceptions in the personal interview results reaffirms our earlier observation that women admitting to an abortion in a personal interview are a very selective group whose abortion experiences do not represent those of the general population.

Abortion prevalence rates derived from the SEM are relatively lower among younger women and increase with age, peaking at 30–34 years. Prevalence is substantially lower among 15–19-year-olds than among all other age-groups. To determine whether this finding is attributable to few young adolescent women have initiated sexual activity or to an especially high likelihood of underreporting, we restricted the analysis to sexually experienced women only. Doing so increases abortion prevalence among 15–19-year-olds nearly fivefold, but has much less of an impact on other age-groups. This indicates that although we cannot discard the possibility of underreporting altogether, the extremely low prevalence of abortion reported by adolescents is mainly attributable to their not yet being sexually active.

Results from Converting Prevalence into Incidence

Although it is clear that the SEM provides better estimates of abortion *prevalence* than the personal interviews, we do not know how the SEM and face-to-face estimates compare to external, independent estimates of abortion *incidence* that are considered to be relatively accurate. For the Philippines, an indirect estimate of abortion incidence is fortunately available for 2000, just four years before the CBS data were collected. This estimate is derived from the AICM, which calculated an annual rate of 27 abortions per 1,000 women aged 15–44 and an annual total of 473,408 induced abortions (Juarez et al. 2005). This total was constructed by applying a multiplier to the number of women hospitalized for complications of induced abortion in 2000 (78,901 women).

To assess the completeness of the estimates from the SEM and personal interviews, we need to make the measures directly comparable with the AICM estimates. Below we propose a way to convert estimates of prevalence (the proportion of women who have ever had an abortion) into estimates of rates (the number of abortions per 1,000 women per year). To approximate rates, we need to know the average number of abortions among women who have ever had an abortion. In addition, we assume that the average number of years of exposure to an abortion is equivalent to the median age of the population of women of reproductive age, minus the age at which exposure to pregnancy/abortion begins. Here we assume that age to be 15 years (which is also the beginning of the age-range that we base prevalence and incidence on). As the median age of the sampled CBS population is 31 years, the median number of years of exposure is estimated at 16 (31–15). With these two parameters in hand, we can convert abortion prevalence into an abortion rate as follows:

Estimate of abortion rates =
[(abortion prevalence * mean number of abortions among women who have ever had an abortion)/(median number of years of exposure)] * 10

The conversion requires the following steps:
(a) the percentage of women who have ever had an abortion is multiplied by the mean number of abortions among these women to obtain an estimate of the number of abortions occurring among every 100 women;
(b) the result from (a) is divided by the median years of exposure to the risk of abortion to obtain the number of abortions occurring each year among every 100 women; and

(c) the result from (b) is multiplied by 10 to provide an approximate annual abortion rate per 1,000 women of reproductive age.

However, since we lack accurate data on the average number of abortions among Filipino woman who have ever had an abortion, we propose three possible scenarios to approximate that information.

Scenario 1.
We assume no repeat abortions and that women who have ever had an abortion have only one abortion over their lifetime. This assumption generates a lower bound that corresponds to a minimum abortion rate and is likely to be an underestimate, as it is highly likely that some women will experience more than one abortion over their lifetime.

Scenario 2.
We assume that each woman who has ever had an abortion will have, on average, 1.2 abortions by the end of her reproductive years. This value, which is used by WHO in its world abortion estimates when information for a country is unavailable (Ahman and Shah 2007), takes into account the high likelihood that some women will have more than one abortion over their lifetime. This seems plausible and reasonably approximates the experience of women in the Philippines. To put the value of 1.2 into perspective, this indicator is 1.7 in the United States, based on a nationally representative survey of abortion patients (Special tabulations of data published in Jones et al. 2006).

Scenario 3.
To provide an upper bound to our estimates, we assume that each woman who has had an abortion will have, on average, 1.4 abortions over her lifetime, based on data from the 2004 CBS conducted in the Philippines.*

In addition to the three estimates of prevalence discussed so far—the face-to-face interview estimate, the SEM estimate, and the combined SEM estimate (which includes the additional abortions not reported in the SEM but reported in the personal interviews)—we discuss an additional estimate that is useful for determining the accuracy of abortion reporting. This is prevalence among women aged 30–34 years old, the age-group with the highest reported level and thus the most complete reporting of abortion. We consider prevalence among 30–34-year-olds to be the "best estimate" and discuss values generated by the combined SEM (18.3%) and the combined SEM (22.7%).

Table 6 presents a range of estimates—lifetime prevalence, annual rates and their level of underreporting relative to the AICM—for each of the three scenarios regarding the average numbers of abortions among women who have ever had an abortion (1.0, 1.2 and 1.4). The three scenarios provide useful information. Scenario 1—no repeat abortions—represents the minimum abortion rate that can be derived from the self-reported abortions in the personal interviews and the SEM; the real abortion rate would most likely be higher. Scenarios 2 and 3 can be considered more plausible for estimating more realistic abortion rates. For each of these three assumptions, we present estimates derived from the two approaches—the face-to-face interviews and the SEM (adjusted and unadjusted estimates for both all women and 30–34-year-olds only, and an average of all four SEM estimates).

Annual abortion rates derived from the personal interview data under the three scenarios range from 1.0 to 1.4 abortions per 1,000 women aged 15–44, rates that vastly underrepresent the AICM rate of 27 per 1,000 (Juarez et al. 2005). This finding reconfirms that face-to-face reporting of abortions hugely underestimates actual incidence. The annual abortion rates generated by the SEM alone range from 9 to 13 per 1,000 women of reproductive age, depending on the assumptions regarding women's average number of abortions. Once we adjust the SEM data to include the 22 positive-negatives (abortions reported in the interviews but not in the SEM), the rates for the three scenarios are slightly higher (10–14 abortions per 1,000 women per year). Likewise, if we accept that prevalence among all Filipino women most closely resembles the values among 30–34-year-olds, the rates are 12–16 abortions per 1,000 using the unadjusted SEM data, and slightly higher at 14–20 per 1,000 across the three scenarios using the adjusted SEM data.

Clearly, all 16 abortion rates derived from the SEM data (Table 6) underestimate the AICM annual rate of 27 abortions per 1,000 women. To determine the SEM's level of underreporting, we focus on the most likely prevalence (i.e., that among 30–34-year-olds) under the most plausible scenario, in which women who have had an abortion will have an average of 1.2 over their lifetime. The resulting abortion rate from the SEM alone is 13.8 per 1,000

*This assumption is based on the average number of *pregnancies* that women attempted to end among those who said they had made at least one abortion attempt in their interview. Although the socioeconomic profile of women who reported having attempted an abortion in their interview is somewhat different from that of women who reported an abortion in the SEM, the estimate of 1.4 lifetime abortions among those having an abortion is a reasonable upper bound, since it is based on real experiences reported by Filipino women.

women, and from the adjusted SEM it is 17.0 per 1,000, results that underestimate the AICM rate by 37–49%.

Finally, averaging all four SEM estimates using the assumption that women having an abortion will have a mean of 1.2 abortions gives us a more conservative annual rate of 13.5 abortions per 1,000 women aged 15–44. Thus, based on this scenario, the abortion rate derived from the SEM underestimates the AICM rate by about 50%.

Advantages and Disadvantages of the SEM

More applications of the method are needed to better understand its specific strengths and weaknesses. Nonetheless, the method has already demonstrated the following five distinct advantages in its application in the Philippines:

1) low cost of data collection when added on to an already funded survey;

2) ease of data collection;

3) ease of calculating the method's output (an estimate of the prevalence of induced abortion);

4) linkage with data from the main survey that provides background, behavioral and attitudinal characteristics of women who have had an abortion; and

5) improvement (tenfold in this application) in reporting of induced abortion over face-to-face interviews.

The method also has the following notable limitations:

1) Abortion prevalence obtained through the method still underrepresents the true level of induced abortions. In the two countries that have both SEM and AICM estimates, the Philippines and Colombia, the SEM underestimated abortions by 50% in the Philippines and by 25% (in urban Colombia). However, the level of underreporting that persists with the SEM could be different in other countries.

2) The general lack of independent, robust estimates of induced abortion in most countries makes it difficult to assess how far an SEM-generated estimate may be from the real level of induced abortion in a given country.

Conclusion

This chapter provides new evidence on self-reported abortions in a setting where the procedure is highly legally restricted and very stigmatized. Little is known about the validity of the SEM, so it is important to examine its strengths and weaknesses carefully. Comparing three approaches to estimating prevalence—the SEM, face-to-face interviews and the AICM—throws some light on the difficulty of measuring abortion in a setting where the procedure is practiced clandestinely.

A relatively large proportion of Filipino women were willing to report ever having had an abortion in the highly private SEM (15.1%), a finding that is encouraging for estimating overall abortion prevalence. As expected, the proportion of women reporting an abortion in a face-to-face interview is very low (1.6%) and these women are a selective group in terms of being better-educated than women reporting an abortion in the SEM. For the Philippines and similarly conservative environments, we do not recommend estimating induced abortion through asking women about their abortion experience in face-to-face interviews, despite the approach's advantage over the SEM in gathering more in-depth individual data on women who have abortions.

Abortion reporting using the SEM approach was more complete and thus provides a more accurate profile of women who obtain abortions in the general Filipino population. Because the method confers greater privacy and confidentiality, women from different demographic and socioeconomic characteristics appear to be willing to acknowledge that they have had an abortion.

We recommend using the SEM to estimate overall abortion prevalence and to understand how abortion is related to women's characteristics, including other fertility-related behaviors. One attractive feature of the method is that a survey does not have to be conducted from scratch but is "piggybacked" onto a survey that is already in progress. As such, an application of the SEM could be done at almost no additional time or cost. The SEM was shown to have a nearly 99% sensitivity rate, which makes it a robust method. Despite the method's advantages, however, it yields an abortion rate that underestimates the rate derived from the more accurate AICM by about 50% (13.5 per 1,000 vs. 27 per 1,000).

However, one huge advantage of the SEM over the AICM is its relative simplicity. The AICM requires a large investment of effort and money, whereas the SEM is relatively easy to implement and costs little if the module is added on to an already funded national demographic and fertility survey.

We suggest the following areas for future research:

- Further testing of the SEM is required in other countries, particularly those where AICM estimates are available to verify whether the level of underreporting in other settings is similar to that in the Philippines.
- Further methodological efforts are needed to more adequately identify the link between abortion prevalence and abortion rates, and to derive more adequate approaches and adjustments for converting prevalence into rates.
- Further exploration is needed to understand how women could become more confident in reporting an abortion in a sealed envelope module, possibly by using a qualitative approach.

The case study conducted in the Philippines shows

that the SEM approach is a methodological advance in this environment, producing better, less biased abortion estimates than those produced through personal interviews. This more accurate information is essential to guiding the formation of policies and programs to improve the prevention of unplanned pregnancy, and thereby reduce unsafe abortion. National statistical agencies should apply the SEM in demographic and fertility surveys to learn more about the level of abortion where such information is absent and desperately needed.

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TABLE 1. Questions used to estimate abortion prevalence in face-to-face interviews and sealed envelope module, 2004 CBS, Phillippines; and information used to indirectly estimate abortion incidence, 2000 AICM, Philippines

PANEL A

Face-to-face questions

Q601. Thinking back on your life, were you ever pregnant when you did not want to be?

Q602. Has there ever been any time when you were pregnant and you felt that the pregnancy would have caused difficulties for you because of your own circumstances or others' opposition to the pregnancy, even though you may have desired it?

Q603. How many times has this happened to you?

Q604. What were the reasons you did not want that pregnancy at that time?

Q606. Thinking about this pregnancy, were you or your partner using something to avoid or delay getting pregnant in the month you became pregnant?

Q607. What method(s) were you using in the month you became pregnant?

Q608. What is the order of this pregnancy?

Q609. Did you or someone else consider doing something to stop that pregnancy?

Q610. Did you or someone else ever do or use anything to stop that pregnancy or any other pregnancy?

Q611. How many times did you or someone else do or use anything to stop a pregnancy?

The following questions were asked about the most recent attempt to end the pregnancy (if a woman had made more than one such attempt):

Q629. What was the outcome of your first step to stop that pregnancy?

1 - Stopped the pregnancy but had complications
2 - Stopped the pregnancy and had no complications
3 - Did not stop the pregnancy and had complications
4 - Did not stop the pregnancy and did not have complications
5 - Did not stop the pregnancy, provider could not attend or help
6 - Did not stop the pregnancy, I could not afford the cost
7 - Other (SPECIFY): _____

And an additional question was asked to women who made more than one attempt to abort the pregnancy (after detailed questioning about those attempts):

Q637. What was the final outcome of (ALL) your attempt(s) to stop that pregnancy?

1 - Did not succeed, gave birth and had complications
2 - Did not succeed, gave birth and did not have complications
3 - Succeeded, did not give birth and had complications
4 - Succeeded, did not give birth and did not have complications
5 - Other (SPECIFY): _____

PANEL B

Sealed envelope module

1. Have you ever had any pregnancy that was not carried to full term?
2. How many pregnancies were not carried to full term?
3. Did you or a doctor or anyone else do something to cause the premature termination of your pregnancy?
4. When did this happen? Before 1995 / Between 1995 and 2000 / After 2000
5. Have you ever experienced a delay in your menstruation?
6. Did you or a doctor or anyone else do anything to induce menstruation?
7. When did this happen? Before 1995 / Between 1995 and 2000 / After 2000

PANEL C

Information needed to estimate abortion incidence, AICM

Number of hospital complications due to abortion (Hospital records data)

Number of induced and spontaneous abortions of women treated for hospital complications (Clinical data)

Proportion of women in the population likely to have an abortion (Health Professionals Survey)

Proportion of women who had an abortion likely to have a complication that requires hospitalization (Health Professionals Survey)

Proportion of women who had a complication and were treated in a hospital (Health Professionals Survey)

TABLE 2. Percentage of women aged 15–49 reporting an abortion or an abortion attempt, 2004 CBS, Phillippines

Survey method	% (N=4,094)
SEM	
% reporting had an abortion	15.1 (N=618)
Face-to-face interviews	
% reporting having ever attempted an abortion	5.5 (N=224)
% reported having succeeded in an abortion attempt	1.6 (N=65)

TABLE 3. Percentage distribution of respondents by characteristic, according to survey method, 2004 CBS, Phillippines

	All women		% (and N) reporting an abortion in SEM		% (and N) reporting an abortion in face-to-face interview	
Characteristic	%	(N)	%	(N)	%	(N)
Age (yrs.)						
15–19	10.6	433	5.9	36	8.2	5
20–24	16.3	665	15.2	94	11.6	8
25–29	17.5	717	16.9	104	10.7	7
30–34	18.2	745	22.1	137	19.1	12
35–39	16.7	682	17.6	109	17.3	11
40–45	12.5	510	14.1	87	20.8	14
45–49	8.3	341	8.2	51	12.2	8
Education						
≤ elementary	31.3	1,282	28.9	179	48.8	32
High school	47.0	1,924	49.1	304	37.6	25
College or higher	21.7	888	21.9	136	13.6	9
Wealth						
Low econ status	70.6	2,892	67.8	419	70.1	46
High econ status	29.4	1,202	32.2	199	29.9	19
Marital status						
Single	16.7	683	9.0	56	1.6	1
Marr. or consen. union	79.8	3,269	87.7	542	87.0	57
Separ., Divor., Widow.	3.5	142	3.3	21	11.4	7
Total	100.0	4,094	100.0	618	100.0	65

TABLE 4. Discrepancies between abortion data collected with face-to-face interviews and the SEM, 2004 CBS, Phillippines

Face-to-face interview	SEM				Measure of consistency
	No abortion	Yes abortion	Total	%	Positive and negative - consistency across the two sets of questions
No abortion	3,454	575	4,029	14.0	14% negative positives (did not report abortion in interview, but did in the SEM)
Yes abortion	22	43	65	0.5	0.5% positive negatives (reported an abortion in interview, but not in SEM)
				1.1	Yes in both, interviews and SEM
Total	3,476	618	**4,094**	84.4	No in both, interviews and SEM

TABLE 5. Calculation of abortion prevalence according to data collection method, among all women and among those who had ever had sex, by age-group, 2004 CBS, Philippines

	Total no. of women 15–49	No. of women reporting having had an abortion			No. of women ever had sex	% who ever had an abortion			
		Face-to-face interview	SEM	Adjusted SEM*		Face-to-face interview	SEM	Adjusted SEM*	Adjusted SEM,* sexually experienced only
	N (1)	N (2)	N (3)	N (4)	N (5)	% (2)/(1)=(6)	% (3)/(1)=(7)	% (4)/(1)=(8)	% (4)/(5)=(9)
5-year age-group									
15–19	433	5	36	41	106	1.2	8.4	11.4	38.9
20–24	665	8	94	97	505	1.1	14.2	17.5	19.2
25–29	717	7	104	105	656	1.0	14.5	17.6	16.1
30–34	745	12	137	141	716	1.7	18.3	22.7	19.7
35–39	682	11	109	110	665	1.7	15.9	19.4	16.6
40–45	510	14	87	91	504	2.7	17.1	21.5	18.1
45–49	341	8	51	54	328	2.3	14.9	18.9	16.4
Total 15–49	4094	65	618	640	3480	1.6	15.1	15.6	18.4

*Adjusted to include the 22 women who reported an abortion during their personal interview but not on the SEM questionnaire, assigned to their corresponding age-group.

TABLE 6. Comparison of estimates of abortion prevalence and rates, by assumptions for average numbers of abortions among women who have had an abortion (1,1.2 and 1.4); and level of underreporting of abortion rates relative to the AICM value of 27 per 1,000; all according to interview approach

	Abortion prevalence (% of women who have ever had an abortion)			Annual abortion rate (no. of abortions per 1,000 women) estimated from prevalence			% of underreporting relative to AICM rate of 27 abortions per 1,000 women		
	Assumption regarding average number of abortions among women who ever had an abortion								
Data collection approach	1.0 abortion	1.2 abortions	1.4 abortions	1.0 abortion	1.2 abortions	1.4 abortions	1.0 abortion	1.2 abortions	1.4 abortions
Face-to-face interview	1.6	1.9	2.2	1.0	1.2	1.4	96.3	95.6	94.8
SEM									
All women of reproductive age									
Unadjusted	15.1	18.1	21.1	9.4	11.3	13.2	65.0	58.1	51.1
Adjusted*	15.6	18.7	21.8	9.8	11.7	13.7	63.9	56.7	49.4
30–34-year-olds (considered best estimate for all women)									
Unadjusted	18.3	22.0	25.7	11.5	13.8	16.0	57.6	49.1	40.6
Adjusted*	22.7	27.3	31.8	14.2	17.0	19.9	47.4	36.9	26.3
Average of all four SEM estimates	**17.9**	**21.5**	**25.1**	**11.2**	**13.5**	**15.7**	**58.5**	**50.2**	**41.9**

*Adjusted to include the 22 women who reported an abortion during their personal interview but not on the SEM questionnaire, assigned to their corresponding age-group.

Notes: The assumption of an average of 1.2 abortions among women who have ever had an abortion comes from Ahman and Shah (see references). The assumption of an average of 1.4 abortions among women who have ever had an abortion is equivalent to the average number of pregnancies that women reported attempting to terminate in their face-to-face interview. Conversion of prevalence into rates used the median number of years of exposure to the risk of pregnancy—the median age of women in the 2004 CBS sample (31 years) minus the median age at first sex (age 15) = 16 years of exposure.

APPENDIX

a) First request for informed consent—at start of personal interview.

INTRODUCTION.

We are undertaking a survey among women in this community about unwanted pregnancy because it has been a great problem in our country and the whole world. Unwanted pregnancy is a very important problem needing solutions because of impairing effects on the health, well-being and future fertility of women and teenage girls.

We urge you to become our partners in solving unwanted pregnancy through the information you provide. Your help is very important in enabling us to have a better understanding and picture of this problem in our country. The results of this study will help us develop appropriate ways of addressing the problem and plans for better reproductive health services.

You provide us information in two ways:

I, the interviewer ask you questions; and

you fill the answers yourself to the questions in this piece of paper.

Your views on these issues are very important and we would be very grateful for your cooperation. We assure you that any information you provide will be:

strictly confidential; and

used for research purposes only and will never be used against you.

Your participation is voluntary, and you may stop the interview at any time. Do I have your permission to continue?

1 - Yes

2 - No

[If yes] I certify that the respondent has given permission to conduct the interview with her.

Interviewer's signature: _____

b) Second request for informed consent—at end of personal interview before initiating self-administered, sealed envelope questionnaire.

The part of this survey in which I ask you questions is complete. We will now move to the self-administered section. This is a piece of paper with some questions for you to read and answer yourself. Many women may feel more comfortable answering these questions this way. When you finish filling in the page, please put your answers in this envelope and seal it. This sealed envelope will remain closed until it is sent to our central office. I would like to remind you that **any information you provide will be strictly confidential and your name will not be linked to your answers. Do I have your permission to continue?**

*[*ONLY FOR LITERATE WOMEN. *GIVE RESPONDENT THE SELF-ADMINISTERED SECTION AND A PEN. IF SHE IS UNABLE TO READ AND WRITE OR DOES NOT WANT TO COMPLETE THE SELF-ADMINISTERED PART, END THE INTERVIEW HERE AND THANK HER.]*

That is the end of my questions, and I want to thank you for your help on this important project.

807. FILTER – LITERATE AND ILLITERATE WOMEN V807 ☐

ILLITERATE WOMEN (IF SECTION 1, Q108 and Q109 answers No=Code 2)

1 ➔ ***[FINISH THE INTERVIEW AND THANK THE RESPONDENT:***

That is the end of my questions, and I want to thank you for your help on this important project]

Iyon na po ang katapusan ng aking pagtatanong at ako po ay nagpapasalamat sa inyong tulong sa importanteng proyektong ito.

LITERATE WOMEN (IF SECTION 1, Q108 and Q109 answers ≠ Code 2)

2 ➔ ***[CONTINUE]*** ↓

IDENTIFICATION	☐☐☐☐☐

SELF ADMINSTERED PART OF THE QUESTIONNAIRE. Please read carefully and write answers to the following questions or tick the appropriate answer. Once you complete the questions please place your answers in the envelope and seal it.	***DO NOT FILL – UP THE SHADED PART***
1. Have you ever had any pregnancy that was not carried to full term? ○ Yes ○ No ➔ ***[GO TO QUESTION 3]***	SAQ1 ☐
2. How many pregnancies were not carried to full term? NUMBER: ___ ___	SAQ2 ☐☐
3. Did you or a doctor or anyone else do something to cause the premature termination of your pregnancy? ○ Yes ○ No ➔ ***[GO TO QUESTION 5]***	SAQ3 ☐
4. In what month and year did this happen? ***[REFER TO THE LAST HAPPENING. WRITE WHAT YOU REMEMBER, YEAR OR MONTH OR MONTH AND YEAR]*** Month : ___ ___ Year : ___ ___ ___ ___ ***IF YOU CANNOT REMEMBER MONTH AND YEAR, PLEASE CHECK THE APPROPRIATE PERIOD WHEN THIS HAPPENED.*** ○ Before 1995 ○ Between 1995 and 2000 ○ After 2000	SAQ4m ☐☐ SAQ4y ☐☐☐☐ SAQ4a ☐
5. Have you ever experienced a delay in your menstruation? ○ Yes ○ No	SAQ5 ☐
6. Did you or a doctor or anyone else do anything to induce menstruation? ○ Yes ○ No	SAQ6 ☐

7. In what month and year did this happen? ***[REFER TO THE LAST HAPPENING.]***

Month : ___ ___

Year : ___ ___ ___ ___

IF YOU CANNOT REMEMBER MONTH AND YEAR, PLEASE CHECK THE APPROPRIATE PERIOD WHEN THIS HAPPENED.

- ○ Before 1995
- ○ Between 1995 and 2000
- ○ After 2000

SAQ7m ☐☐

SAQ7y ☐☐☐☐

SAQ7a ☐