Introduction

Lisa Remez, Susheela Singh and Alyssa Tartaglione

The social and political sensitivity surrounding induced abortion makes it very difficult to conduct high-quality research to measure its incidence. This is particularly true where abortion is illegal, but occurs in countries where abortion is broadly legal as well. These same factors also constrain research on morbidity resulting from unsafe abortion. As a result, there are large evidence gaps in the documentation of abortion incidence and abortion-related morbidity. One major problem in carrying out research on abortion is the generally high level of underreporting. For example, with surveys of women, a high proportion of respondents will not report their abortion experience because of the strong stigma against abortion. In addition, data on abortion from such surveys are likely to be nonrepresentative of all women, because underreporting typically varies according to women’s characteristics. As a result, measures of abortion incidence, prevalence and morbidity from face-to-face surveys of women are likely to be both underreported and biased.

Surveys of providers are also problematic for a number of reasons. Such surveys may not be possible in countries where the procedure is illegal for obvious reasons (fear of prosecution), and even if they are conducted, underreporting will likely be high. Where abortion is legal under broad indications, the numbers of official abortions may be low because private-sector providers may not be required to report to government statistical bodies; because public stigma affects providers’ willingness to openly acknowledge that they perform abortions; because providers who do not meet all requirements to do the procedure may be reluctant to participate in surveys; and because others may not want to have this source of income recognized by authorities.

In summary, the quality of data on abortion incidence or prevalence is problematic both when women and providers serve as data sources, regardless of the legal status of abortion. Thus, data-quality issues persist in countries where abortion is legally permitted under broad criteria, as well as in countries where it is permitted only under very restricted circumstances, such as to save the life of the pregnant woman. In the case of morbidity, data collected from facilities that provide postabortion care can be of reasonably high completeness and quality. These data are valuable in documenting the health consequences of unsafe abortion and the medical care provided, but they do not represent morbidity from abortion among women who suffer complications but do not obtain treatment at a facility.

The objective of the following chapters is to contribute to addressing these data-quality issues by improving research on the measurement of abortion incidence and abortion-related morbidity. To do so, they provide overviews of existing methods of and approaches to estimating abortion incidence and morbidity. The volume supplies detailed descriptions and examples of key methods. Its goal is to provide a clear understanding of the relative merits of available study designs to quantify abortion incidence and abortion-related morbidity. Information on methodologies will greatly assist researchers worldwide in carrying out studies on these topics, particularly in settings where abortion is legally restricted.

This volume is primarily based on papers presented at a seminar titled Measurement of Abortion Incidence, Abortion-Related Morbidity and Mortality, which took place in Paris, France, in November of 2007. The seminar was convened by the International Union for the Scientific Study of Population’s (IUSSP) Scientific Panel on Abortion, in collaboration with the Centre Population et Développement (CEPED) and the Centre de Recherche et de Documentation sur l’Amérique Latine (CREDAL). The goal of the meeting was to stimulate and advance research on the measurement of abortion incidence and its morbidity by bringing together researchers who had developed and applied different methodologies and approaches. Key papers from the seminar were selected to be revised for inclusion in the report. In addition, a few chapters were added on notable methods and topics that were not covered by the papers presented at the seminar.

The following chapters present a comprehensive appraisal of the state of abortion estimation methodology today. Many estimation approaches of both incidence and morbidity have been developed for use in contexts where abortion is legally restricted, some are used mainly where abortion is legally permitted under broad circumstances, and some are relevant in both contexts. As such, the volume is relevant for research in a wide range of contexts in
both developed and developing countries. Wherever possible, the chapters provide a way to validate the approach in question to assess how well it works to accurately quantify abortions or their morbidity.

Methods measuring the incidence of induced abortion generally fit into two categories. In the first, direct methods, women are directly interviewed about their abortion experience through surveys that can use community-based, convenience or random samples. The degree of underreporting in a direct survey will vary by country and is associated with each society’s cultural and religious framing of abortion. Societies that are tolerant of abortion will have less underreporting, and the stronger the stigma surrounding abortion, the more likely women will not report their abortions in a direct, personal interview.

Because of the sensitivity of the topic and the tendency for abortion to be heavily underreported, women who self-report an abortion tend to be a highly selective group, which automatically introduces bias into the resulting measures of abortion incidence, prevalence or morbidity. The volume provides information on approaches to remove some of that bias through approaches that shield women’s identities from interviewers or that use qualitative techniques to build rapport to lessen reluctance to report an abortion. One of the greatest strengths of direct methods is that they can obtain information on women’s characteristics (such as demographic, social and economic characteristics) that help to better understand the barriers women face in accessing safe abortion and treatment for unsafe abortions. Direct surveys also yield invaluable details about the process of seeking an abortion and whether women were practicing contraception (and, if so, which method they were using) when they conceived the pregnancy that ended in an abortion.

Approaches in the second major category, indirect methods, are often most useful when measuring abortion incidence and related morbidity in settings where abortion is highly stigmatized, and thus illegal and unsafe. These methods rely on retrospective hospital records, prospective health facility data, and retrospective surveys of health professionals and facilities. Other indirect methods interview third parties about others’ abortions, and several integrate elements from both direct and indirect approaches to assure the most complete—and most accurate—reporting possible.

This volume presents many examples of direct and indirect methods of estimating abortion. It is divided into two main sections. The first section (Chapters 1 through 9) covers fundamental methods and approaches to estimating abortion incidence, including those that have been used for decades as well as new and less well-known methods. The second section (Chapters 10 through 14) covers methodologies for estimating and examining morbidity resulting from unsafe abortion, a research area that is somewhat less developed. All chapters provide detailed descriptions and discussions of how the methodologies have been applied and indicate their strengths and limitations. We anticipate that this volume will be helpful to researchers and students conducting abortion studies, and to advocates, program managers, service providers and others who use the studies’ results for policy change, program development and public health interventions. Below we give a brief summary of the material covered in each chapter.

CHAPTER 1. Generating National Unsafe Abortion Estimates: Challenges and Choices highlights the need for more national-level estimates of unsafe abortion in countries that legally restrict the procedure. The authors stress the importance of measuring the magnitude of unsafe abortion at the country level to inform national strategies to improve women’s reproductive health. Country-level data on the scope of unsafe abortion are not only essential for local advocacy and intervention but are useful for building an accurate knowledge base on which to design and implement solutions. The chapter describes the methodology used by the World Health Organization (WHO) to make regional and global estimates of unsafe abortion and outlines how country-level assessments of unsafe abortion can be developed by drawing on existing data. The chapter identifies regions where country-level data are most needed, underlines the importance of using existing and often untapped data sources, and draws attention to lesser-known aspects of incidence research.

CHAPTER 2. Measuring the Incidence of Abortion in Countries with Liberal Laws reviews and discusses data-quality issues affecting a range of sources of data on legal abortion. These include central government agencies, surveys of abortion providers, surveys of women, insurance reimbursement reports and hospital statistics. The chapter describes in detail the data collection systems of eight countries (Australia, Canada, China, Finland, India, the Russian Federation, the United States and Vietnam). It provides examples of existing data collection efforts for countries whose abortion laws have been newly liberalized and whose systems are still being put into place, and where improvements in established data collection procedures are needed. The chapter details the importance of using population data to convert numbers of abortions into uniform measures of annual rates (per 1,000 women of reproductive age) and ratios (per 100 live births) for
cross-country and regional comparisons. It also discusses issues that remain to be solved to achieve more complete reporting of abortion in settings where the procedure is legal and available.

CHAPTER 3. Three Approaches to Improving the Use of Face-to-Face Interviews to Measure Abortion presents modifications to standard approaches toward interviewing women about abortion. Two incorporate a qualitative data component. The first, a protocol known as the Abortion Frequency Survey, was applied and validated in Matlab, Bangladesh. It used a semistructured questionnaire with both open- and closed-ended questions to elicit better reporting of abortions by taking into account the underlying cultural context of abortion. The second, a two-day, “narrative” survey technique was applied in Madhya Pradesh, India. That technique started out with qualitative questions to build rapport with women before asking them to report their abortion experiences as part of the broader story of their lives. The third approach involved the addition of a special abortion module to standard Reproductive Health Surveys conducted in Eastern Europe. In these former communist countries, stigma against abortion has been relatively weak and, as a result, women rarely under-report their abortions. Government reporting systems, however, have increasingly become more inefficient and incomplete, so in this environment, direct questioning of women about abortion. Two incorporate a qualitative data component. The first, a protocol known as the Abortion Frequency Survey, was applied and validated in Matlab, Bangladesh. It used a semistructured questionnaire with both open- and closed-ended questions to elicit better reporting of abortions by taking into account the underlying cultural context of abortion. The second, a two-day, “narrative” survey technique was applied in Madhya Pradesh, India. That technique started out with qualitative questions to build rapport with women before asking them to report their abortion experiences as part of the broader story of their lives. The third approach involved the addition of a special abortion module to standard Reproductive Health Surveys conducted in Eastern Europe. In these former communist countries, stigma against abortion has been relatively weak and, as a result, women rarely under-report their abortions. Government reporting systems, however, have increasingly become more inefficient and incomplete, so in this environment, direct questioning of their abortion incidences. The authors also point out that while the true abortion rate is unknown, different survey designs affect completeness within the same country; as a result, there is need for further work to improve measurement of incidence in Eastern Europe.

CHAPTER 4. Examples of Model-Based Approaches to Estimating Abortion introduces the attractive concept of not having to gather new data on the highly sensitive topic of abortion. Instead, its incidence is indirectly deduced through existing relationships with other fertility determinants. The chapter is divided into two parts. Part I, The Residual Technique, discusses how Bongaarts’s model of the main proximate determinants of fertility—for which standard reproductive health surveys readily supply three of the four main determinants—can be rearranged to yield an abortion index, which is then converted into abortion rates. The residual technique is applied with data for Matlab, Bangladesh, and its validity is assessed through comparison with abortion data collected from a direct Abortion Frequency Survey and results from an application of the indirect Abortion Incidence Complications Method (AICM).

Part II, A Regression Equation Approach to the Estimation of Abortion Rates, is premised on the very high correlation between modern contraceptive use and abortion in 44 countries (most of which are developed countries). From this observation, the author assumes that widely available contraception and fertility information can serve as input data in a regression equation to predict total abortion rates (TARs). TARs from a first equation using both traditional and modern method use are presented for 34 countries, and regression-derived TARs for broad international regions are compared with TARs estimated by the WHO and the Guttmacher Institute. Part II also provides results of a modified regression equation using modern contraceptive use only to predict abortion.

CHAPTER 5. Examples of Methods to Address Under-reporting of Induced Abortion: Preceding Birth Technique and Randomized Response Technique evaluates two indirect methods that specifically address underreporting of abortion in contexts where abortion is illegal or access is highly restricted. The Preceding Birth Technique (PBT) was employed in a study in Ghana and the Randomized Response Technique (RRT) was used in a study in Mexico. Applying the PBT to abortion research involves adapting a method that was used to collect stigma-free information on previous births to instead collect data on previous abortions. With RRT, women (who can be semi-literate or illiterate) are asked to privately respond yes or no to one of two questions that the interviewer is unaware of, on a form that is separate from other questions. One question has a known probability and the other asks the sensitive question about abortion. The prevalence of abortion can then be calculated from the responses. These two methods collect only data on whether women have ever had an abortion (prevalence) and, given the data collection design, cannot identify the characteristics of such women.

CHAPTER 6. The Abortion Incidence Complications Method: A Quantitative Technique describes this indirect approach that builds on the number of women treated in health facilities for abortion complications to estimate the total number of induced abortions. The AICM first yields data on numbers and rates of women receiving treatment for complications of induced abortion, either through national hospital discharge data or a nationally representative Health Facilities Survey. Then, respondents to a Health Professionals Survey are asked three sets of questions that are used to calculate a multiplier by which to inflate the morbidity data to take into account those women who do not develop complications or who do not get formal treatment. (These questions ask about the distribution of abortions by type/provider, the probability of complications...
with each respective type/provider, and women’s likelihood of getting treatment.) The AICM provides estimates of the total annual number of women obtaining induced abortions and the annual rate of abortion, nationally and by region. The method is especially useful in countries where abortion is highly restricted by law or where abortion may be permitted under broad criteria but its practice is unsafe. The chapter assesses applications of the AICM over the past 20 years in diverse settings.

CHAPTER 7. Measuring Abortion with the Anonymous Third Party Reporting Method also reports on a way of measuring abortion where the procedure is illegal, not openly tolerated and socially stigmatized, but in a country context where women are knowledgeable about and willing to report on the abortion experience of their close friends/relatives. In this innovative method, neither a woman who has had an abortion nor a provider who has supplied one is asked to disclose socially sanctioned information about themselves. Instead, individuals are asked to report on the abortions of their confidants (i.e., those of the women who confide in the respondents). The chapter describes an application in Burkina Faso of this method to obtain more complete reporting by asking about the abortions of others. Qualitative interviews showed that, in this setting, women who are unwilling to talk about their own abortions were more forthcoming about abortions obtained by women in their social network. The methodology converts information on confidants’ abortions into measures of abortion prevalence.

CHAPTER 8. The Sealed Envelope Method of Estimating Induced Abortion: How Much of an Improvement? reviews another method that is useful in areas where strong stigma against abortion means women are highly unlikely to report their abortions in a face-to-face interview. In the sealed envelope method (SEM), a short, private self-administered survey is added on to and linked with personal interviews conducted as part of a community-based survey. The add-on questionnaire is self-administered in private by literate women and then placed in a sealed envelope, thus assuring complete confidentiality. The chapter presents findings on abortion prevalence from an application of the SEM in the Philippines. Because the data from the face-to-face interviews and the self-administered interviews are linked, the method reveals the characteristics of individual women who are more likely to report an abortion with each approach. To assess which method captures more abortions among the same women, the authors compare abortion prevalence rates from the two data collection approaches. Validation of the method’s results requires that they be assessed against other estimates of abortion. Fortunately, the widely regarded quantitative technique, the AICM, was applied in the Philippines just a few years earlier; unfortunately, the SEM yields abortion prevalence, whereas the AICM yields abortion rates. Thus, to make the results closely comparable and enable validation, the authors propose a novel method of converting abortion prevalence into abortion rates.

CHAPTER 9. Data Triangulation: Using Multiple Methods to Estimate and Validate Abortion Incidence and Prevalence builds further on the validation efforts just mentioned. The strategy of data triangulation emphasizes the importance of using multiple estimation methodologies—qualitative, quantitative, direct and indirect—to enhance confidence in the final results. A triangulation strategy is useful in all regions of the world and in all legal settings because abortions are universally underreported. Triangulation overcomes some of each individual method’s limitations by using two or more research techniques and cross-checking the results for consistency. The strategy helps researchers determine which methodologies yield the most accurate estimates in a given setting or population. The chapter summarizes findings from several studies that incorporated multiple estimation techniques, including studies conducted in Argentina, Bangladesh, Mexico and the United States.

CHAPTER 10. Prospective Approach to Measuring Abortion-Related Morbidity: Individual-Level Data on Postabortion Patients starts the second part of the report, which is devoted to methods of estimating abortion morbidity. The estimation techniques discussed so far have all involved collecting retrospective data on past events. In this chapter, the author describes the evolution of an early WHO methodology of collecting prospective data on women admitted for treatment, and using their symptoms and contraceptive-use information to label the obstetric event as a miscarriage or a probable, likely or certain induced abortion. In the Prospective Morbidity Method (PMM), the WHO methodology is refined to measure the extent and severity of postabortion morbidity based on symptoms. It involves collecting information for all women receiving postabortion services (for any pregnancy loss, spontaneous or induced) at a representative sample of facilities over a period of a few weeks, and using this information to classify patients according to the severity of their symptoms as high, moderate or low. In settings where abortion is legal or carries relatively little stigma, postabortion patients can be interviewed themselves about their
CHAPTER 11. Use of Health System Data to Study Morbidity Related to Pregnancy Loss focuses on the ready availability of health system data to gather information on in-patient hospitalizations for pregnancy loss at the national and state levels in the case study of Mexico. The authors use ICD-10 codes diagnosing “pregnancy with abortive outcome” for a five-year period from Mexico’s four main public-sector health systems to calculate annual pregnancy-loss hospitalization rates for the country as a whole and for each state. These rates include losses from abnormal pregnancies (including those from ectopic and molar pregnancies) as well as losses due to spontaneous and induced abortions. The ICD-10 codes also allow for an assessment of severe complications from all types of pregnancy losses. The author compares hospitalization rates across states and also over time to detect trends. Assuming current patterns remain unchanged, the authors project hospitalization rates for the next 10 years to estimate future demand on public health institutions for needed care following pregnancies with abortive outcomes.

CHAPTER 12. Quantitative Measures of Self-Reported Data on Abortion Morbidity: A Case Study in Madhya Pradesh, India tries to standardize measures of self-reported morbidity based on results from the qualitative-quantitative survey approach described in Chapter 3. The data collected were used to develop three measures of registering the severity of abortion-related morbidity: by physical symptoms from an abortion attempt; by the time spent on bed rest to recover from those symptoms; and by a combined variable that incorporates elements of both. The incidence and severity of morbidity varied by how it was measured, suggesting that no single measure accurately captures the subjective notion of severity, and that a standardized, combined-measure approach would work best.

CHAPTER 13. Self-Reported Data on Abortion Morbidity: Using Qualitative Techniques with Community-Based Samples also reports on results of self-reported morbidity, but this time from community-based, qualitative surveys only. This research was conducted in Uganda and Guatemala, both countries where abortion is highly restricted and predominately unsafe. The Community Abortion Morbidity Study (CAMS) was administered among both community members and among providers (formal and informal) who treat complications from unsafe abortion. The studies used a qualitative approach that employed both focus group discussions and in-depth interviews. The chapter lays out the difficulties that arose while studying women’s experiences of abortion morbidity where the restrictive law and culture made participants highly unlikely to mention any experiences of abortion, even those of third parties.

CHAPTER 14. Misoprostol Use and Its Impact on Measuring Abortion Incidence and Morbidity addresses the increasing importance of misoprostol (Cytotec) as a method of self-inducing abortion in highly restricted settings, and the challenges the drug presents in quantifying abortion morbidity and related calculations of incidence. For example, the drug’s relatively mild complications have likely lessened the severity of the health consequences of unsafe abortion, but its incorrect and underinformed use may have also increased the proportion of women who present at facilities. The chapter presents case studies from Latin America where misoprostol-induced abortions are believed to be especially common. The authors report on various ways to assess its use and access, including through national pharmacy sales, direct interviews with women and pharmacists, and pharmacy-based “mystery client” scenarios in which researchers pose as clients to see whether and how vendors dispense the drug. The authors warn about the potential pitfalls of disseminating findings about extensive misoprostol use, which could cause a backlash that tightens restrictions on the drug.

In sum, the chapters described above present a snapshot of the current state of abortion research. Accurate measurement of abortion incidence is essential for a broad array of reasons: From a demographic perspective, abortion is a key component of fertility control that is inextricably tied to unintended pregnancy; from the perspective of gender imbalance, abortion may influence sex ratios if sex-selective abortion is common in a given society; and from a service-provision perspective, abortion is an indicator of unmet need for contraception and for improved contraceptive services. In addition, accurate measurement of abortion incidence (safe and unsafe) is needed to assess the impact of changes in abortion laws and regulations.
It is equally important to have accurate measures of the extent of unsafe abortion and its consequences, which continue to lead to morbidity and mortality worldwide. Results from the rigorous study of unsafe abortion need to be widely disseminated. Morbidity from unsafe abortion has a negative impact on women and their families; puts strain on the resources of public health systems; and results in the loss of economic productivity. Moreover, information on abortion morbidity is essential for estimating the costs of treating abortion complications in health care systems.

Despite the difficulty of measuring abortion incidence and morbidity, it is crucial to continue developing new techniques and advancing existing methodologies. To that end, the volume presents a set of methods to improve the measurement and analysis of abortion incidence in any country, and of abortion morbidity in settings where the procedure is predominantly unsafe. We hope it will be a significant contribution to this field of study and serve as a useful reference in the future.