Fundamental discrepancies in abortion estimates and abortion-related mortality: A reevaluation of recent studies in Mexico with special reference to the International Classification of Diseases

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Abstract: In countries where induced abortion is legally restricted, as in most of Latin America, evaluation of statistics related to induced abortions and abortion-related mortality is challenging. The present article reexamines recent reports estimating the number of induced abortions and abortion-related mortality in Mexico, with special reference to the International Classification of Diseases (ICD). We found significant overestimations of abortion figures in the Federal District of Mexico (up to 10-fold), where elective abortion has been legal since 2007. Significant overestimation of maternal and abortion-related mortality during the last 20 years in the entire Mexican country (up to 35%) was also found. Such overestimations are most likely due to the use of incomplete in-hospital records as well as subjective opinion surveys regarding induced abortion figures, and due to the consideration of causes of death that are unrelated to induced abortion, including flawed denominators of live births. Contrary to previous publications, we found important progress in maternal health, reflected by the decrease in overall maternal mortality (30.6%) from 1990 to 2010. The use of specific ICD codes revealed that the mortality ratio associated with induced abortion decreased 22.9% between 2002 and 2008 (from 1.48 to 1.14 deaths per 100,000 live births). Currently, approximately 98% of maternal deaths in Mexico are related to causes other than induced abortion, such as hemorrhage, hypertension and eclampsia, indirect causes, and other pathological conditions. Therefore, only marginal or null effects would be expected from changes in the legal status of abortion on overall maternal mortality rates. Rather, maternal health in Mexico would greatly benefit from increasing access to emergency and specialized obstetric care. Finally, more reliable methodologies to assess abortion-related deaths are clearly required.

Keywords: maternal health, maternal mortality, abortion, estimation methods, developing countries, International Classification of Diseases

Introduction

Improving maternal health is one of the eight Millennium Development Goals1 stated by the United Nations (UN). Therefore, all UN member states have been implementing policies directed toward promoting health during pregnancy and the postnatal period. Although recent efforts have led to a decrease in maternal mortality by half during the last decade,2 the UN indicates that more efforts are needed to achieve this Millennium Development Goal by 2015.3 In this regard, improving maternal health and decreasing morbidity and mortality from induced abortions are key endeavors for all UN state members, especially for developing countries.4 Clearly, accurate epidemiological
Information about maternal mortality is crucial before proposing evidence-based public health interventions or legal policies regarding women’s health worldwide, as well as for accurately evaluating the effects of such interventions.

Study of actual statistics surrounding induced abortion is difficult in countries where it is restricted; therefore, researchers employ various epidemiologic methodologies to yield estimations around empirically plausible figures. Given their inherent estimative nature, constant challenge and adjustment of the methodologies are mandatory steps to ensure valid, accurate, and reliable abortion estimates. In addition, another important issue to adequately gauge the influence of abortion on maternal health is to consider the relative contribution of other causes of maternal morbidity and mortality. Thus, promoting the use of standardized methodologies along with an appropriate epidemiologic interpretation of the International Classification of Diseases (ICD) are two key endeavors that researchers should follow and policy makers should demand before intervening at a population level. This information becomes particularly important when resources are limited and adequate priorities must be defined to efficiently allocate such resources to improve maternal health, especially in low and middle income developing countries.

When attempting to evaluate how maternal health may be influenced by abortion at a population level, three major epidemiological indicators are frequently taken into account:

- Maternal mortality ratio (MMR): MMR is the acknowledged indicator for assessing maternal health worldwide. It is obtained by dividing the number of maternal deaths (ie, female deaths during pregnancy, childbirth, and puerperium) by the number of live births in a given year. The reliability of this indicator will depend on the quality of the registry of vital statistics of each country, which has greatly improved during the last two decades for several Latin American countries.

- Number of abortions: Many countries which have a liberal abortion law exhibit fairly accessible abortion statistics. However, most Latin American countries restrict induced abortion by law. Therefore, estimation methods are required to obtain approximate figures of induced abortion.

- Abortion mortality ratio or abortion-related mortality ratio (AMR): AMR is similar to MMR, and is calculated as the number of maternal deaths due to abortion divided by the number of live births in a given year. AMR is subject to some ambiguity, depending on what is included in the term “deaths due to abortion.” This ambiguity becomes evident when some researchers include maternal deaths from spontaneous as well as induced abortions to calculate AMR. Thus this acronym may have different meanings depending on the study. Lack of a univocal definition of AMR complicates interpretation of this indicator, especially when assessing maternal mortality associated with induced abortion.

The present work aimed to reevaluate estimation methods employed to obtain abortion figures in countries exhibiting restrictive abortion laws and to re-analyze figures of maternal mortality and abortion mortality presented in recent studies conducted in Mexico as an illustrative case of major discrepancies regarding maternal health indicators in the context of Latin America.

**Abortion estimates**

A recent report published this year in *The Lancet* presented global estimates of induced abortion for different regions, concluding that no progress was observed in Latin America over the last decade. Abortion estimations were based on a combination of in-hospital statistics and surveys of subjective opinion over a limited number of individuals and health institutions rather than on actual vital statistic data, eliciting largely overestimated figures. The validity of this methodology is seriously questioned in a recent review. The methodological approach first considers the estimation of the losses from spontaneous and induced abortions from the opinion of subjects who work in health institutions through a survey entitled Health Facilities Survey. Respondents are asked to remember the total number of women who received post-abortion care “in the average month and in the past month.” In a second step, another opinion survey entitled Health Professionals Survey, is applied to non-randomly selected individuals who are unrelated to the health facilities selected for the former survey. The Health Professionals Survey is used to estimate an expansive multiplier (x3, x4, x5, etc), which is then applied to the numbers obtained by the Health Facilities Survey. In consequence, these estimation methods are subjective in nature and extremely subject to selection and recall bias, making them questionable instruments even when evaluating the general impression of abortion in a particular territory. In contrast, estimates using actual demographical data, fertility rates, observed live births, abortion mortality rates, and known abortion rates from standard populations, or complete abortion hospital discharges might be more accurate and objective than estimates based on opinion surveys. Moreover, significant overestimation of abortion figures prompts unnecessary alarm in public opinion, especially when an allegation of