

The Distinction Between Rate and Ratio Is Important

I recently read the article in the September-October 1988 issue of *Public Health Reports* on "Standard Terminology for Reporting of Reproductive Health Statistics in the United States."

I would like to take issue with one small point in an otherwise excellent article. This point has to do with the statistics used to measure maternal mortality.

It has been conventional to report a maternal mortality "rate" that is the number of maternal deaths divided by the number of live births (or, occasionally, pregnancies) in the same year multiplied by 1,000, 10,000, or 100,000.

Technically, of course, this is a ratio not a rate. This comment is more than simply pedantic. This confusion has retarded research in maternal mortality. What I would recommend, and what is, in fact, becoming the convention among researchers in the field, is to define the ratio as maternal deaths/live births and the rate as maternal deaths/number of women of reproductive age. The former measures primarily the obstetric risk, the latter measures the combination of obstetric risk and the frequency of exposure to that risk. In some circumstances the ratio is the better measure to use, in others the rate is more useful. But the distinction is extremely important to make, especially to those of us who work in public health. An earlier article (1) illustrates how one can reach the wrong conclusion by using the wrong measure.

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Reference.....

1. Fortney, J. A.: The importance of family planning in reducing maternal mortality. *Studies in Family Planning* 18:109-114, March-April 1987.

The Internal Inconsistency Was a Conscious Choice: Dr. Cefalo and Mr. Gay Reply

Dr. Fortney and Dr. Ahmed correctly note that the interorganizational report "Standard Terminology for Reporting of Reproductive Health Statistics in the United States" follows tradition in setting forth as "Maternal Mortality Rate" what should more accurately be described as a ratio. The representatives consciously elected this internal inconsistency (the difference between a rate and ratio is defined earlier in the paper for readers) to avoid what they judged would result in greater confusion by making an abrupt change in the designation of a well-known measure.

Note that the paragraph introducing the formula (p. 469) says,

" . . . the population at risk should theoretically include all fetal deaths (reported and unreported), all induced terminations of pregnancy, and all live births. Because . . . [the information is not all required to be collected currently], the entire population at risk can not be included in the denominator. Therefore, the total number of live births has become the generally accepted denominator. It is recommended that when complete ascertainment of the denominator (that is, the number of pregnant women) is achieved, that a modified maternal mortality rate be defined, in addition to the traditional rate."

Likewise, in response to Dr. Ahmed's objection to the use of "Induced Termination of Pregnancy Ratio II" to describe what he asserts is a rate, you will note that the preceding paragraphs (p. 469) allude to live births as a "surrogate measure of pregnancy." Even with the addition of "reported fetal deaths" and "number of induced terminations of pregnancies" to the denominator, the text explains the sum is an "estimate" of pregnancies that "more closely approximates [but does not equal because of unreported, largely very early pregnancy loss] in the population at risk."

The representatives struggled with what degree of change would clarify, and what would confuse. Their judgment—for example, that the term "maternal mortality rate" was familiar and widely understood by physicians and, even though technically inaccurate, was not presently causing confusion—is open to criticism, as the writers contend. It is their hope that this report will make a bridge toward a still more consistent approach in the future, as data collection and analysis catch up with statistical theory and logic.

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C Section Rates and Increased Malpractice Premiums—An Alternate Explanation

I am writing to you regarding the paper entitled "Malpractice Premiums and Primary Cesarean Section Rates in New York and Illinois," by Steven M. Rock, which appeared in the September-October issue (Vol. 103, No. 5, p 459) of *Public Health Reports*. Dr. Rock found a correlation between increased malpractice insurance rates and increased cesarean section rates and concluded in his summary that "a substantial impact was found on delivery decisions resulting from the fear of malpractice suits."

I would like to suggest an equally plausible alternative to fear of malpractice suits as the agency for the