The Measurement and Meaning of Unintended Pregnancy

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The concept of unintended pregnancy has been essential to demographers in seeking to understand fertility, to public health practitioners in preventing unwanted childbearing and to both groups in promoting a woman's ability to determine whether and when to have children. Accurate measurement of pregnancy intentions is important in understanding fertility-related behaviors, forecasting fertility, estimating unmet need for contraception, understanding the impact of pregnancy intentions on maternal and child health, designing family planning programs and evaluating their effectiveness, and creating and evaluating community-based programs that prevent unintended pregnancy.[1]

Pregnancy unintendedness is a complex concept, and has been the subject of recent conceptual and methodological critiques.[2] Pregnancy intentions are increasingly viewed as encompassing affective, cognitive, cultural and contextual dimensions. Developing a more complete understanding of pregnancy intentions should advance efforts to increase contraceptive use, to prevent unintended pregnancies and to improve the health of women and their children.

To provide a scientific foundation for public health efforts to prevent unintended pregnancy, we conducted a review of unintended pregnancy between the fall of 1999 and the spring of 2001 as part of strategic planning activities within the Division of Reproductive Health at the Centers for Disease Control and Prevention (CDC). We reviewed the published and unpublished literature, consulted with experts in reproductive health and held several joint meetings with the Demographic and Behavioral Research Branch of the National Institute of Child Health and Human Development, and the Office of Population Affairs of the Department of Health and Human Services. We used standard scientific search engines, such as Medline, to find relevant articles published since 1975, and identified older references from bibliographies contained in recent articles; academic experts and federal officials helped to identify unpublished reports. This comment summarizes our findings and incorporates insights gained from the joint meetings and the strategic planning process.

CURRENT DEFINITIONS AND MEASURES

Conventional measures of unintended pregnancy are designed to reflect a woman's intentions before she became pregnant.[3] Unintended pregnancies are pregnancies that are reported to have been either unwanted (i.e., they occurred when no children, or no more children, were desired) or mistimed (i.e., they occurred earlier than desired). In contrast, pregnancies are described as intended if they are reported to have happened at the "right time"[4] or later than desired (because of infertility or difficulties in conceiving). A concept related to unintended pregnancy is unplanned pregnancy—one that occurred when the woman used a contraceptive method or when she did not desire to become pregnant but did not use a method. Intentions are often measured or reported only for pregnancies ending in live births; pregnancies ending in abortion are generally assumed to have been unintended. All of these definitions assume that pregnancy is a conscious decision.

The development of terms related to unintended pregnancy and their measurement can be traced back to the initial population-based surveys of fertility behaviors and intentions, beginning with the Indianapolis Study in 1941.[5] Distinctions between unwanted and mistimed pregnancies were first made in the 1965 National Fertility Survey and were incorporated in the first National Survey of Family Growth (NSFG), in 1973. However, surveys that measure pregnancy intentions do not use the term "unintended" in their questions, and the extent of mistiming (i.e., how much sooner than desired a pregnancy occurred) is generally not reported.

The NSFG—the primary source of data on unintended pregnancy in the United States—asks several questions that assess the timing and desire for more children; the Pregnancy Risk Assessment Monitoring System (PRAMS) combines these questions into one (Figure 1). International surveys, such as the Demographic and Health Surveys (DHS) and the CDC-assisted Reproductive Health Surveys, generally ask one question. Few studies have directly compared these questions; Kaufmann and colleagues[6] found a 25% discordance rate among women answering both NSFG and DHS questions about their most recent pregnancy.

For the United States, the most recent estimates of the prevalence of unintendedness come from the 1995 NSFG:[7] Excluding miscarriages, but including pregnancies ending in abortion, 49% of pregnancies in 1994 were unintended,[8] down from 57% in 1987.[9] The prevalence of unintended pregnancy in 1994 was highest among women who were younger than 20 or older than 40, unmarried women, those living below the federal poverty line and black women.[10] Among unintended pregnancies ending in a live birth that were reported in the 1987 NSFG, 71% were mistimed and 29% were unwanted.[11] Furthermore, PRAMS data show considerable variation among states in the proportion of live births that result from unintended pregnancies—in 1999, it ranged from 34% to 52%.[12]

HEALTH IMPLICATIONS

Conventional measures of unintended pregnancy are associated with adverse child health outcomes and risk factors for poor health outcomes.[13] Women with unintended pregnancies are less likely than those with intended pregnancies to seek prenatal care during the first trimester, and more likely to use alcohol and tobacco during pregnancy.[14] Unintended pregnancy that results in a live birth is associated with physical abuse and violence during pregnancy and the 12 months before conception,[15] and with household dysfunction and exposure to psychological, physical or sexual abuse during the woman's childhood.[16] According to longitudinal studies in Europe that began in the mid-1960s, the denial of abortion has a severe negative impact on children's long-term psychosocial development—for example, on their schooling, social adjustment, alcohol and drug use, criminal activity and employment.[17] Findings from U.S. studies, however, question the association between unintended pregnancy and child development, and suggest that the impact of unintendedness on infant health is related more to the mother's preexisting physical and socioeconomic status than to her pregnancy intentions.[18]

The type of unintendedness and extent of mistiming may be important in understanding its health impact. Women who carry an unwanted pregnancy to term are more likely to smoke, receive delayed prenatal care and have low-birth-weight infants than are those carrying a mistimed pregnancy to term.[19] Although mistimed pregnancies have better health outcomes than unwanted ones, pregnancies that are seriously mistimed (by more than 24 months) and that end in a live birth are associated with less breastfeeding, a shorter gestation and a higher risk of low birth weight than pregnancies that are mistimed by 24 months or less.[20]

Many unintended pregnancies end in abortion. In countries where abortion is illegal and unsafe, unintended pregnancy is a major contributor to maternal morbidity and mortality. Abortion is estimated to have caused 400,000 of the 700,000 deaths resulting from unintended pregnancy worldwide between January 1995 and December 2000.[21] Given the legal status of abortion and current medical practices in the United States, abortion-related mortality and morbidity—including long-term psychological problems such as depression—are less common than birth-related mortality and morbidity.[22]

FIGURE 1. Questions used to assess pregnancy intentions in major U.S. surveys

NATIONAL SURVEY OF FAMILY GROWTH, 2002

1. Right before you became pregnant with your (nth) pregnancy, which ended in (date/this time), did you yourself want to have a(nother) baby at any time in the future?
   - Yes
   - Not sure, don't know
   - No

2. It is sometimes difficult to recall these things but, right before (this/that) pregnancy began, would you say you probably wanted a(nother) baby at some time in the future or probably not?
   - Probably yes
   - Didn't care
   - Probably not

3. So right before you became pregnant (this time/that time), you thought you did not want to have (any children/a nth child) at any time in the future, is that correct?
   - Correct
   - Incorrect

4. Right before you became pregnant with your (nth) pregnancy, which ended in (date/this time), did you yourself want to have a(nother) baby at any time in the future?
   - Yes
   - Not sure, don't know
   - No
   - Didn't care

5. So would you say you became pregnant too soon, at about the right time, or later than you wanted?
   - Too soon
   - Later
   - Right time
   - Didn't care

PREGNANCY RISK ASSESSMENT MONITORING SYSTEM, 2002

Mailed survey

Thinking back to just before you got pregnant, how did you feel about becoming pregnant?
- I wanted to be pregnant sooner
- I wanted to be pregnant later
- I wanted to be pregnant then
- I didn't want to be pregnant then or at any time in the future

Telephone survey*

Thinking back to just before you got pregnant, how did you feel about becoming pregnant? I am going to read you a list of options. Please choose the one that best describes how you felt. Just before you got pregnant with your new baby, how did you feel about becoming pregnant?
- You wanted to be pregnant sooner
- You wanted to be pregnant later
- You wanted to be pregnant then
- You did not want to be pregnant then or at any time in the future
- Don't know/don't remember

*Telephone survey is administered to nonrespondents to the mailed survey.

PROBLEMS WITH CURRENT MEASURES

Coherence Within Surveys

Researchers have questioned the validity of current measures of unintendedness.[23] Trussell and colleagues[24] have used NSFG data to highlight contradictions among assessments of pregnancy intention, contraceptive failure, and a woman's happiness or unhappiness at discovering she is pregnant. Among women who reported that their pregnancy was due to contraceptive failure, 68% defined the pregnancy as unintended. Of these women, 59% had felt unhappy or very unhappy about the pregnancy; yet, 25% said they felt happy or very happy when they found themselves pregnant. Among the 32% of women who reported a contraceptive failure as an intended pregnancy, 90% had been happy or very happy. Furthermore, intentions to avoid pregnancy often do not translate into contraceptive use: Almost half of pregnancies reported as unintended occur among women who were not using a contraceptive method. (Similar discrepant results have been found among British women.[25])

Trussell and colleagues[26] suggest several possible explanations for these contradictions. First, planning or intending to become pregnant may be distinct from wanting to be pregnant. Second, the concept of planning a pregnancy may not be meaningful to some women. Third, ambivalence about avoiding pregnancy may be expressed in imperfect contraceptive use.

A major problem with surveys on unintended pregnancy is that most measure women's intentions retrospectively—after a birth has occurred. Such reports of intentions are likely influenced by the presence of the infant. Retrospectively reported intentions generally become more positive over time—for example, a smiling baby may result in a more positive recollection of past intentions.[27]

Another complicating factor is the considerable heterogeneity within the category of unintended pregnancy. Unwanted and mistimed pregnancies commonly represent different life-choice considerations.[28] Unwantedness reflects the intentions or desires of a woman (and her partner) after the couple have had all the children they want. In contrast, mistimed pregnancies can occur throughout the reproductive years but are most common among adolescent and young adult women. Among mistimed births, the magnitude of mistiming varies greatly: Thirty percent are mistimed by 12 months or less, 25% by 13–24 months and 24% by four or more years.[29] A pregnancy mistimed by a few months is likely to have less of an impact on a woman or couple compared with one that comes several or many years too early.

The use of more precise measures of pregnancy intentions should improve the prediction of pregnancy and contraceptive behavior.

Predictive Value of Pregnancy Intentions

International studies have challenged the reliability and validity of current measures of reproductive intentions in demographic surveys. Studies conducted in Taiwan, Korea, Sri Lanka, Nigeria and Morocco demonstrated that although intentions were reasonably good in predicting fertility at the population level, intentions and behaviors at the individual level frequently showed discrepancies.[30] In addition, the studies emphasized the importance of considering partners' intentions in predicting fertility.

In the Morocco study, women were interviewed in 1992 about reproductive intentions and were reinterviewed in 1995.[31] Population-level estimates of the ideal number of children did not change significantly: Women wanted, on average, 3.85 children in 1992 and 3.82 in 1995. However, only 36% of women gave the same numerical response at both interviews. Furthermore, childbearing intentions reported in 1992 were mostly consistent with those reported in 1995 for children born in the intersurvey period—discrepancies were apparent for only 25% of women.

Overall, reproductive intentions were a good but imperfect indicator of subsequent fertility: Among women wanting more children in 1992, 62% gave birth by 1995; however, among those wanting no more children, 29% gave birth by 1995. Retrospective reports of intendedness of pregnancies before 1992 became more positive over time, the largest shifts being from unwanted or mistimed to wanted pregnancies: Of unwanted pregnancies in 1992, 43% were reported in 1995 as wanted and 19% as "wanted later"; only 38% were still viewed as unwanted. By comparison, 87% of wanted pregnancies in 1992 remained wanted in 1995, and 22% of pregnancies "wanted later" in 1992 remained so in 1995. The researchers conclude that information about childbearing intention is most accurate when it is collected close to the time of birth and that "the extraordinary consistency at the aggregate level suggests...some demographic usefulness as an indicator of the normative pattern of family size."[32]

U.S. studies also suggest that measures of unintended pregnancy may be useful at the population level but less useful in describing the intentions of a particular woman. For example, almost one-quarter of low-income minority women who were medically at high risk reported a change in childbearing intentions from middle to later pregnancy, but the overall proportion of pregnancies reported as intended did not change.[33] An analysis of data from the National Longitudinal Survey of Youth found that 16% of women in their late 20s and early 30s reported a change in intention status between 1990 and 1992—7% changed responses from intended to unintended, and 9% from unintended to intended. Overall, 63% of women consistently reported the pregnancy as intended, and 21% consistently reported it as unintended; the total proportion of women citing unintendedness did not change significantly (70% vs. 72%).[34]

Although longitudinal studies demonstrate the importance of pregnancy intentions in predicting fertility, the predictive power of intentions is not high. For example, fertility intentions among non-Hispanic whites are strong and persistent predictors of fertility even in analyses controlling for maternal background and life-course variables, such as age, marital status, parity, income and education. Expected timing of pregnancies has a much more modest association with fertility intention.[35] On the basis of Azjen and Fishbein's theory of reasoned action,* Schoen and colleagues[36] have suggested that pregnancy intentions are the most immediate determinant of fertility and related behaviors.

The use of more precise measures of pregnancy intentions should improve the prediction of pregnancy and contraceptive behavior. Such measures might also clarify the relationship between intentions and health outcomes. The 1995 NSFG examined several ways to improve the measurement of intentions and other attitudes toward pregnancy.[37] Intention status correlates reasonably well with a "happiness to be pregnant" scale among women aged 15–24: Intended pregnancies have the highest scores, unwanted pregnancies have the lowest scores and mistimed pregnancies have intermediate scores.[38] Wantedness is also positively correlated with other positive attitudes about pregnancy and negatively correlated with negative attitudes.

CONCEPTUAL PROBLEMS

Ambivalence and Meaning to Individual Women

Ambivalence about conception and contraception may be of central importance in understanding pregnancy intentions and contraceptive use.[39] Ambivalence and failure to form intentions about fertility appear to be common.[40]

*According to the theory of reasoned action, behavioral intentions and, in turn, behaviors are influenced by attitudes toward an action (i.e., an individual's beliefs about a behavior and his or her evaluation of its outcomes) and perceptions of likely responses (reflected by predicted reactions from peers and the extent to which an individual desires to please his or her peers).

Moreover, the usual measures of pregnancy intentions were not designed for the assessment and care of individual women, and they may oversimplify the complex decisions that women make about fertility.[41] In particular, mistimed and unwanted pregnancies are often grouped together in analyses, even though they affect women of different ages and stages in their reproductive life.

Pregnancy intentions involve emotional and psychological factors that current measures may not capture.[42] Motivations to engage in sexual activity may be distinct from childbearing motivations, and the latter may emerge only after a pregnancy has occurred.[43] Bachrach and Newcomer[44] suggest that intended and unintended pregnancies be considered as two ends of a continuum instead of as a simple dichotomy. Stanford and colleagues[45] suggest that this continuum include at least two dimensions: an affective dimension (i.e., the desire for a baby), which is related to community, partner and personal values about childbearing; and a planning dimension, which concerns preparation for pregnancy, life goals and education.

Almost all studies of pregnancy intention focus on live births. Much less is known about intentions related to pregnancies ending in abortion. Measures usually consider all abortions to be the result of unintended pregnancies. However, a woman's feelings about a specific pregnancy and her decision about abortion may be shaped by changes in the relationship with her partner, medical and psychiatric conditions, pressure from family members and results of prenatal diagnostic procedures.[46] Hence, decisions about abortion are driven not only by pregnancy wantedness, but also by the extent to which a woman accepts or rejects abortion as a way of resolving an unwanted pregnancy.[47]

Cultural Perspectives

Generally, anthropological studies of reproduction call into question the meaningfulness of unintended pregnancy by looking at the complex and diverse social contexts within which pregnancies occur and are carried to term.[48] These studies have contrasted commonly used measures, such as unintended pregnancy, with the culturally variable ways of thinking about sexuality, relationships and fertility among different groups of women and men around the world. For example, the experiences of poor U.S. women, whose unintended pregnancies are likely related to their social circumstances and their limited access to reproductive health services,[49] differ in critical ways from the experiences of middle-class U.S. women, for whom an unintended pregnancy may represent ambivalence about sexuality, as expressed through the inconsistent use of contraceptives.[50] Combining such unintended pregnancies in a single category may seem appropriate, but it obscures the diversity of actual experience and of underlying factors.

The idea that pregnancies are clearly either intended or not may not be a universally applicable concept.[51] In addition, a series of closed-ended questions designed to categorize pregnancies in a dichotomous way cannot capture the cognitive processes through which women reflect on the desirability of a specific pregnancy. Commonly used questions assume that women always decide about the desirability of becoming pregnant at the time of sexual intercourse. This is not always the case: In an HIV prevention program, 60% of inner-city minority women reported that they had not even considered the possibility of becoming pregnant at the time they last conceived.[52] A woman's conscious weighing of the advantages and disadvantages of becoming pregnant from a specific act of intercourse is only one of numerous social and cultural factors that shape contraceptive use.[53] The growing diversity of the U.S. population due to migration also should ensure that social and cultural factors will continue to influence contraceptive use and pregnancy termination.[54]

Anthropological studies of reproduction note the complex set of relationships within which pregnancies occur, thereby raising the question "intended by whom?" To answer this question, we must examine how gender inequality and culturally constructed ideals about relationships and sexuality shape women's interactions with their partners, as well as focus on women's relationships with their kin groups, peer groups and health care providers. Hence, pregnancy should be understood not as the product of an individual's intentions, but rather as the result of multiple, interwoven social and economic influences. Accordingly, the anthropological literature suggests that public health research on pregnancy intendedness should incorporate attention to how contextual factors such as poverty, racism, gender inequality and the structure of health services might constrain women's life options and access to contraceptive methods.[55] Researchers have examined such factors at both the micro level (e.g., how power disparities between patients and reproductive health service providers shape contraceptive choices and behaviors[56]) and the macro level (e.g., how the reproduction of certain groups over time has been cast as socially desirable or undesirable[57]).

The focus on whether a woman intends a pregnancy implies that her intentions count the most. However, for millions of women in the United States and around the world, the power to translate these intentions into practice is circumscribed by limited access to resources or health services, or by limited control of their own bodies. Research on gender and AIDS[58] suggests that because of gender inequality, women frequently do not control even the circumstances in which they have intercourse, much less the decision whether to bear a child. Although some studies challenge the disenfranchisement among minority women in the United States and suggest that women often play a powerful role in controlling barrier contraceptive use, unfortunately many women frequently continue to make decisions under circumstances that limit their choices.[59]

Influence of Male Partners

Attitudes and behaviors of male partners may influence women's intentions, sexual behavior, contraceptive use and parenting. The 1941 Indianapolis Study interviewed couples, but most later surveys have interviewed only women.[60]

(The NSFG included men for the first time in 2002.) Current surveys often ask women to indicate their male partner's intentions, but relevant data are not usually collected directly from men, and discordance in intentions between partners is common. In the 1988 NSFG, women reported different intentions for themselves and their husbands for 30% of births.[61] Zabin and colleagues[62] have argued that changing marriage and partnership patterns may influence pregnancy intentions, and that women's desire for children may be more strongly tied to meeting the needs of a particular partner than to abstract notions about ideal family size. Partners' disagreement about pregnancy intentions is associated with instability in women's reported pregnancy intentions[63] and with the likelihood that a pregnant woman will engage in behaviors that may have adverse effects on her infant.[64]

Clarifying issues of meaning and measurement is fundamental to developing a more complete understanding of pregnancy intentions.

Partners may also influence contraceptive behavior. Partner influence varies according to the type of contraceptive decision being made and the specific method of contraception.[65] For example, partner support can facilitate consistent use of condoms for pregnancy prevention.[66] Additionally, an examination of DHS data suggests that considering male partners' intentions greatly reduces national estimates of unmet need for contraception.[67]

The "second demographic transition"—marked by higher divorce and cohabitation rates, and increases in sexual intercourse and childbearing occurring outside committed unions—may weaken the ability of couples to plan pregnancies.[68] Poor, young and never-married women are the least able to plan pregnancies successfully and jointly with their partner.[69] Unmarried pregnant women are less likely than married or cohabiting women to have wanted to conceive, to carry the pregnancy to term and to know the father's intentions.[70]

Changing Realities

Luker[71] suggests that since the mid-1970s, the demographic focus of unintended pregnancy has shifted from the end of the fertility cycle (i.e., completed family size) to the beginning of the cycle (i.e., when to start a family or become a mother). She argues that this shift is a result of profound social changes, including the severing of parenthood from marriage, ready availability of modern contraceptive methods, earlier sexual initiation and multiple, shifting sexual partnerships during a woman's reproductive life. Luker also suggests that demographers are now monitoring a much more complicated situation, within a sociopolitical climate in which motherhood provokes antagonistic battles over "family values."

Sexual intercourse is occurring more commonly outside of committed marital relationships, and nonmarital fertility has increased in virtually all developed countries.[72] Age at first intercourse, age at first pregnancy and age at first live birth have become increasingly influential factors in the timing and overall level of fertility.[73] The mean age at first intercourse is often well below the age at first marriage. Consequently, respondents in recent demographic surveys are more likely than those in earlier surveys to be unmarried or to have married at later ages, to have had sexual relations outside marriage and to have had an out-of-wedlock birth; they are less likely to have experienced stigma as a result of the out-of-wedlock birth.[74]

The developing world has seen sharp declines in family size over the past several decades—from approximately six children in the 1960s to four children in the late 1980s.[75] The worldwide total fertility rate in the early 1990s was 3.0 births per woman.[76] The total fertility rate for the United States is 2.1 (approximating replacement fertility), and for many developed countries, it is below 2.0.[77]

Contraception and Pregnancy Intentions

Publicly supported family planning services prevent some 1.3 million unintended pregnancies annually in the United States.[78] Sterilization has markedly decreased rates of pregnancy, birth and induced abortion among older women, and has prevented many unwanted pregnancies.[79] Modern contraceptive methods are highly efficacious, but many American women are concerned about their side effects and are unhappy about the limited range of methods available.[80] In developing countries, the most important determinant of declining fertility is the effective use of contraceptives.[81]

Despite considerable progress, we know little about how pregnancy intentions relate to patterns of contraceptive use. Most often, intentions are measured only for pregnant or postpartum women about a specific pregnancy. Factors associated with failure to practice contraception include negative attitudes about methods; increased perceived barriers to method use; perceived low support from partners and peers; low self-efficacy; poor communication skills; involvement in risk behavior; and, for teenagers, residence in neighborhoods characterized by poor supervision, inadequate community resources and high levels of behaviors that depart from a conventional lifestyle (e.g., dropping out of school).[82] However, these studies seldom address intentions about pregnancy.

Increasingly, concerns about sexually transmitted infections, including HIV, are essential to understanding contraceptive choices. Motivation (i.e., intentions) to prevent both disease and pregnancy is significantly associated with consistent barrier method use: Women who report condom use to protect against both disease and pregnancy use the method more consistently than others.[83] Efforts to integrate the two types of prevention messages can strengthen the consistency of contraceptive use by capitalizing on both motives.

CONCLUSION

Unintended pregnancy is an important concept for understanding the fertility of populations and the need for contraception, but more research is needed to elucidate the role of intentions in contraceptive use and fertility. Clarifying issues of meaning and measurement is fundamental to developing a more complete understanding of pregnancy

intentions, which would help improve public health and clinical prevention programs aimed at preventing unintended pregnancy. Although current measures of unintended pregnancy seem reasonable, reliable and predictive at a population level, they were not designed to be used at an individual level. Current retrospective measures are limited in their utility even as population measures, given the assumption that all women have fully formed intentions at the time of conception. Measures of pregnancy intentions need to incorporate the intentions of male partners.

Unintended pregnancy combines two aspects of fertility: unwanted and mistimed pregnancies. The personal, partnership, social and political realities of these two aspects are different, and the use of separate categories may better reflect the way women think about a pregnancy. A better understanding of the multiple dimensions of unintended pregnancy also may lead to a better understanding of the consequences of these pregnancies. Likewise, better knowledge of the extent of mistiming and perhaps the strength of intentions may be important in understanding health impact.

Effective programs to prevent unintended pregnancy must use terms that are familiar to women and must build upon cultural understanding of the problem to be prevented. Research should focus on the meaning of pregnancy intentions to women and the processes women and their partners use in making fertility decisions. It should prospectively address the impact of pregnancy intentions on contraceptive use. Both qualitative and quantitative research have contributed to our understanding of fertility decision-making; both will be essential to the creation of more effective prevention programs.

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