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Examining intendedness among pregnancies ending in spontaneous abortion☆,☆☆,★

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Abstract

Objectives: Spontaneous abortion (SAB) affects over 1 million US women each year, yet little is known about the intendedness of these pregnancies. We examined prevalence and correlates of unintended and unwanted pregnancies ending in SAB.
Study design: We used nationally-representative cross-sectional data of US women aged 15–44 from the 2011–2013 National Survey of Family Growth to examine pregnancies ending in SAB. We used modified Poisson regression models to evaluate associations between demographic and pregnancy characteristics with unintended and unwanted pregnancy.
Results: Among 1351 pregnancies ending in SAB, 44.5% were unintended (i.e. unwanted or occurring sooner than desired). Younger women with SAB were more likely to report unintended pregnancies than women 30–44 years, and women 15–19 years reported unintended pregnancy most often [adjusted relative risk (aRR) = 3.0; 95% confidence interval (CI): 2.2–4.1]. Unintended pregnancy was two times more likely among unmarried than married women [never married: aRR=2.2; 95% CI: 1.7–2.7; previously married: aRR=2.2; 95% CI: 1.7–3.0]. Other factors associated with unintended pregnancy were multiparity compared to nulliparity [aRR=2.6; 95% CI: 1.7–4.1 for ≥3 children; aRR=1.8; 95% CI: 1.3–2.5 for 2 children] and inter-pregnancy interval ≤12 months compared to >12 months [aRR=1.4; 95% CI: 1.2–1.7]. We found similar associations with unwanted pregnancies ending in SAB (15.3% of pregnancies). Neither race/ethnicity nor socioeconomic indicators were independently associated with unintended or unwanted pregnancy ending in SAB.
Conclusions: Many pregnancies ending in spontaneous abortion are unintended and/or unwanted. Women with pregnancy loss, like all reproductive-aged women, should receive comprehensive counseling about reproductive planning and contraception.
Implications: Similar to all pregnancies, nearly half of pregnancies ending in spontaneous abortion are unintended and/or unwanted, suggesting that many women experiencing spontaneous abortion may benefit from a review of family planning desires and the provision of reproductive planning counseling and effective contraception to prevent future undesired pregnancy.

Keywords: Pregnancy intention; Spontaneous abortion; Miscarriage; Pregnancy loss; Unintended pregnancy; Unwanted pregnancy

1. Introduction

Over 1 million spontaneous abortions (SABs) occur annually in the United States [1], accounting for 15% of clinically-recognized pregnancies and affecting more than 1% of reproductive-aged women each year [2,3]. Nearly half of all pregnancies in the US are unintended [4], which is more common in the setting of previous unintended pregnancy and has been linked to adverse perinatal outcomes and maternal risk behaviors [5–7]. Some of the risk factors

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associated with unintended pregnancies, such as short inter-pregnancy interval, less education, lower socioeconomic status and maternal substance use, are also associated with increased risk of SAB [8–10], and while unintended pregnancy is more common in younger women [4], risk of SAB increases with age [11]. It is therefore unclear whether general population estimates of pregnancy intendedness are applicable to women with SAB. Unlike previous research into intendedness of pregnancies ending in SAB, which has drawn from heterogeneous data sources and yielded only crude point estimates [12,13], this study uses nationally-representative data from the 2011–2013 National Survey of Family Growth (NSFG) to clearly define the prevalence of and factors associated with unintendedness among pregnancies ending in SAB.

While researchers have sought to understand family planning and contraceptive needs after induced abortion and live birth [14], less research has been conducted to understand the contraceptive needs of women experiencing miscarriage. Unlike women undergoing induced abortion or live birth, who often want and are encouraged to avoid rapid repeat pregnancy [15], women experiencing SAB likely have more heterogeneous family planning needs, confounded further by the lack of clarity around patient desires and the optimal spacing after early pregnancy loss [16,17]. With women obtaining miscarriage care in diverse settings and potentially receiving inconsistent attention to future reproductive planning, women experiencing SAB may be at particularly high risk for future undesired pregnancy. This is especially of concern given the rapid return to fertility, with median ovulation 20 days post-miscarriage (range 13–103 days) [18]. Understanding the prevalence and correlates of unintended pregnancy ending in SAB may further inform the importance of reproductive and contraceptive counseling for women experiencing miscarriage.

2. Materials and methods

Our study was a secondary analysis of cross-sectional data from the 2011–2013 NSFG. The NSFG is administered by the National Center for Health Statistics, with the purpose of obtaining national estimates of factors affecting pregnancy, medical care associated with pregnancy, marriage and family formation, use of reproductive health services, and attitudes about sex, childbearing and marriage. The NSFG collects cross-sectional data from a nationally-representative sample of the US household population aged 15–44, using a multi-stage probability-based sampling design [19–22]. The 2011–2013 cycle had a female response rate of 73.4%. The University of Michigan's Institute for Social Research conducted the statistical design, interviewing and data processing.

We included pregnancies from the NSFG in our study if the respondent was 15–44 years old at the time of pregnancy outcome, the pregnancy was reported to end in miscarriage or stillbirth, and pregnancy intendedness was available. Consistent with the medical definition of SAB [8], we excluded those pregnancies lasting beyond 20 weeks gestation. This analysis of the 2011–2013 NSFG data was given exemption by the University of Pittsburgh Institutional Review Board.

Our primary observations of interest were unintended and unwanted pregnancy. To assess these outcomes, we examined responses to the NSFG question, "Right before you became pregnant [with this specific pregnancy], did you yourself want to have a(nother) baby at any time in the future?" with possible responses of "yes," "no," and "not sure, don't know." Respondents in the NSFG who had answered affirmatively were then asked, "Would you say you became pregnant too soon, at about the right time, or later than you wanted?" We used a recoded variable created by the NSFG for pregnancy intendedness that categorized each pregnancy as intended (right time or overdue), mistimed (sooner than desired), or unwanted (occurring at a time when the respondent did not want any future pregnancies). Consistent with conventional measures, we considered both unwanted and mistimed pregnancies to be "unintended" [4]. Pregnancies for which women reported that they "didn't care," or were "indifferent" or "not sure" regarding intendedness and/or timing accounted for 2% of the overall sample, and we excluded these pregnancies from analysis due to inability to clarify unambiguous intendedness and wantedness.

Covariates examined included demographic and pregnancy characteristics at the time of SAB: age, relationship status, gestational age, inter-pregnancy interval (time from outcome of most recent prior pregnancy to conception of index pregnancy), number of previous SABs and number of previous live born children. In addition to these variables collected for each pregnancy, we examined socio-economic factors captured at the participant level at the time of the interview: race/ethnicity, educational level, and income.

We analyzed data using Stata SE software release 14.2 (StataCorp, College Station, TX). We applied sampling weights provided by the NSFG to adjust for the complex sampling design and to produce nationally-representative estimates. We compared baseline characteristics between intended and unintended pregnancies, as well as intended and unwanted pregnancies, using Pearson Chi-square tests for categorical variables. Given the high prevalence of both unintended and unwanted pregnancy, we used modified Poisson regression with a linearized variance estimator to evaluate the unadjusted associations between each covariate and our two observations of interest (unintended and unwanted pregnancy ending in SAB). We considered covariates with significance levels of $p<.1$ for inclusion in multivariable models that we developed using forward selection. To account for potential recall bias, we also adjusted both multivariable models for years elapsed between pregnancy outcome and interview date. Variables were retained in the final models for both unintended and