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**Title**

State-mandated (mis)information and women's endorsement of common abortion myths

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Women's Health Issues

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**State-mandated (mis)information and women's endorsement of common abortion myths****Abstract**

*Purpose:* The extent that state-mandated informed consent scripts affect women's knowledge about abortion is unknown. We examine women's endorsement of common abortion myths before and after receiving state-mandated information that included accurate and inaccurate statements about abortion.

*Methods:* In Utah, women presenting for an abortion information visit completed baseline surveys ( $N=494$ ) and follow-up interviews three weeks later ( $N=309$ ). Women answered five items about abortion risks, indicating which of two statements was closer to the truth (as established by prior research) or responding "don't know." We developed a continuous myth endorsement scale (range: 0-1) and, using multivariable regression models, examined predictors of myth endorsement at baseline and change in myth endorsement from baseline to follow-up.

*Results:* At baseline, many women reported not knowing about abortion risks (range: 36% to 70% across myths). Women who were younger, non-White, and had previously given birth but not had a prior abortion reported higher myth endorsement at baseline. Overall, myth endorsement decreased following the information visit (0.37 to 0.31,  $p<.001$ ). However, endorsement of the myth that was included in the state script—describing inaccurate risks of depression and anxiety—increased at follow-up (0.47 to 0.52,  $p<.05$ ).

*Conclusions:* Lack of knowledge about the effects of abortion is common. Knowledge of information that was accurately presented or not referenced in state-mandated scripts increased. In contrast, inaccurate information was associated with decreases in women's knowledge about abortion, violating accepted principles of informed consent. State policies that require or result in the provision of inaccurate information should be reconsidered.

**Introduction**

Of the increasing number of state-level regulations of abortion care, those that mandate that health care providers deliver state-approved information to women are among the most common (Daniels, Ferguson, Howard, & Roberti, 2016). Currently, 30 states require information in the form of standardized oral scripts and/or written materials (Guttmacher Institute, 2016), affecting an estimated two-thirds of women seeking abortion across the U.S. (Daniels et al., 2016).

Proponents assert that these laws ensure that women are fully informed of the risks of and alternatives to having an abortion and have an additional opportunity to consider their decision (Smith, 2012).

Informed consent, a core tenet of medical ethics (AMA Council on Ethical and Judicial Affairs, 2016), establishes that patients have the right to complete and accurate medical information so that they can make well-considered decisions about their health. Providers typically determine best practices regarding patient education and support based on their professional expertise, institutional protocols, available research evidence, and the needs of individual patients. It is rare for governmental authorities to be involved in the details of the informed consent process. All states have general laws to ensure that patients consent prior to undergoing medical treatment. Laws that create standardized requirements for a particular procedure are rare, seen most notably for abortion as well as a few other procedures, such as sterilization (Vandewalker, 2012).

While states that have enacted mandated abortion information laws purport to be working on behalf of women—with titles like “Women’s Right to Know”—the accuracy of the information in these mandated scripts varies considerably. While many scripts contain some accurate information, a large proportion of the content has been found to be misleading or false

(Daniels et al., 2016; Richardson & Nash, 2006). Several states mandate content that exaggerates the risks of breast cancer, infertility, and psychological harm associated with abortion (Guttmacher Institute, 2016). These statements are not supported by the rigorously designed research studies that have identified no causal relationship between abortion and these long-term outcomes (Beral et al., 2004; Biggs, Upadhyay, McCulloch, & Foster, 2016; Foster, Steinberg, Roberts, Neuhaus, & Biggs, 2015; Hogue, 1986; Major et al., 2009).

The promotion of misinformation is of particular concern as many people lack basic information about abortion and its associated health risks. An online survey of women and men of reproductive age found that knowledge of the prevalence, risks and legality of abortion is low, and notably the lowest of all sexual and reproductive health topics (Bessett, Gerds, Littman, Kavanaugh, & Norris, 2015; Kavanaugh, Bessett, Littman, & Norris, 2013). A recent national poll found that people underestimate how many women have had an abortion, are unaware that abortion rates are declining, and erroneously believe abortion is much more dangerous than other common procedures, such as wisdom tooth removal (Vox, 2016). Studies of women who are presenting for an abortion, or who have recently had an abortion, have found similar misperceptions and overestimates of risk (Littman et al., 2014; Wiebe, Littman, Kaczorowski, & Moshier, 2014).

While there has been public and professional concern about the accuracy of state-mandated information scripts, the extent that information provided at the abortion visit has an effect on women's knowledge is unknown. Understanding whether this information affects abortion knowledge is a first step towards developing a broader understanding of whether and how state-mandated informed consent policies affect women's decision-making about abortion and their experiences when seeking care.

This study focuses on Utah, a state that mandates a face-to-face information visit at least 72 hours prior to an abortion (Sanders, Conway, Jacobson, Torres, & Turok, 2016). To comply with the mandate, facility staff read aloud a standardized information script. The script includes scientifically accurate statements on the safety of abortion, including its lower risk relative to childbirth (“The risk of death associated [with] childbirth is about 11 times as high as that associated with abortion.”). It also stresses negative emotional responses to the procedure (Guttmacher Institute, 2016), listing “post-abort syndrome” and depression among its risks. The script does not address other common abortion myths, such as those regarding future fertility, risk of breast cancer, or feelings of regret. It further directs women to a pregnancy resource guide on the State Department of Health’s website, which contains inaccurate statements about the psychological effects of abortion (Utah Department of Health, 2012). This analysis explores women’s endorsement of common abortion myths before and after receiving Utah’s state-mandated information. It asks: (1) To what extent do women endorse common myths about abortion? and (2) To what extent does myth endorsement change following receipt of state-mandated information? As the study is exploratory, it did not establish *a priori* hypotheses about how change would vary across myths.

## **Methods**

### *Study Design*

The study design has been described elsewhere (omitted). Briefly, participants included English and Spanish-speaking women ages 15 and older who presented for an abortion information visit at four family planning facilities in Utah, one of which provided abortions. State law requires the

notification and consent of one parent prior to a minor's abortion. Minors were eligible to participate in the study with their assent and consent from one parent.

Facility staff informed women about the study and invited them to participate. Women who consented to participate completed an iPad survey prior to receiving state-mandated information and counseling provided as part of routine care. Routine counseling was provided by trained staff, who discussed treatment options by gestational age, details of treatment procedures, safety, potential complications, risks, benefits, pain management, follow-up care, and contraceptive counseling. Three weeks later, participants completed a telephone interview with trained research interviewers. The institutional review board of the University of California, San Francisco approved the study protocol.

### *Measures*

At baseline and follow-up, participants were asked to choose which of two statements was closer to the truth for five common myths about the safety of abortion and longer term risks of depression/anxiety, breast cancer, feelings of regret, and infertility. (See Table 1.) These five myths are frequently presented in state-mandated documents (Guttmacher Institute, 2016) and have been considered in prior research (Bessett et al., 2015; Littman et al., 2014; Wiebe et al., 2014). "Don't know/not sure" was offered as a response option for each item. For each myth, we assigned women a score of 0 points for endorsing the more accurate statement, 0.5 points for each "don't know/not sure" response, and 1 point for endorsing the myth. We created an overall myth endorsement scale as the mean score across the five items, with a range of 0 to 1. Higher scores indicated greater myth endorsement (i.e., lower abortion knowledge). We created a myth endorsement change scale by subtracting women's baseline score from their follow-up score.

Other baseline measures included age (continuous), race (White vs. non-White), religion (Protestant, Catholic, Mormon, other religion, no religion), education (some high school/high school graduate vs. some college/college graduate), receipt of public assistance (yes vs. no in previous 12 months), gestational age of the pregnancy, and pregnancy history (no previous pregnancies, previous pregnancies resulting in births, previous pregnancies resulting in abortions, previous pregnancies resulting in births and abortions, previous pregnancies resulting in other/unknown outcomes).

At follow-up, women were asked whether they remembered someone reading information “from a paper about risks involved in the abortion procedure and your options for this pregnancy” and if they believed that the information on the paper was accurate. Both items were measured on a 5-point Likert scale (Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Agree).

### *Analysis*

We conducted attrition analyses to assess differences in the sample of women who completed the follow-up interview with those who were lost to follow-up using  $\chi^2$  tests for categorical variables and *t*-tests for continuous variables. The analyses required 23 comparisons across the myth and sociodemographic categories; we therefore used a corrected standard for statistical significance ( $p < .01$ ) to assess differential loss to follow-up.

We examined the distribution of responses to the five myth items and myth endorsement scale at baseline. We assessed predictors of the baseline myth endorsement scale using a multiple linear regression model. Covariates were selected based on key characteristics of abortion patients (Jerman, Jones, & Onda, 2016) and included age, race, religion, education, use of public



assistance, and pregnancy history. Facility site was considered as a fixed effect, but not retained because likelihood ratio tests determined that its inclusion did not improve model fit. *F*-tests were used to assess the joint significance of sets of categorical dummy variables (religion, pregnancy history).

We used paired *t*-tests to examine change in responses to each myth and the myth endorsement scale from baseline to follow-up. We assessed predictors of change in the myth endorsement scale using multiple linear regression, including the same covariates as in the baseline analysis. Analyses were conducted using Stata 14.1 (StataCorp, 2015).

## **Results**

### *Attrition Analysis*

Of the 494 women who completed the baseline survey, 309 (63%) were interviewed at follow-up. Those lost to follow-up had completed less education than those retained ( $p=.004$ ). There were no statistical differences in other baseline characteristics (age, gender, religion, use of public assistance, gestational age of the pregnancy, and pregnancy history), five myth items, or myth endorsement scale at the corrected significance level.

### *Sample Description*

The mean age of women in the baseline sample was 25.7 years (SD=5.6), and six (1.2%) were minors. The majority were White (65%), had at least some college education (55%), reported no religious affiliation (54%), and were not on public assistance (68%). The mean gestational age of the current pregnancy was 7.1 weeks (SD=2.7) at the time of the information visit; 97% of pregnancies were in the first trimester (<13 weeks). Most women (62%) reported having been

pregnant before their current pregnancy. Half (49%) had previously given birth and 23% had had a prior abortion, with 14% experiencing both childbirth and abortion. (See Table 2.)

Among those completing the follow-up interview, 86% reported having had an abortion, 3% reported having had a miscarriage or discovering they had not been pregnant, and 11% reported they were still pregnant.

### *Baseline Myth Endorsement*

Baseline myth endorsement varied for each statement. (See Table 1.) Women were least likely to endorse the myth statement “Abortion causes breast cancer” (1%) and most likely to endorse the myth statement “Having an abortion causes women to become depressed and anxious” (27%). Many women responded “don’t know” to the myth items. There was considerable variation by myth, with 70% of women reporting not knowing about the relative safety of abortion and childbirth and 36% not knowing whether abortion affects future fertility.

### *Predictors of Baseline Myth Endorsement*

Age, race and pregnancy history were significantly associated with baseline myth endorsement in the multivariable regression model. (See Table 3.) Myth endorsement decreased with age ( $b=-0.01$ ,  $p=.004$ ) and was lower for White women compared to non-White women ( $b=-0.05$ ,  $p=.021$ ). Pregnancy history was significantly associated with baseline myth endorsement ( $p=.037$ ). Specifically, women who had previously given birth but not previously had an abortion had a higher myth endorsement score relative to women who had not previously been pregnant ( $b=0.06$ ,  $p=.039$ ). Religion, education, and public assistance were not significantly associated with baseline myth endorsement in the multivariable model.

### *Change in Myth Endorsement*

Figure 1 displays the proportion of women endorsing each myth statement at baseline and follow-up ( $N=304$ ). The proportion increased (from 24% to 34%) for the statement that abortion causes depression or anxiety, and decreased or held stable for the other four statements. Table 4 displays this trend using continuous myth endorsement scores. Statistically significant decreases in myth endorsement are noted for four myth statements (all at least  $p<.05$ ), while a statistically significant increase is found for the depression/anxiety statement (0.47 to 0.52,  $p<.05$ ). The mean myth endorsement score decreased from 0.37 to 0.31; this change was statistically significant ( $p<.001$ ).

### *Predictors of Change in Myth Endorsement*

Table 5 displays results of the multivariable regression model predicting change in myth endorsement from baseline to follow-up. Women reporting at least some college education showed a significant decrease in myth endorsement from baseline to follow-up ( $b=-0.08$ ,  $p=.001$ ), whereas women receiving public assistance showed a significant increase ( $b=0.07$ ,  $p=.007$ ). The set of pregnancy history variables was significantly associated with change in myth endorsement ( $p=.008$ ). Women with a history of childbirth but not abortion showed a significant decrease in myth endorsement ( $b=-.07$ ,  $p=.032$ ), compared to women reporting no previous pregnancy. Age, race, and religion were not significantly associated with change in myth endorsement, controlling for other variables in the model.

### *Other Items*

Ninety-eight percent of women remembered that someone had read information about abortion risks and pregnancy options to them (63% strongly agree, 36% agree), and 95% stated that the information was accurate (27% strongly agree, 68% agree).

## **Discussion**

Despite considerable research evidence indicating that abortion in the U.S. is safe (Raymond & Grimes, 2012; Upadhyay et al., 2015) and does not have long-term negative consequences for women's physical or mental health (Beral et al., 2004; Biggs et al., 2016; Foster et al., 2015; Hogue, 1986; Major et al., 2009), misinformation about abortion is widely presented in state laws, by the media, in abstinence education programs, at crisis pregnancy centers, and in anti-abortion advocacy arguments (Bryant & Levi, 2012; di Mauro & Joffe, 2007; Ott & Santelli, 2007; Sisson & Kimport, 2014; U.S. House of Representatives Committee on Government Reform, 2004). It is therefore not surprising to find that most women in this study hold inaccurate views or report not knowing about the five statements on abortion. At baseline, more than 10% of women endorsed common myths about the safety of abortion relative to childbirth, its effect on future fertility, and on commonness of feelings of regret, and more than 25% incorrectly believed that abortion leads to increased risk of depression and anxiety. Notably, an even greater proportion of women reported not knowing about basic facts related to the physical and mental health risks of abortion, with 36% to 70% responding that that they did not know whether the statements were accurate or not. It is important to note that, despite this limited knowledge about health outcomes following an abortion, the overwhelming majority of women expressed certainty about their decision to have an abortion (omitted), and 86% had an abortion by three weeks later (omitted).

These findings mirror other studies that have highlighted pervasive misperceptions about the physical and emotional risks of abortion among the general public and, more importantly, among women presenting for an abortion (Bessett et al., 2015; Kavanaugh et al., 2013; Littman et al., 2014; Wiebe et al., 2014). The extent that our study indicates a lower prevalence of misinformation may be due to differences in study populations, but is more likely due to our inclusion of a “don’t know/unsure” response option rather than using a dichotomous true/false measure. By offering this option, we do not force women to guess when they are unsure of the answer; answers based on guesses could potentially reflect extant political beliefs about abortion (Kavanaugh et al., 2013). For example, when unsure about the correct response, a woman opposed to abortion rights may be more likely to choose an option that describes abortion as risky, and a woman supportive of abortion rights may be more likely to choose an option that describes abortion as safe.

We found that myth endorsement decreased from the time of the information visit to the interview three weeks later. It is noteworthy that participants reported an increase in myth endorsement solely for the statement that was inaccurately presented in Utah’s mandated script, i.e., that abortion causes depression and anxiety. In contrast, myth endorsement decreased for the statements that were correct, or not mentioned, in the state-mandated script.

This study is a step in understanding the mechanisms by which myth endorsement may change among women presenting for abortion. Before concluding that the state-mandated information has a causal effect on myth endorsement (i.e., an “information” explanation for the noted change), alternative explanations need to be considered. Myth endorsement after an abortion may be influenced by other aspects of the abortion experience (i.e., a “personal experience” explanation). For example, a woman may gain knowledge about the immediate

effect of abortion (i.e., that the procedure is safe, that many women do not feel regret) because she has now had an abortion. Our finding that myth endorsement decreased among women with a prior birth (but no prior abortion) may lend some support to this explanation, i.e., that these women gained knowledge having gone through the experience of having an abortion that they could then contrast with their birth experience when answering the item comparing the relative safety of abortion and childbirth. The increase in women's reports of abortion causing depression and anxiety could also possibly be due to their personal experience with Utah's required 72-hour waiting period, and not the information in the script. In fact, some women in our study reported that the waiting period resulted in difficulties due to forced attention to a decision they had already made – including wanting the abortion to be over, nervousness about the procedure, and feelings of frustration – which they may have experienced as increased anxiety (omitted). However, if changes in myth endorsement were solely the result of personal experience, we would not expect to see changes in knowledge about long-term consequences (i.e., breast cancer, infertility) within the 3-week study period. Decreasing endorsement for these two items raises questions about the personal experience explanation for changes in myth endorsement, and thus adds validity to the conclusion that other factors – namely, the information received during the information visit – are likely involved.

To that end, it is likely that information shared during routine counseling affects women's knowledge about abortion, as it includes details of treatment options, potential complications, risks, and benefits. This may help explain the decline in overall myth endorsement in this study, including for those myths not explicitly mentioned in the state-mandated script. Routine counseling cannot, however, explain the increase in endorsement of the depression/anxiety myth that was inaccurately presented in the state script. Consistency in the routine counseling was

likely to be high across women in the study, as all four sites are affiliates of a larger organization that provides standardized training for counselors. However, the specifics of the information provided during the routine counseling that each woman received was not observed. Additional research is needed to disentangle the effects of state-mandated information from that of routinely provided counseling, as well as the impact of women's own personal experiences with an abortion.

Based on these results, we conclude that the continued promotion of misinformation in these scripts could affect women's experience with abortion. Additional analyses from this study indicate that women with greater knowledge about abortion are more certain in their decision (omitted). The overwhelming majority of women presenting for abortion are certain about their decision (Foster, Gould, Taylor, & Weitz, 2012; Gatter, Kimport, Foster, Weitz, & Upadhyay, 2014). However, the minority who are conflicted in their decision-making and then proceed to have an abortion may experience more negative emotions (Rocca, Kimport, Gould, & Foster, 2013). If abortion myths cause decisional conflict—an issue which should be explored in future studies—it is possible that providing accurate information could reduce conflict and decrease negative emotional responses subsequent to abortion.

This study has limitations worth noting. First, the study sample was limited to women presenting for abortion information visits in Utah, a sample who differ from women receiving abortions across the U.S. (Jerman et al., 2016). These findings may not be generalizable to other states. For example, Utah has a large Mormon population. Additionally, the mandated information differs from other states, where scripts have been shown to be less accurate (Daniels et al., 2016; Guttmacher Institute, 2016; Richardson & Nash, 2006) and thus may have a greater impact. Second, as previously described, we are unable to disentangle the effect of the state-

mandated information from the routinely provided counseling provided during the visits. Changes in women's myth endorsement may be a result of either, or both. Although all of the facilities in this study followed a standardized script to provide Utah's mandated information and thus can be assumed to be consistent for all women in the sample, the specifics of the routine counseling each woman received are unknown. Third, additional survey measures would be informative in understanding these results. While women reported their religion, extent of religiosity was not addressed. An assessment of prior experience with the health care system would have been useful in understanding the extent women trust the information provided. Finally, one-third of participants did not complete a follow-up interview. Few differences were noted between the full baseline sample and those retained at follow-up. Sensitivity analyses, conducted for the larger study, indicate that the proportion of women who returned for an abortion was similar for those who did and did not complete the follow-up interview (omitted). Nonetheless, these results might be biased if those lost to follow-up were differently affected by the information script and counseling than those who completed the follow-up interview.

### *Implications for Policy and Practice*

Informed consent scripts are an important component of women's experiences with abortion care, with the number of state laws dictating practice increasing widely following the 1992 *Planned Parenthood v. Casey* Supreme Court decision, which affirmed states could enact regulations to ensure women's decisions were "thoughtful and informed." While these laws may not present a concrete barrier to a woman's ability to obtain an abortion—as is the case with some other state-level abortion regulations and limits on public funding (Dennis, Manski, & Blanchard, 2014; Gerds et al., 2016)—understanding women's experiences with regulations that



have become integrated into routine abortion care remains important. Provider-patient communication rests on the understanding that health care professionals provide accurate, unbiased information so that patients can make informed choices that meet their needs and are consistent with their values. Misinformation in these laws “detracts from the essential trust between patients and their physicians,” (Lazzarini, 2008)p.2191) and thus may have long-term consequences for women’s ongoing relationship with the health care system. Moreover, these laws undermine the autonomy of physicians, nurses and counselors in caring for their patients and, in mandating the presentation of false information, also raise concerns about nonmaleficence by potentially doing harm (Lazzarini, 2008; Mariner & Annas, 2015).

The question of how to effectively educate patients about the health risks of diseases, medical treatments, and procedures has been considered across many areas of medicine; lessons from other fields can inform the abortion context. We have reason to believe that most abortion facilities are comprehensive in their approach, providing information about the procedure (i.e., risks and benefits), assessing patient certainty, gauging patients’ feelings and providing emotional support as part of their informed consent and counseling practices (Gould, Perrucci, Barar, Sinkford, & Foster, 2012). Several resources are available for abortion providers on how to obtain informed consent and support their patients’ decision-making (Baker, 1995; Paul et al., 2009; Perrucci, 2012).

In response to state legislatures’ enacting mandated information laws for abortion, state departments of health are tasked with implementing these policies and including specific state-mandated information in their materials. These departments do not necessarily have the resources or opportunity to modify content based on their professional expertise or best understanding of the research evidence, nor do they necessarily have the opportunity to update materials based on

new scientific developments. To the extent that state-mandated information laws remain on the books, state governments need to develop mechanisms to periodically update their materials with the latest research evidence to appropriately meet the information needs of their citizens. The ability of states to regulate aspects of abortion care may be in flux. In its 2016 *Whole Women's Health v. Hellerstadt* decision, the Supreme Court placed some limits on the ability of state legislatures to enact abortion restrictions that burden women and are not based in evidence (*Whole Women's Health v. Hellerstadt*, 2016), although it is unclear whether this will be applied to laws that seek to change women's minds about having an abortion.

### **Conclusion**

This study demonstrates that abortion myths persist among women presenting for abortion, and that these beliefs are amenable to change in both positive and negative directions. Notably, women's knowledge appears to increase with information presented accurately or not referenced in state-mandated informed consent scripts, but decrease with information presented inaccurately. Providing materials that decrease women's knowledge violates accepted principles of informed consent and raises important ethical concerns for providers. State policies that require or result in the provision of this misinformation must be reconsidered.

## References

- AMA Council on Ethical and Judicial Affairs. (2016). *Code of Medical Ethics of the American Medical Association*. Chicago, IL: American Medical Association.
- Baker, A. (1995). *Abortion and options counseling: A comprehensive reference*. Retrieved from Granite City, IL
- Beral, V., Bull, D., Doll, R., Peto, R., Reeves, G., & Collaborative Group on Hormonal Factors in Breast, C. (2004). Breast cancer and abortion: collaborative reanalysis of data from 53 epidemiological studies, including 83?000 women with breast cancer from 16 countries. *Lancet*, 363(9414), 1007-1016. doi:10.1016/S0140-6736(04)15835-2
- Bessett, D., Gerdts, C., Littman, L. L., Kavanaugh, M. L., & Norris, A. (2015). Does state-level context matter for individuals' knowledge about abortion, legality and health? Challenging the 'red states v. blue states' hypothesis. *Cult Health Sex*, 17(6), 733-746. doi:10.1080/13691058.2014.994230
- Biggs, M. A., Upadhyay, U. D., McCulloch, C. E., & Foster, D. G. (2016). Women's Mental Health and Well-being 5 Years After Receiving or Being Denied an Abortion: A Prospective, Longitudinal Cohort Study. *JAMA Psychiatry*. doi:10.1001/jamapsychiatry.2016.3478
- Bryant, A. G., & Levi, E. E. (2012). Abortion misinformation from crisis pregnancy centers in North Carolina. *Contraception*, 86(6), 752-756. doi:10.1016/j.contraception.2012.06.001
- Daniels, C. R., Ferguson, J., Howard, G., & Roberti, A. (2016). Informed or Misinformed Consent? Abortion Policy in the United States. *J Health Polit Policy Law*. doi:10.1215/03616878-3476105
- Dennis, A., Manski, R., & Blanchard, K. (2014). Does medicaid coverage matter?: A qualitative multi-state study of abortion affordability for low-income women. *J Health Care Poor Underserved*, 25(4), 1571-1585. doi:10.1353/hpu.2014.0151
- di Mauro, D., & Joffe, C. (2007). The religious right and the reshaping of sexual policy: An examination of reproductive rights and sexuality education. *Sexuality Research & Social Policy*, 4(1), 67-92.
- Foster, D. G., Gould, H., Taylor, J., & Weitz, T. A. (2012). Attitudes and decision making among women seeking abortions at one U.S. clinic. *Perspect Sex Reprod Health*, 44(2), 117-124. doi:10.1363/4411712
- Foster, D. G., Steinberg, J. R., Roberts, S. C., Neuhaus, J., & Biggs, M. A. (2015). A comparison of depression and anxiety symptom trajectories between women who had an abortion and women denied one. *Psychol Med*, 45(10), 2073-2082. doi:10.1017/S0033291714003213
- Gatter, M., Kimport, K., Foster, D. G., Weitz, T. A., & Upadhyay, U. D. (2014). Relationship between ultrasound viewing and proceeding to abortion. *Obstet Gynecol*, 123(1), 81-87. doi:10.1097/AOG.0000000000000053
- Gerdts, C., Fuentes, L., Grossman, D., White, K., Keefe-Oates, B., Baum, S. E., . . . Potter, J. E. (2016). Impact of Clinic Closures on Women Obtaining Abortion Services After

- Implementation of a Restrictive Law in Texas. *Am J Public Health*, 106(5), 857-864. doi:10.2105/AJPH.2016.303134
- Gould, H., Perrucci, A., Barar, R., Sinkford, D., & Foster, D. G. (2012). Patient education and emotional support practices in abortion care facilities in the United States. *Womens Health Issues*, 22(4), e359-364. doi:10.1016/j.whi.2012.04.003
- Guttmacher Institute. (2016). *Counseling and Waiting Periods for Abortion*. Retrieved from New York, NY: [http://www.guttmacher.org/statecenter/spibs/spib\\_MWPA.pdf](http://www.guttmacher.org/statecenter/spibs/spib_MWPA.pdf)
- Hogue, C. J. (1986). Impact of abortion on subsequent fecundity. *Clin Obstet Gynaecol*, 13(1), 95-103.
- Jerman, J., Jones, R. K., & Onda, T. (2016). *Characteristics of U.S. abortion patients in 2014 and changes since 2008*. Retrieved from New York:
- Kavanaugh, M. L., Bessett, D., Littman, L. L., & Norris, A. (2013). Connecting knowledge about abortion and sexual and reproductive health to belief about abortion restrictions: findings from an online survey. *Womens Health Issues*, 23(4), e239-247. doi:10.1016/j.whi.2013.04.003
- Lazzarini, Z. (2008). South Dakota's abortion script--threatening the physician-patient relationship. *N Engl J Med*, 359(21), 2189-2191. doi:10.1056/NEJMp0806742
- Littman, L. L., Jacobs, A., Negron, R., Shochet, T., Gold, M., & Cremer, M. (2014). Beliefs about abortion risks in women returning to the clinic after their abortions: a pilot study. *Contraception*, 90(1), 19-22. doi:10.1016/j.contraception.2014.03.005
- Major, B., Appelbaum, M., Beckman, L., Dutton, M. A., Russo, N. F., & West, C. (2009). Abortion and mental health: Evaluating the evidence. *Am Psychol*, 64(9), 863-890. doi:10.1037/a0017497
- Mariner, W. K., & Annas, G. J. (2015). Informed consent and the First Amendment. *N Engl J Med*, 372(14), 1285-1287. doi:10.1056/NEJMp1501190
- Ott, M. A., & Santelli, J. S. (2007). Abstinence and abstinence-only education. *Current Opinion in Obstetrics & Gynecology*, 19(5), 446-452.
- Paul, M., Lichtenberg, S., Borgatta, L., Grimes, D., Stubblefield, P., & Creinin, M. (2009). *Management of unintended and abnormal pregnancy: Comprehensive abortion care*. Hoboken, NJ: Wiley-Blackwell.
- Perrucci, A. (2012). *Decision assessment and counseling in abortion care: Philosophy and practice*. New York: Rowman & Littlefield.
- Raymond, E. G., & Grimes, D. A. (2012). The comparative safety of legal induced abortion and childbirth in the United States. *Obstet Gynecol*, 119(2 Pt 1), 215-219. doi:10.1097/AOG.0b013e31823fe923
- Richardson, C. T., & Nash, E. (2006). *Misinformed Consent: The Medical Accuracy of State-Developed Abortion Counseling Materials*. Retrieved from New York, NY: <https://www.guttmacher.org/pubs/gpr/09/4/gpr090406.pdf>

- Rocca, C. H., Kimport, K., Gould, H., & Foster, D. G. (2013). Women's emotions one week after receiving or being denied an abortion in the United States. *Perspect Sex Reprod Health*, 45(3), 122-131. doi:10.1363/4512213
- Sanders, J. N., Conway, H., Jacobson, J., Torres, L., & Turok, D. K. (2016). The longest wait: Examining the impact of Utah's 72-hour waiting period for abortion. *Womens Health Issues*. doi:10.1016/j.whi.2016.06.004
- Sisson, G., & Kimport, K. (2014). Telling stories about abortion: abortion-related plots in American film and television, 1916-2013. *Contraception*, 89(5), 413-418. doi:10.1016/j.contraception.2013.12.015
- Smith, M. R. (2012). *Informed Consent Laws: Protecting a Woman's Right to Know*. Retrieved from Washington, DC: <http://www.aul.org/wp-content/uploads/2012/04/informed-consent-laws.pdf>
- StataCorp. (2015). Stata/SE 14.1. College Station, TX: StataCorp.
- U.S. House of Representatives Committee on Government Reform. (2004). *The Content of Federally Funded Abstinence-Only Education Programs*. Washington, DC.
- Upadhyay, U. D., Desai, S., Zlidar, V., Weitz, T. A., Grossman, D., Anderson, P., & Taylor, D. (2015). Incidence of emergency department visits and complications after abortion. *Obstet Gynecol*, 125(1), 175-183. doi:10.1097/AOG.0000000000000603
- Utah Department of Health. (2012). *Information About the Developing Embryo and Fetus, about Abortion, and about Abortion Alternatives*. Retrieved from [http://health.utah.gov/mihp/Abortion/English\\_Abortion\\_Book\\_2012\\_web.pdf](http://health.utah.gov/mihp/Abortion/English_Abortion_Book_2012_web.pdf)
- Vandewalker, I. (2012). Abortion and informed consent: How biases counseling laws mandate violations of medical ethics. *Michigan Journal of Gender and Law*, 19(1).
- Vox. (2016). What Americans Think About Abortion. Retrieved from <http://www.vox.com/a/abortion-statistics-opinions-2016>
- Wiebe, E. R., Littman, L., Kaczorowski, J., & Moshier, E. L. (2014). Misperceptions about the risks of abortion in women presenting for abortion. *J Obstet Gynaecol Can*, 36(3), 223-230.

ENDORSEMENT OF COMMON ABORTION MYTHS

**TABLE 1. Survey Response Options for Abortion Myth Endorsement Items and Responses at Baseline (N = 494)**

	N	Accurate Statement	Inaccurate (Myth) Statement	Don't Know/ Not Sure
Safety	490	19% Abortion in the U.S. is safer than childbirth.	11% Childbirth in the U.S. is safer than abortion.	70%
Depression/anxiety	491	29% Having an abortion does not cause women to become depressed and anxious.	27% Having an abortion causes women to become depressed and anxious.	44%
Breast cancer	493	53% Abortion does not cause breast cancer.	1% Abortion causes breast cancer.	46%
Regret	492	38% Most women feel relieved after their abortions.	14% Most women feel regret after their abortions.	48%
Infertility	493	50% Having an abortion does not affect whether women can become pregnant and have children later.	14% Having an abortion makes it more difficult for women to become pregnant and have children later.	36%

ENDORSEMENT OF COMMON ABORTION MYTHS

**TABLE 2. Description of Sample at Baseline (N = 494)**

	<b>Mean (SD) or N (%)</b>
Age in years (mean, SD)	25.7 (5.6)
Age group	
<18	6 (1)
18-29	382 (77)
30-39	102 (20)
40+	9 (2)
Race/ethnicity	
White	323 (65)
Black	14 (3)
Hispanic/Latina	118 (24)
Other, mixed race	39 (8)
Religion	
No religion	266 (54)
Protestant	51 (10)
Catholic	58 (12)
Mormon	94 (19)
Other religion	23 (5)
Education	
Some high school or high school graduate	221 (45)
Some college or college graduate	273 (55)
Public assistance	159 (32)
Gestational age of pregnancy in weeks (mean, SD)	7.1 (2.7)
Pregnancy history	
No previous pregnancy	186 (38)
Pregnancy, birth only	168 (35)
Pregnancy, abortion only	43 (9)
Pregnancy, birth and abortion	69 (14)
Pregnancy, other/unknown outcome	20 (4)

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**TABLE 3. Multivariable Regression Model Predicting Overall Myth Endorsement Scale at Baseline (N = 482)**

	<b>Coefficient (s.e.)</b>	<b>95% Confidence Interval</b>	
Age in years	-0.01 (0.00) **	-0.01	0.00
Race/ethnicity			
Non-white (ref.)	--	--	--
White	-0.05 (0.02) *	-0.09	-0.01
Religion <sup>^</sup>			
No religion (ref.)	--	--	--
Protestant	0.06 (0.03) *	0.00	0.12
Catholic	0.04 (0.03)	-0.02	0.11
Mormon	0.01 (0.02)	-0.04	0.06
Other religion	-0.05 (0.05)	-0.15	0.03
Education			
Some high school or high school graduate (ref.)	--	--	--
Some college or college graduate	-0.02 (0.02)	-0.06	0.02
Public assistance	-0.03 (0.02)	-0.07	0.02
Pregnancy history <sup>^</sup>			
No previous pregnancy (ref.)	--	--	--
Previous pregnancy, birth only	0.06 (0.03) *	0.01	0.11
Previous pregnancy, abortion only	-0.03 (0.03)	-0.09	0.04
Previous pregnancy, birth and abortion	0.03 (0.03)	-0.04	0.10
Previous pregnancy, other outcome	-0.08 (0.05)	-0.17	0.02

\*  $p < .05$ , \*\*  $p < .01$

<sup>^</sup> F-test of group of categorical variables statistically significant for pregnancy history ( $p = .037$ ).  
Not statistically significant for religion ( $p = .097$ ).



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**TABLE 4. Change in Myth Endorsement from Baseline to Follow-Up, Paired Sample (N = 304)**

	N	Myth Endorsement Score (Mean, SD)		Change
		Baseline	Follow-Up	
Safety	300	0.44 (0.26)	0.33 (0.29)	-0.11 (0.29)***
Depression and Anxiety	300	0.47 (0.36)	0.52 (0.40)	0.05 (0.41)*
Breast Cancer	303	0.23 (0.26)	0.19 (0.25)	-0.04 (0.28)*
Relief or Regret	303	0.37 (0.34)	0.31 (0.34)	-0.07 (0.35)**
Fertility	303	0.30 (0.36)	0.21 (0.31)	-0.09 (0.39)***
Overall Myth Endorsement Scale	303	0.37 (0.20)	0.31 (0.21)	-0.05 (0.19)***

Change in scores from baseline to follow-up, \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

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**TABLE 5. Multivariable Regression Model Predicting Change in Overall Myth Endorsement from Baseline to Follow-up (N = 298)**

	<b>Coefficient (s.e.)</b>	<b>95% Confidence Interval</b>	
Age in years	0.00 (0.00)	0.00	0.01
White	-0.02 (0.02)	-0.07	0.03
Religion <sup>^</sup>			
No religion (ref.)	--	--	--
Protestant	-0.03 (0.04)	-0.10	0.04
Catholic	0.02 (0.04)	-0.05	0.09
Mormon	0.01 (0.03)	-0.04	0.07
Other religion	-0.05 (0.06)	-0.16	0.07
Education			
Some high school or high school graduate (ref.)	--	--	--
Some college or college graduate	-0.08 (0.02) **	-0.13	-0.03
Public assistance	0.07 (0.03) **	0.02	0.13
Pregnancy history <sup>^</sup>			
No previous pregnancy (ref.)	--	--	--
Previous pregnancy, birth only	-0.07 (0.03) *	-0.13	-0.01
Previous pregnancy, abortion only	0.03 (0.04)	-0.05	0.11
Previous pregnancy, birth and abortion	-0.03 (0.04)	-0.11	0.05
Previous pregnancy, other/unknown outcome	0.12 (0.05) *	0.02	0.22

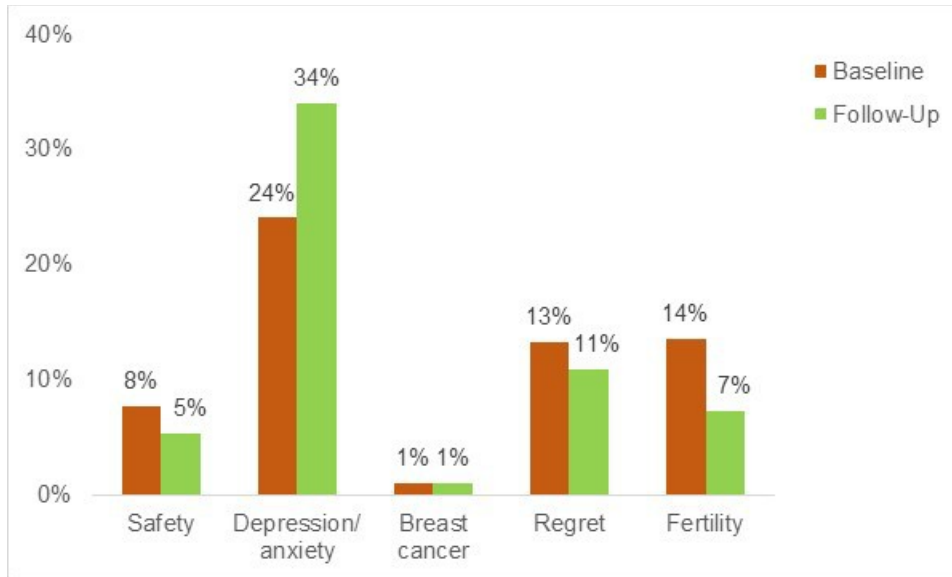
\*  $p < .05$ , \*\*  $p < .01$

<sup>^</sup> F-test of group of categorical variables statistically significant for pregnancy history ( $p = .008$ ).

Not statistically significant for religion ( $p = .732$ ).

## ENDORSEMENT OF COMMON ABORTION MYTHS

**FIGURE 1. Proportion of Women Endorsing Inaccurate (Myth) Statement at Baseline and Follow-up, Matched Sample (N = 304)**



Note: Data include participants who provided both baseline and follow-up data, and therefore differ from the percentages presented in Table 1 for the full baseline sample.