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# Assessing public awareness and use of medical abortion via mobile phone survey in India ☆,☆☆

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ABSTRACT

*Objective:* We assess the feasibility of measuring awareness and use of medical abortion via a mobile phone survey on social attitudes in India.
*Study design:* In 2018, we conducted a mobile phone survey with 3455 married men and women in Bihar and Maharashtra, two of India's most populous states. As part of a broader survey on social inequality, welfare programs, and health, we asked respondents about their awareness of medical abortion and whether they (or their wife) had ever had a medical abortion.
*Results:* Among men and women in Bihar and Maharashtra, one fifth to one third of respondents said that they had heard of medical abortion. In Bihar, men were more likely than women to report having heard of pills that can be used to end a pregnancy. Awareness of medical abortion was positively associated with education and with women's status within the household. Consistent with results from representative face-to-face surveys, reported use of abortion medications was low.
*Conclusion:* Our findings demonstrate that respondents are willing to answer abortion-related questions via mobile phone survey and reveal differences in reported awareness of medical abortion according to region, sex, education, and household status.
*Implications:* Inclusion of abortion-related questions in a large-scale, social attitudes phone survey is a feasible option for assessing public awareness of medical abortion in India.


## 1. Introduction

When medical abortion first became a legal option in India in 2002, guidelines required individuals to obtain a doctor's prescription. Yet in 2015 alone, the largest and most comprehensive study of abortion incidence in India revealed that an estimated 11.5 million induced abortions occurred outside of health facilities with the use of medications, and that the vast majority of those abortions (87%) were completed with medical abortion Combipacks (mifepristone plus misoprostol) [1]. Given the informal nature of this health behavior, researchers have turned to innovative methods that involve recruitment and data collection in pharmacies to better understand women's experiences seeking abortion [2,3]. These studies have assessed safety and effectiveness of medical abortion outside of the clinic setting [3] as well as knowledge and attitudes of pharmacists that provide abortion medications without a prescription [4–7]. Because medical abortion outside of health facilities is thought to be more prevalent than abortions in the formal sector [1], these studies have greatly enhanced our understanding of women's abortion experiences in India. Despite apparently widespread access, however, most of these studies sample men and women who have already sought an abortion; therefore, we know little about public knowledge and perceptions of medical abortion in India.

We contribute to this gap in the literature by presenting results from a large-scale, social attitudes mobile phone survey from two states in India: Bihar and Maharashtra, which are important places to study medical abortion because they are two of India's most populous states. Bihar has significantly lower GDP per capita, lower

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literacy rates, and more conservative attitudes towards women than Maharashtra. Women's labor-force participation rates have declined across India, and in both states, since 2005 [8]. Given this context, we explore whether differences in awareness of medical abortion can be explained by differences in sex, education, and women's intrahousehold status. An analysis of differences in awareness and use by sex further allows us to examine the gendered social context of abortion-seeking in India. Previous studies suggest that a significant proportion of people who purchase abortion medications are men who do so on their partner's behalf [4,6]. In some cases, men's role in this process may be indicative of reproductive coercion; therefore, an analysis of differences in awareness of medical abortion by sex has important implications for women's reproductive autonomy. Nevertheless, since women may sometimes obtain abortions without their partner's knowledge, we anticipated that women's reported use of medical abortion would be higher than men's reports of their partner's abortions.

Evidence from a range of countries and political contexts indicates that abortion is greatly underreported in survey research [1,9–11]. A primary cause of underreporting is likely due to the fact that abortion, along with premarital sex and birth, are stigmatized in India [12–15]. Nevertheless, a household survey on abortion attitudes revealed that almost 90% of men and women believe that abortion should be allowed for a range of reasons, to include when the pregnancy is a result of rape or contraceptive failure, the woman is unmarried, or she does not desire another child [2]. Despite popular support for abortion access under these circumstances, underreporting may also be common in India due to a widespread, albeit incorrect, belief that abortion is illegal [2,13]. The inclusion of survey questions assessing awareness of medical abortion can therefore improve understanding of public willingness to report this information to researchers in a context where abortion has been legal for decades but is often perceived to be illegal. In the following analysis, we investigate reported knowledge and use of medical abortion, accounting for region, sex, education level, and women's intrahousehold status.

## 2. Materials and methods

### 2.1. The Social Attitudes Research, India (SARI) survey

Social Attitudes Research, India (SARI) is a mobile phone survey which asks questions about gender and caste, inequality, and mental health. SARI takes advantage of the high rates of mobile phone use in India, where 93% of households own a mobile phone [16]. The survey uses a random digit dialing technique to select adults ages 18–65 for inclusion in the sample. India's Department of Telecommunications (DOT) assigns each phone company a certain number of 5-digit "series" to be used as the first 5 digits of the phone numbers they issue. We use lists of potentially active phone numbers by combining these series (in proportion to the number of subscribers to each phone company) with 5 randomly generated digits to form a complete 10-digit mobile number.

The overall response rate for the survey was calculated by dividing the total number of interviews by the number of valid phone numbers that were called. SARI's overall response rate of 22% may seem low to researchers who work with survey data collected in face-to-face interviews, but it is high compared with phone surveys done in developed countries; a Pew Research Center study from the United States (US) found an average response rate of 9% in its 2012 surveys [17]. Kohut et al. (2012) concluded that despite this response rate, phone surveys that are weighted to match the demographic composition of the population provide accurate estimates of public opinion.

The survey is offered in several languages. In Bihar, respondents have the option of taking the survey in Hindi, Maithili, or Bhojpuri. In Maharashtra, they have the option of taking the survey in Marathi or Hindi. The person who answers the phone is invited to participate in a 10-minute survey about their lifestyle and how people around them live. They have the option to refuse the survey if they do not want to participate, schedule a call-back later, or continue the survey. If they decide to participate, this same individual who answers the phone is asked to list all adults in his/her household who are of the same sex as the interviewer. Using this list, survey respondents are selected by Qualtrics survey software in one of two ways: either by (i) randomly selecting an individual from the list of eligible respondents or (ii) selecting the least educated individual from the list of eligible respondents. Once the selected person is on the line, the surveyor again obtains consent from the selected respondent, who can then choose to participate or not, or reschedule a follow-up call.

Random selection from the family listing was used to select approximately half of survey respondents; 54% of individuals in the sample were selected because they were the least educated in their households. This latter sampling strategy helped to produce distributions of education among SARI respondents that better match the education distribution in the 2011 Census of India for the state.

The Figures in the Supplementary Material, published online, show how the raw distributions of age (Fig. S1), education (Fig. S2), and rural residence (Fig. S3) among SARI respondents compare to the distributions of these variables in the 2011 Census. In most cases, the distributions are quite close. The largest mismatch between the raw SARI data and the 2011 Census is on education; in particular, people who never attended school are underrepresented in the SARI data. Like other sample surveys, we adjust our estimates using statistical weights. The weights are constructed using demographic data from the 2011 Census that account for the intersection of sex, place (i.e. urban/rural), education, and age. Our estimates will be unbiased if, within each sex, place, education, and age category, the people who did not respond would have answered similarly to those who did respond. Additional information about survey design and data collection, as well as strategies to reduce non-sampling error, can be found in Coffey et al. (2018) [18] and in online documentation at http://riceinstitute.org/data/sari-dataset-documentation/. Ethical approval for the SARI survey was provided by the r.i.c.e IRB (NIH #IORG0008721 under the name RICE Institute, Inc.).

### 2.2. Survey design

Prior studies have noted that the sensitivity of abortion-related questions can make it a challenging topic to study [19,20]. We aimed to reduce the sensitivity of questions, as well possible attrition from the sample, by asking abortion-related questions to men (both married and unmarried) and married women only. We conducted 50 pilot interviews and found that unmarried men were comfortable answering questions about medical abortion awareness. However, we did not ask abortion-related question to unmarried women. Local researchers on the SARI team felt that questions posed to an unmarried woman about medical abortion would imply that she has had sex outside of marriage. For this reason, we followed data collection practices consistent with the India Human Development Survey in not surveying unmarried women on topics related to pregnancy [21]. Question wording and section ordering was extensively piloted to ensure clarity for respondents and limit how questions from one section could impact subsequent sections. In order to further promote respondent retention, abortion questions were asked relatively late in the survey. Earlier survey questions asked about sanitation, religion and caste, gender

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and status, and inter-caste/ inter-religious marriage. Questions about medical abortion were preceded by questions about the acceptability of physical violence between parents and children, educators and students, and husbands and wives.

All surveyors completed a three-day training to learn about the purpose of the survey and how they would enter data, track respondents, and ask questions. Surveyors watched role-plays and practiced interviewing each other during this initial training period. Each surveyor then spent approximately one week calling pilot numbers to practice the survey with close supervision by survey managers. After supervisors felt that surveyors were ready for responses to be recorded, surveyors were given actual sample phone numbers to call. For training on abortion-related questions, extensive care was taken to explain the purpose of the question. Surveyors were taught how to ask the question respectfully, respond to various types of reactions, and listen as respondents provided their stories or answers. If surveyors were unsure about how to code a response, they could call a manager to clarify. Further questions were addressed in weekly group meetings to ensure that all surveyors were asking questions and coding answers in a consistent manner.

Participants in our sample have only attended school for an average of five years, and many have limited knowledge about formal health care. For this reason, we carefully selected non-technical language to describe medical abortion to provide for the possibility that some may be familiar with the medications even if they do not know the names, brands, or regimens for use. SARI surveyors asked the following questions about medical abortion:

1. "Now I want to ask you about pregnancy. Some people know quite a bit of information about pregnancy and health; others know less. Do you know that if a woman wants to end her pregnancy there are some pills that she can get at a pharmacy or a hospital and that she can take? Have you ever heard about these pills before?" *[awareness of medical abortion pills]*
2. "This medicine works like this: it usually comes in a pack of five pills. If a pregnant woman takes these pills, she then feels some cramping and she starts bleeding like she is having a period. This is how the pregnancy ends. (Among married women) So, have you ever taken those pills before? (Among married men) So, has your wife ever taken those pills before?" *[use of medical abortion pills]*

### 2.3. Analytical plan

We sought to investigate how reported awareness and use of medical abortion differ across demographic characteristics and social contexts. We stratify our results by state and include the following predictors in our analysis: sex, age, education, and women's intrahousehold status. The predictor for women's intrahousehold status is a composite score (coded as 0, 1, 2, or 3) of responses to three questions that were asked specifically to married women. We used this composite score for simplicity of interpretation, but results were consistent when we used dummy indicators. The questions are: 1) whether she believes a woman whose husband earns enough to support the family should work outside the home; 2) whether women in her household eat with men (rather than after them); and 3) whether she can leave the house without permission from senior family members. These variables have been validated by prior literature on women's status in India [15,16]. Although we found that unmarried men were willing to answer questions about medical abortion, the analyses presented in this paper restrict the sample to married men in order to provide better comparisons across sexes.

We use OLS linear probability models to estimate the relationship between awareness of medical abortion and our demographic predictors. The model we use for female respondents (the second set of results presented for each state) is:

$$aware_i = Age_i\Theta_1 + Education_i\Theta_2 + \beta_1 Status_i + \varepsilon_i$$

where $aware_i$ is an indicator for whether respondent $i$ is aware of medical abortion; $Age_i$ is a vector of indicator variables controlling for age group (18–24; 25–34; 35–44; 45–60; with 18–24 as the reference category); $Education_i$ is a vector of indicator variables controlling for education category (none; 1–8 years; 9–12 years; 13 + years; with none as the reference category); $Status_i$ is a measure of women's status that takes on the values 0, 1, 2 or 3 depending on how many of the binary women's status questions (described above) she responded positively to; and $\varepsilon_i$ is an error term.

Following an analysis of reported use of medical abortion, we compare our results with rates of abortion in the National Family Health Survey (NFHS), a representative face-to-face survey. One difficulty of this comparison, however, is that the NFHS, 2015–16 asks women about abortion only if they had a pregnancy since January 2011 which ended in miscarriage, abortion, or stillbirth. Assuming that the distribution of miscarriage, abortion, and stillbirth stayed the same before and after 2011, we multiply the fraction of women who ever had a terminated pregnancy by the fraction of last pregnancies since 2011 that were abortions to estimate the fraction of women who have ever had an abortion.

## 3. Results

### 3.1. Sample characteristics

Overall, 2331 participants from Bihar and 1124 participants from Maharashtra completed the survey. Table 1 presents demographic and social characteristics of married male and female respondents in each state. A higher proportion of women than men are in the youngest age group, perhaps as a result of women's lower average age at marriage. Across both states, women are less educated than men, and this gap is wider in Bihar than in Maharashtra. Finally, as expected given Maharashtra's higher GDP and levels of female labor force participation, Maharashtra has higher levels of women's status than Bihar for all three indicators.

### 3.2. Feasibility of asking about medical abortion via mobile-phone survey

Table 2 shows the number of respondents who were asked two questions about medical abortion and the percent who provided an answer. Refusal to answer questions about medical abortion was uncommon. Response to medical abortion questions was somewhat higher in Maharashtra than in Bihar, perhaps because average education is higher in Maharashtra. For no question were response rates to medical abortion questions lower than 93%. This was not the case with all potentially sensitive health questions on the SARI survey. For instance, 90% and 92% of respondents in Bihar and Maharashtra respectively provided an answer to the question on depression ("Sometimes we are so unhappy that nothing pleases us. In the past month, how often did you feel depressed? What would you say – Most of the time, sometimes, or never?").

### 3.3. Description of awareness about medical abortion

Fig. 1 shows summary statistics for the fraction of men and women in Bihar and Maharashtra who have heard of medical abortion pills. Awareness of medical abortion ranges from about 20% of women in Maharashtra to more than 35% of men in Bihar. In

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**Table 1**
Demographic and social characteristics of ever-married respondents residing in two Indian states.

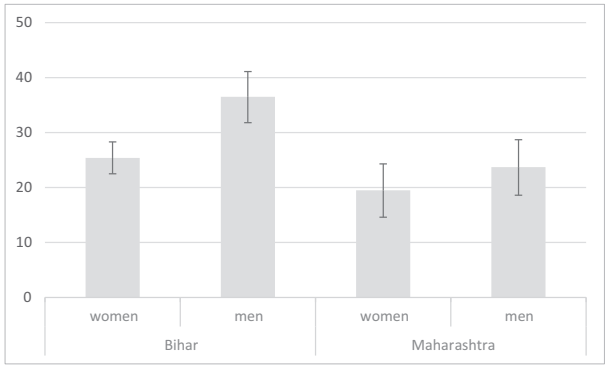
| | Bihar | | Maharashtra | |
|---|---|---|---|---|
| | Men | Women | Men | Women |
| *Age* | | | | |
| 18–24 | 0.05 | 0.17 | 0.03 | 0.15 |
| 25–34 | 0.29 | 0.3 | 0.29 | 0.27 |
| 35–44 | 0.3 | 0.23 | 0.31 | 0.27 |
| 45–60 | 0.36 | 0.29 | 0.37 | 0.31 |
| *Education* | | | | |
| None | 0.41 | 0.66 | 0.21 | 0.36 |
| 1–8 years | 0.3 | 0.21 | 0.38 | 0.36 |
| 9–12 years | 0.14 | 0.07 | 0.16 | 0.13 |
| 13 + years | 0.14 | 0.06 | 0.25 | 0.15 |
| *Women's status indicators* | | | | |
| Believes women should work outside the home | . | 0.57 | . | 0.78 |
| Women in the household do not eat last (i.e. after men) | . | 0.34 | . | 0.74 |
| Woman can leave house without permission | . | 0.32 | . | 0.34 |
| Number of women's status indicators (of 3) | . | 1.22 | . | 1.86 |
| Total | 838 | 1493 | 535 | 589 |

*Data source:* SARI, 2018.

**Table 2**
Response rates to questions about medical abortion from a mobile-phone survey of social-attitudes among men and married women in two Indian states.

| | Bihar | | Maharashtra | |
|---|---|---|---|---|
| | women | Men | Women | Men |
| *Awareness of medical abortion pills* | | | | |
| number asked | 1510 | 849 | 594 | 538 |
| percent responded | 99% | 99% | 99% | 99% |
| *Use of medical abortion pills* | | | | |
| number asked | 1493 | 838 | 589 | 535 |
| percent responded | 93% | 95% | 94% | 98% |

*Data source:* SARI, 2018.




*Data source: SARI, 2018.*

**Fig. 1.** Percent of ever-married men and women who have heard of medical abortion in two Indian states. *Data source:* SARI, 2018.

Maharashtra, women and men were similarly likely to have heard of medical abortion, but in Bihar, men were significantly more likely to have heard of it than women (35% of men vs. 25% of women, $p < 0.05$).

### 3.4. Predictors of awareness about medical abortion

Table 3 presents the results of OLS linear probability models predicting whether a respondent has heard of medical abortion. We present results separately for Bihar and Maharashtra and display results for men and women combined and for women only. In the models that include only women, we additionally control for the number of indicators of women's status that apply to that respondent.

The results in Table 3 suggest that age is not strongly correlated with awareness of medical abortion. On average, people in the oldest age group are less likely to have heard of it than younger people, but apart from this there are no significant associations between awareness and age. Education, however, is positively associated with awareness: in Bihar, an adult with 13+ years (at least some college) of schooling is over 20 percentage points more likely to have heard of medical abortion than one who has never attended school ($\widehat{\beta} = 0.276$, $p < 0.01$). In Maharashtra, the difference is more than 30 percentage points ($\widehat{\beta} = 0.306$, $p < 0.01$). Despite the large associations with education, we find that differences in education do not entirely explain sex differences in awareness in Bihar. Even after controlling for differences in age and education, women in Bihar are about 8 percentage points ($\widehat{\beta} = -0.079$, $p < 0.01$) less likely to have heard of medical abortion than men.

The second column for each state restricts the sample to women and controls for the number of women's status indicators (out of 3) that apply to the respondent. We find that higher status is associated with greater awareness of medical abortion, even controlling for education. In Maharashtra, the association is particularly strong. An additional women's status indicator is associated with being about 8 percentage points more likely to have heard of medical abortion (Bihar: $\widehat{\beta} = 0.029$, $p < 0.05$; Maharashtra: 0.077, $p < 0.01$).

### 3.5. Reported use of medical abortion pills

Fig. 2 presents the fraction of adults who say that they (married women) or their wives (married men) have ever used medical

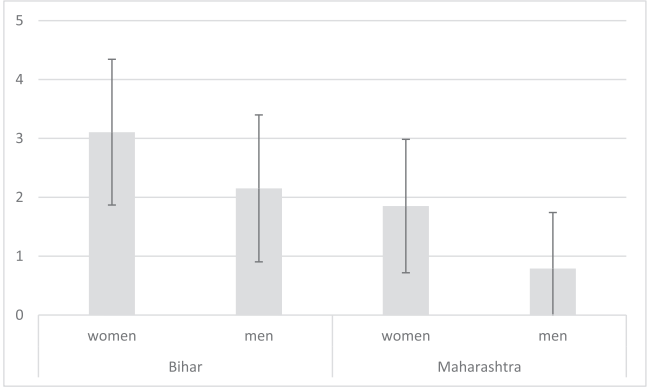
**Table 3**
Linear probability models explaining variation in awareness of medical abortion pills among ever-married men and women in two Indian states.

| | Awareness of medical abortion pills | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Bihar | | | | Maharashtra | | | |
| | Men & women | *P*-value | Women | *P*-value | Men & women | *P*-value | Women | *P*-value |
| Female | −0.079 | 0.000 | | | −0.018 | 0.453 | | |
| | (0.02) | | | | (0.03) | | | |
| Age | | | | | | | | |
| 18–24 | . | | . | | . | | . | |
| 25–34 | −0.027 | 0.399 | 0.030 | 0.376 | −0.067 | 0.137 | 0.024 | 0.634 |
| | (0.03) | | (0.03) | | (0.05) | | (0.05) | |
| 35–44 | −0.003 | 0.939 | 0.012 | 0.744 | −0.027 | 0.543 | −0.058 | 0.261 |
| | (0.03) | | (0.04) | | (0.05) | | (0.05) | |
| 45–60 | −0.058 | 0.077 | 0.029 | 0.427 | −0.109 | 0.015 | −0.079 | 0.140 |
| | (0.03) | | (0.04) | | (0.05) | | (0.05) | |
| Education | | | | | | | | |
| None | . | | . | | . | | . | |
| 1–8 years | 0.092 | 0.000 | 0.092 | 0.998 | 0.094 | 0.002 | 0.083 | 0.041 |
| | (0.02) | | (0.02) | | (0.03) | | (0.04) | |
| 9–12 years | 0.147 | 0.000 | 0.197 | 0.000 | 0.085 | 0.030 | 0.064 | 0.257 |
| | (0.03) | | (0.05) | | (0.04) | | (0.06) | |
| 13 + years | 0.214 | 0.000 | 0.167 | 0.001 | 0.306 | 0.000 | 0.276 | 0.000 |
| | (0.03) | | (0.05) | | (0.04) | | (0.05) | |
| Women's status indicators (of 3) □ | | | 0.029 | 0.033 | | | 0.077 | 0.000 |
| | | | (0.01) | | | | (0.02) | |
| Constant | 0.316 | 0.000 | 0.171 | 0.000 | 0.180 | 0.000 | 0.023 | 0.706 |
| | (0.04) | | (0.03) | | (0.05) | | (0.06) | |
| Number of respondents in each group | 2331 | | 1378 | | 1124 | | 556 | |

*Data source:* SARI, 2018.
□ The predictor for women's intrahousehold status is a composite score (coded as 0, 1, 2, or 3) of responses to three questions that were asked about women's intrahousehold status. The questions include: (1) whether she believes a woman whose husband earns enough to support the family should work outside the home; (2) whether women in her household eat with men (rather than after them); and (3) whether she can leave the house without permission from senior family members.
*Note:* This table presents coefficients and standard errors, in parentheses, from linear probability regression models of an indicator for reporting having heard about medical abortion pills on demographic and social characteristics. In the left column for each state, the sample is ever-married men and women; in the right column, the sample includes only ever-married women. A negative coefficient means that a person with that characteristic is less likely to have heard of medical abortion than a person in the reference category. So, a coefficient of −0.08 on "female" for the Bihar sample means that, other things equal, women in Bihar are 8 percentage points less likely to have heard of medical abortion than men.

abortion to end a pregnancy. Within states, answers for men and women are not statistically significantly different. However, the figures, which for women were about 3% in Bihar and about 2% in Maharashtra, seem quite low.

It is difficult to assess by how much these figures may underestimate the fraction of women who have ever had a medical abortion. The National Family Health Survey, 2015–16 finds that 1.8% of 18–49 year-old women in Bihar and 3.9% of 18–49 year old women in Maharashtra have ever had an abortion. This would include both medical and surgical abortions, so the estimated number of medical abortions would necessarily be lower.




*Data source: SARI, 2018.*

**Fig. 2.** Percent of ever-married adults who report that they or their wives have ever used medical abortion pills in two Indian states. *Data source:* SARI, 2018.

## 4. Discussion

To our knowledge, SARI made the first-ever attempt to ask a population-representative sample of Indian adults about their use of medical abortion in a phone survey. This study assessed the feasibility of including abortion-related questions in a mobile phone survey of married men and women in two states of India. Despite our initial reservations about asking abortion-related questions in a general-interest survey on social attitudes, respondents were more likely to answer questions about medical abortion than we anticipated, indicating that phone surveys could be a fruitful methodology for future research on this sensitive topic.

Although medical abortion is widespread in India, significant variation in reported awareness of medical abortion exists. Awareness of medical abortion as an option to end a pregnancy was higher among those living in Bihar, men compared to women, people with greater levels of education, and women with higher intrahousehold status. The greater awareness of medical abortion among adults in Bihar relative to Maharashtra may seem surprising given their lower average education, but perhaps it is less surprising when we consider that according to nationally representative data from the National Family Health Survey (NFHS), 2015–16, unmet need for family planning in Bihar was twice what it was in Maharashtra (approximately 20% of married women ages 15–49 vs. approximately 10%). People in Bihar may be more familiar with medical abortion if they have more unintended pregnancies.

Reported use was generally low, in line with the NFHS, a recent representative, face-to-face survey. Unfortunately, consensus in the scientific literature is that the Demographic and Health Surveys, of which the NFHS is a part, substantially underestimate

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abortion [13,22]. Therefore, even though SARI returned estimates of similar magnitude to the NFHS, there is reason to believe that SARI's methods also substantially underestimate use of medical abortion.

Future research should focus on improving question wording, as well as possibly surveyor training, to see whether future mobile phone surveys can yield better estimates of use of medical abortion than face-to-face surveys. In particular, SARI surveyors were instructed to repeat the question verbatim if the respondent did not understand. Future survey research could also consider rephrasing questions or experimenting with alternative wording, such as mentioning specific names of medicines or common brands of abortion medications.

This study was subject to several limitations. We sought to describe medical abortion in a conversational and non-technical way so that respondents from a range of backgrounds would be able to understand the questions. However, the first question about medical abortion awareness was compound and therefore may have been confusing. Consequently, the replicability of this study in other contexts may be limited.

Another limitation of this study is that men and people living in urban areas are more likely to own mobile phones compared to women or people living in rural areas [16]. A recent nationally-representative study suggests that over 90% of households in India have access to a mobile phone [16], so we sought to mitigate this bias by randomly selecting a respondent based on a household listing of residents. Although our sample is diverse in terms of age, sex, education, and women's intrahousehold status, it is nevertheless possible that individuals who answered the phone may not have accurately represented their household structure to the surveyor. We discovered during data collection that our sample was not balanced by education level and began a targeted sampling of the least-educated household members. We therefore recognize that our initial sampling strategy faces some constraints.

The risk of social desirability bias is a challenge encountered by most surveys, particularly those that ask about sensitive behaviors. Abortion is a particularly stigmatized topic, which lead us to believe that our findings of reported awareness and use of medical abortion are conservative. Nevertheless, we found that roughly one-third of men and women reported that they had heard of medical abortion. These findings motivate future measurement of abortion prevalence using questions that ask about abortion in indirect ways related to knowledge rather than personal experience. One method that elicits higher reports of abortion involves asking women about the abortion experiences of their friends rather than their own abortions [22]. In our study, similar proportions of women reported having a medical abortion as men who reported their wife's medical abortion. This suggests a minimal gender gap in knowledge and awareness of medical abortion among married couples, however, future studies, particularly those that include unmarried women, are needed to better understand the social context of abortion-seeking in India.

These results shed light on differences in reported awareness and use of medical abortion in two Indian states. Male respondents, those with more education, and women with higher household status were more likely to report awareness of medical abortion. Future studies are needed to determine whether these differences are due to differential willingness to report or to disparities in access to information. Given high estimated prevalence of medical abortion outside of the formal healthcare setting in India, our study validates the use of mobile phone surveys to ask men and married women about their awareness and experiences of medical abortion. Although the relatively low rate of reported use appears to be a significant limitation of the mobile phone survey approach, approximately 20–35% of respondents confirmed that they had heard of medical abortion, representing an important step forward in the analysis of medical abortion in survey research.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.contraception.2019.08.005.

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