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Sources, Providers and Self-Reported Complications among Indian Women Seeking Induced Abortion: Evidence from the National Family Health Survey (2015–16)

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ABSTRACT

This article attempts to find types of sources and providers, and likelihood of self-reported complication among Indian women. Fifty-three percent of abortions are done at private health facilities. Only one in every 5 women went to public health facilities, and the rest did not go anywhere (27.5%). Doctors are the major abortion service providers (52.3%) in India. Eighteen percent of women who sought abortion reported some complication. Logit regression shows that complications were 1.8 times higher in the second-trimester than the first-trimester abortion. This study suggests for addressing the demand of abortion by accessing and improving services in public health system.

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Abortion; sources; providers; complications; India

Introduction

In India, unsafe abortion accounts for 8% of all maternal deaths according to reports available on the causes of death (ORGI & CGHR, 2006). During 2010–2014, 58% of all abortions in south-central Asia, of which India is considered to be a part and constitutes 69% of the region's population, were estimated to be unsafe (Ganatra et al., 2017). Deaths due to unsafe abortions are unnecessary and can be easily avoided by providing safe and legal abortion services to all women seeking abortion.

In 1971, India legalized induced abortion under the Medical Termination of Pregnancy (MTP) Act (Government of India [GoI], 1971). The Act allows a woman to avail abortion legally if her pregnancy carries the risk of grave physical injury, endangers her mental health, results from contraceptive failure in the case of a married woman or from rape, or is likely to result in the birth of a child with physical or mental abnormalities. The Act allows women to seek termination of pregnancy up to 20 weeks of gestation. An amendment to the MTP Act, aiming at wider

and safer access to abortion services, legalized the use of medical method of abortion (MMA) in 2002 (GoI, 2002). The MMA, recommended by the World Health Organization (WHO, 2012), is medically safe methods to terminate a pregnancy up to 9 weeks of gestation. However, for the purposes of safety, the GoI has limited it to 7 weeks of gestation (GoI, 2016).

The GoI has prescribed operational guidelines for Comprehensive Abortion Care (CAC) Services to improve the quality of abortion-related services in public and private sectors (GoI, 2014). Toward the aim of further improving access to safe abortion services, the GoI has drafted amendments to the 1971 MTP Act to widen the network of abortion service providers and increase the gestation age from 20 to 24 weeks. However, the bill is yet to be passed by the Parliament.

The total fertility rate in India has declined to 2.3 births per woman in the fourth round of the National Family Health Survey (NFHS)-4 (2015–2016), from 3.4 births per woman in the first round of NFHS-1 (1992–1993). This decline

in fertility does not seem to commensurate with the observed changes in the effective use of modern contraceptive methods between these two surveys. In addition, a large section of India's population is young and sexually active. Today, many young men and women are challenging old traditions of early marriage, and early childbearing, large family size norms, and sexual taboos. Thus, abortion plays a critical role in attaining reproductive goals especially when effective contraceptive services and sex education are seldom available. This is evident from the recent abortion incidence estimates for India that show 15.7 million abortions were performed out of 48.1 million pregnancies in the year 2015 (Singh et al., 2018). Thus, about nine million abortions would fall in unsafe category if the proportion of unsafe abortions (58%) estimated for the south-central Asian region by Ganatra et al. (2017) were applied to India. Singh et al. (2018) have also estimated as high as about 0.8 million abortions in 2015 had been done outside of health facilities by using methods other than medication or surgical abortion. These are traditional and mostly unsafe methods that include vaginal herbs, roots, foreign bodies, abdominal massage, and homemade concoctions.

Abortions sought at early gestation are safer, accessible and affordable in a context like India. Several studies have looked at the gestational period at which abortions are performed in India. These indicate that the majority of the abortions take place during the first trimester. However, studies have also shown that there have also been a sizable proportion of second-trimester abortions (Dalvie, 2008). The GoI reported that about 13% of all abortions had taken place in the second trimester in the year 2004–2005 (GoI, 2007). This suggests that there is a demand for second trimester abortions too. Therefore, safe abortion services, provided through advanced medical techniques and procedures as suggested by the WHO (2012), should be made available upto the primary level of health care facilities.

Studies from 2002 onwards indicate that government facilities are not the leading providers of abortion services in India; rather, the majority of the women who have undergone abortion report having done so at private facilities (Jejeebhoy,

Zavier, & Kalyanwala, 2010; Banerjee, Andersen, & Warvadekar, 2012). Registered facilities providing second-trimester abortion services across India and facilities that are fully equipped to perform abortion are few in number (Dalvie, 2008). A comprehensive review of literatures suggest that young and unmarried women are especially vulnerable to sexual and reproductive health problems in general, and it is primarily due to poor access to safe abortion services that many resort to unsafe abortion (Stillman, Jennifer, Susheela, Ann, & Kalyanwala, 2014). Pallikadavath and Stones (2006), in their study on maternal and social factors associated with abortion in India, concluded that rising education among women may have led to the increase in demand for induced abortion. However, multiple barriers such as lack of awareness about abortion services, poor quality of services, lack of trained personnel, scarcity of modern abortion methods at health care facilities, and sociocultural stigma are critical in the Indian context (Banerjee, Andersen, Warvadekar, & Pearson, 2013; Visaria, Barua, & Mistry, 2008; Jejeebhoy, Zavier, Acharya, & Kalyanwala, 2011a, b)

Given the above context and literature, this article aims to study the prevalence of self-reported induced abortions, the characteristics of women who had an induced abortion, the gestational age at which abortion was sought. This work also examines socioeconomic differentials and regional patterns in places where induced abortion was sought, type of service providers, and the susceptibility to experience any postabortion complications. Analyses of these aspects of self-reported abortion-seeking behavior can provide useful pointers for developing effective strategies to provide safe and legal induced abortions among diverse socio-demographic subgroups so that mortality and morbidities attributed to unsafe abortion can be eliminated (Banerjee & Andersen, 2012). This article has a high degree of relevance as no previous research study, to the best of our knowledge, has been done so far on such aspects of induced abortion in India using responses from a large nationally representative sample of women aged 15–49 years.

Data and methods

For the first time in 2015–2016, the fourth round of the NFHS—a nationally representative large-scale cross-sectional survey, also known as India’s Demographic and Health Survey (DHS)—collected information on abortion services sought by women. The present article has used the information from the women’s data file to meet the objectives of this article. This is the first-ever work on abortion-related issues using the NFHS (2015–16) data. The survey collected unit level data on socioeconomic characteristics (each household member’s information on age, sex, marital status, and occupation, relationship with household head, type of sanitation facilities, possession of household goods, households covered in health schemes/insurance, etc.) from 601,509 households and individual level information (age, marital status, reproductive and maternal care history, outcomes of pregnancies, husband’s background, spousal violence, and health care utilization, etc.) from 699,686 women in the reproductive age group. The International Institute for Population Sciences, Mumbai, was the national nodal agency to carry out the survey under the stewardship of the Ministry of Health and Family Welfare, GoI.

In this article, the terms *abortion* and *induced abortion* have been used interchangeably to enhance its readability. To make the results nationally representative, we applied national sample weights given in the women’s data file. Women who had reported an induced abortion for the last pregnancy during the 5 years preceding the survey were included in the analysis. A total of 2,76,321 outcomes of the last pregnancy during the 5 years preceding the survey were reported by women aged 15–49 years. The questions put to the women in NFHS-4 were, “When did the last such pregnancy end?”, “Have you ever had a pregnancy that miscarried, was aborted or ended in a stillbirth?”, and “Did that pregnancy end in a miscarriage, an abortion or a stillbirth?”

A total of 8023 women reported induced abortion at the all India level. NFHS-4 gathered information from the women who had undergone an induced abortion since January 1, 2009, on the

place of abortion, type of service provider, and the occurrence of any abortion complication. The battery of questions used in the survey on these important aspects of abortion included, “How many months pregnant were you when the last such pregnancy happened?”, “Where was the abortion performed?”, “Who performed the abortion?”, “Did you have any complication from the abortion?”, and “Did you seek treatment for the complication?”

Based on their responses, the prevalence of self-reported induced abortion complications according to background characteristics, type of provider, source (place of abortion), and gestational age was estimated. The unit level (household, women, and men) dataset is available on the DHS program website and can be downloaded from <https://dhsprogram.com/data/available-datasets.cfm>.

We applied both descriptive and inferential statistics to make our results robust. In the descriptive analysis, we used percentages, percentage distribution, and bar diagram, whereas in the inferential statistics, we applied a multivariate logistic regression analysis to estimate the likelihood of any abortion complication (for technical details regarding multivariate logistic regression analysis, see Chapter 5 in Retherford & Choe, 1993). The mathematical formulation of the analysis is given below:

$$P = 1/(1 + e^{-z})$$

Where P is an estimated probability of experiencing any abortion complication, Z is a set of predictor variables, and e is the base of the natural logarithm. Z is a set of a linear function of predictor variables and can be written as follows-

$$Z \equiv b_0 + b_1X_1 + b_2X_2 + \dots + b_iX_i + \dots + b_kX_k$$

Where Xi’s are different predictor variables and bi’s are coefficients.

The ethical clearance for the survey was obtained from the Institutional Review Board of IIPS, Mumbai, and the ICF. The data analysis was carried out with the help of statistical software STATA/SE version 15.1 (StataCorp LP, College Station, TX).

Results

Sociodemographic and subnational variations in abortion rate (self-reported) in India

A total of 2,76,321 pregnancy outcomes were reported by women who had their last pregnancy 5 years prior to the survey (Table 1). Of these, only 3.1% were reported as induced abortion. The prevalence of self-reported induced abortion varies by age of women, residence, years of schooling, caste, and wealth status. Among women aged 40–49 years, 6.1% of the pregnancies ended in induced abortion compared to 2.8% among women aged 15–19 years. A relatively higher proportion of urban women (4.4%) reported induced abortion as the outcome of their last pregnancy compared to their rural counterparts (2.6%). Across caste and tribe groups, Scheduled Tribe women reported the lowest proportion of induced abortions as the outcome of their last pregnancy. The proportion of those reported terminating their last pregnancy was found to increase with women's education (from 2% among nonliterate to 4% among those with 12 or more years of schooling). The wealth index showed a similar trend, with the percentage of terminated pregnancies increasing from the lowest (1.6%) to the highest (4.6%) quintile.

Figure 1 shows the percentage of pregnancies terminated (self-reported) in different states and union territories (UTs). The level of induced abortion reported in Manipur (9.6%), Chandigarh (6.3%), Delhi (6.1%), Kerala (5.5%), Assam (5.2%), and West Bengal (5.1%) was much higher than the national average of 3.1%. On the contrary, the level of induced abortion reported by women in Mizoram (0.4%), Meghalaya (0.9%), Bihar (1.0%), Sikkim (1.1%), Daman & Diu (1.2%), Madhya Pradesh (1.3%), Rajasthan, and Haryana (1.8% each) was much lower than the national average.

Characteristics of women who had induced abortion and differentials in gestational age

It is important to examine the socioeconomic, demographic and regional background characteristics of women who reported termination of their last pregnancy during the 5 years preceding

Table 1. Percentage of Induced Abortion as Outcome of the Last Pregnancy by Selected Women's Background Characteristics, India.

Background characteristics	Abortion	Number of pregnancies
Age		
15–19	2.8	8364
20–29	2.5	194,949
30–39	4.4	66,730
40–49	6.1	6277
Residence		
Urban	4.4	79,550
Rural	2.6	196,771
Years of schooling		
No schooling	2.0	81,486
<7 years complete	2.9	61,538
8–11 years complete	3.6	79,542
12 or more years complete	4.0	53,755
Religion		
Hindu	3.1	217,309
Muslim	3.0	45,860
Christian	3.7	5566
Sikh	2.8	3411
Others	2.7	4174
Caste/tribe		
Scheduled caste	3.0	59,523
Scheduled tribe	1.8	28,146
Other backward classes	3.0	121,821
Others	3.9	66,831
Wealth index		
Lowest	1.6	67,971
Second	2.6	60,279
Middle	3.3	55,018
Fourth	4.0	50,934
Highest	4.6	42,119
Total	3.1	276,321

Sources: IIPS & ICF, 2017.

the survey. The majority of the women (57.5%) who had reported abortion were in the age group 20–29, followed by those aged 30–39 (35.3%). The proportion of women reporting termination of a pregnancy among those who had one, two and three surviving children was found to be nearly equal (27–34%). The marital duration of half of those women who reported induced abortion was between 6 and 15 years, and nearly one-fourth (24%) had completed 3–5 years of marriage. One in every seven women who reported termination of their last pregnancy had completed 16 or more years of marriage.

It is to be noted that the proportion of rural women (59%) was higher among those who had reported any induced abortion. Women with 8–11 years of schooling contributed to approximately 34% of the total abortions reported in the 5 years preceding the survey. The share of reported abortions increased from 13.4% in the lowest wealth quintile to 23.5% in the fourth quintile. The share of the central region was the highest (27.8%) in the reported abortions,

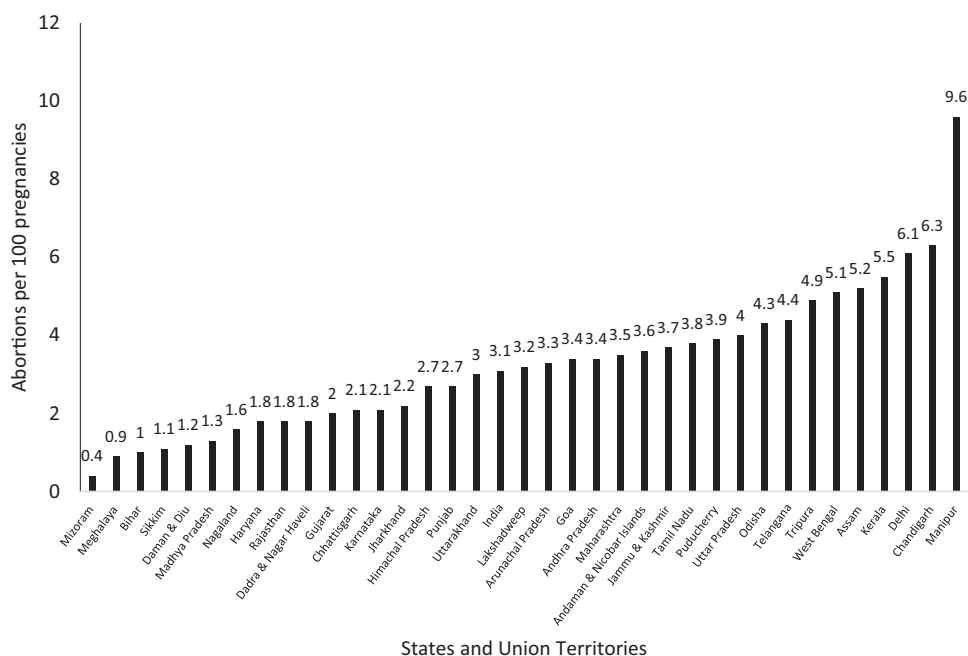


Figure 1. Percentage of Induced abortions as outcomes of the last pregnancies during the 5 years preceding the survey by States and Union Territories, India, 2015–2016. Sources: It is drawn using the information from the Table 6.16 of the national report of NFHS 2015–2016 (IIPS & ICF, 2017).

followed by the eastern (22.4%) and the southern regions (20.5%).

A large majority of self-reported abortions (86%) were found to take place in the first trimester and the remaining 14% in the second trimester. Women who reported a relatively higher proportion of second trimester abortions than their counterparts in the corresponding categories included those with a shorter duration of marriage (18.9% in 3–5 years of marriage), those having had no schooling (17.1%), and those other than the Hindus and Muslims (19.7%). It is to be noted that 28% of the reported abortions in the southern region occurred in the second trimester, which is the highest across all background characteristics and twice the national average of 14% (Table 2).

Sources for induced abortion by type of health facility: Sociodemographic and regional variations

Table 3 shows the sources of seeking induced abortion among Indian women. More than half of the women (52.3%) reported seeking an abortion from private health facilities and only 20% from public facilities. Twenty-eight percent of them also reported that they had undergone an

abortion neither at a public nor a private health institution. The pattern of seeking termination of a pregnancy varies by women's background characteristics. Compared to the women in the other age groups, a slightly higher proportion of women aged 15–19 (34.7%) reported seeking induced abortion outside of a public or private health care facility. The proportion of women seeking an abortion outside of a health care facility was found to increase with an increase in the number of living children. About 38% of women having three living children did not visit any health facility compared with only 17% of those who did not have any surviving child.

Nearly one-third of the rural women (30.8%) and those with no schooling (35.2%) reported seeking an abortion outside of any type of health institution. Even in the rural areas, where the private sector is not so visible, just a little less than half of the women (47%) sought abortion at private health facilities. Household economic status shown by the wealth index also has a clear association with the sources of seeking induced abortion. The pattern falls along expected lines – about 41% of the women in the lowest wealth quintile did not go to a public or a private health facility to seek induced abortion. The tendency of seeking

Table 2. Percentage Distribution of Abortions by Women's Background Characteristics and Gestational Age, India.

Background characteristics	Percentage distribution	n (weighted)	Gestational age of induced abortions		
			First trimester	Second trimester	Total
Age					
15–19	2.6	204	86.1	13.9	100.0
20–29	57.5	4606	83.6	16.4	100.0
30–39	35.3	2833	89.3	10.7	100.0
40–49	4.7	379	86.6	13.4	100.0
Living children					
None	9.9	798	76.7	23.3	100.0
One	29.1	2336	81.8	18.3	100.0
Two	33.9	2719	88.3	11.7	100.0
Three and more	27.0	2170	90.3	9.7	100.0
Marital duration					
Not in union	2.5	201	82.1	17.9	100.0
0–2 Years	8.4	673	83.7	16.3	100.0
3–5 Years	23.7	1901	81.1	18.9	100.0
6–15 Years	50.0	4007	87.8	12.2	100.0
16+ Years	15.4	1239	88.7	11.3	100.0
Residence					
Urban	41.1	3298	87.6	12.4	100.0
Rural	58.9	4725	84.6	15.4	100.0
Years of schooling					
No schooling	20.2	1619	82.9	17.1	100.0
<7 years	21.1	1695	84.5	15.5	100.0
8–11 years	33.8	2709	87.0	13.0	100.0
12 or more years	24.9	1999	87.7	12.3	100.0
Religion					
Hindu	79.4	6370	85.5	14.5	100.0
Muslim	16.1	1292	89.2	10.8	100.0
Others	4.5	361	80.3	19.7	100.0
Caste/tribe					
Scheduled caste	21.0	1781	84.8	15.2	100.0
Scheduled tribe	5.9	505	84.4	15.6	100.0
OBCs	42.5	3617	84.6	15.4	100.0
Other	30.6	2600	88.5	11.5	100.0
Wealth index					
Lowest	13.4	1078	84.5	15.5	100.0
Second	18.6	1493	83.7	16.3	100.0
Middle	21.3	1705	85.3	14.7	100.0
Fourth	23.5	2881	86.7	13.3	100.0
Highest	23.2	1864	88.0	12.0	100.0
Region					
Northern	11.3	908	86.0	14.0	100.0
Central	27.8	2231	89.8	10.2	100.0
Eastern	22.4	1798	91.0	9.0	100.0
Northeastern	5.9	475	93.4	6.6	100.0
Western	12.0	967	87.0	13.0	100.0
Southern	20.5	1642	71.7	28.3	100.0
India	100.0	8023	85.8	14.2	100.0

Note. OBCs = other backward classes.

abortion at a private health facility was found to increase with household wealth. Two-thirds of the women who belonged to the highest wealth quintile households sought induced abortion at private health facilities. This clearly indicates that a relatively high proportion of women who were young (15–19) and poor, lived in the rural areas, and resided in the central and eastern regions seek induced abortion outside of an institutional health facility. Regional variations are critical for understanding the influence of the sociocultural factors in seeking abortion from a particular type of health facility as well as for the purpose of policy making. A relatively high proportion of women in

the central and eastern regions did not seek an abortion from any type of health institutions. Women from the western (72.8%) and southern (67.0%) regions showed considerable dependence on private health institutions. The north-eastern region revealed an exceptional pattern, with nearly half of the women (48%) having sought abortion at public health facilities

Differentials in type of providers for seeking induced abortion

The providers were grouped into four major categories—(a) doctor, (b) staff nurse/auxiliary nurse

Table 3. Percentage Distribution of Abortions by Sources and Types of Providers by Selected Women's Background Characteristics, India.

Background characteristic	Place of abortion				Type of provider				
	Public	Private	Home	Total	Doctor	Nurse/ANM/LHV	Self	Others	Total
Age									
15–19	22.1	43.2	34.7	100.0	51.2	11.5	26.0	11.3	100.0
20–29	18.4	54.3	27.3	100.0	55.3	14.9	25.9	4.0	100.0
30–39	23.0	50.2	24.9	100.0	51.1	20.2	25.4	3.3	100.0
40–49	21.2	48.2	20.6	100.0	48.5	19.4	27.2	4.9	100.0
Living children									
None	20.4	62.2	17.4	100.0	66.6	13.6	14.4	5.4	100.0
One	22.9	55.7	21.4	100.0	63.0	13.8	20.2	3.0	100.0
Two	19.2	53.2	27.6	100.0	56.1	13.8	26.1	4.0	100.0
Three and more	18.7	43.8	37.5	100.0	34.7	25.2	35.5	4.6	100.0
Marital duration									
Not in union	20.4	46.9	32.7	100.0	36.3	24.2	24.8	14.7	100.0
0–2 years	21.1	57.5	21.4	100.0	64.7	12.8	18.8	4.7	100.0
3–5 years	20.8	56.8	22.4	100.0	60.4	14.6	21.5	3.5	100.0
6–15 years	20.2	50.3	29.5	100.0	52.2	16.3	27.5	4.0	100.0
16+ years	19.0	49.5	31.5	100.0	42.9	23.4	30.4	3.3	100.0
Residence									
Urban	16.9	60.3	22.7	100.0	61.5	14.4	21.8	2.3	100.0
Rural	22.6	46.6	30.8	100.0	47.7	18.6	28.5	5.2	100.0
Years of schooling									
No schooling	21.8	43.0	35.2	100.0	36.5	26.1	31.9	5.5	100.0
<7 years	22.1	43.8	34.1	100.0	46.2	16.7	32.2	4.9	100.0
8–11 years	21.9	52.6	25.6	100.0	56.1	16.0	23.9	4.0	100.0
12 or more years	15.3	66.6	18.1	100.0	69.4	10.8	17.9	2.0	100.0
Religion									
Hindu	20.6	51.7	27.7	100.0	53.1	16.9	26.0	4.0	100.0
Muslim	17.8	52.1	30.1	100.0	51.8	16.9	26.9	4.4	100.0
Others	22.3	63.1	14.7	100.0	64.0	16.9	16.7	2.3	100.0
Caste/tribe									
Scheduled caste	25.9	46.6	27.5	100.0	49.2	20.5	26.2	4.0	100.0
Scheduled tribe	32.5	35.6	31.9	100.0	49.9	14.3	28.7	7.1	100.0
OBCs	17.7	55.1	27.2	100.0	52.9	17.4	25.5	4.2	100.0
Others	17.6	55.5	26.5	100.0	57.4	14.2	25.2	3.2	100.0
Wealth index									
Lowest	23.2	35.9	40.9	100.0	35.5	20.6	36.3	7.6	100.0
Second	23.0	43.6	33.4	100.0	45.0	19.1	30.7	5.2	100.0
Middle	23.5	48.3	28.2	100.0	51.6	17.2	27.4	3.6	100.0
Fourth	19.5	57.4	23.1	100.0	60.2	14.5	22.6	2.8	100.0
Highest	14.1	67.1	18.8	100.0	65.1	15.0	17.3	2.5	100.0
Region									
Northern	27.0	49.9	23.1	100.0	47.6	28.2	22.0	2.2	100.0
Central	14.7	43.6	41.6	100.0	26.4	29.5	38.5	5.6	100.0
Eastern	15.6	46.7	37.7	100.0	47.9	11.3	34.7	6.2	100.0
Northeastern	47.7	25.7	26.6	100.0	63.2	9.6	24.4	2.7	100.0
Western	16.6	72.8	10.6	100.0	81.3	7.4	9.6	1.7	100.0
Southern	23.3	67.0	9.7	100.0	79.8	7.2	10.7	2.2	100.0
India	20.2	52.3	27.5	100.0	53.4	16.9	25.7	4.0	100.0

Note. OBCs = other backward classes; ANM/LHV = auxiliary nurse midwife/lady health visitor.

midwife (ANM)/lady health visitor (LHV), (c) self, and (d) others (Table 3). More than half of the women (53%) had sought abortion from doctors, followed by self (25.7%) and nurse/ANM/LHV (16.9%). The remaining 4% had sought abortion from the other category of providers that may include mainly traditional birth attendants commonly known as *Dais*, traditional healers, herbal practitioners, and massagers.

The background characteristics of women show large variations in terms of the type of service provider for induced abortion. For example, a high proportion of women from the western

and southern regions (about 80% in each), those with 12 or more years of schooling (69.4%), those having no living child (66.6%), those belonging to the highest wealth quintile households (65.1%), those within 2 years of marriage (64.7%), and those other than Hindu and Muslim (64.0%) had sought abortion from doctors. On the contrary, one-third of women in the lowest wealth quintile households (36.3%), those with three or more children (35.5%), and those from the central and eastern regions reported terminating the last pregnancy on their own. In the central region, a fairly large proportion of women

(29.5%) went to a nurse/ANM/LHV to seek termination of their last pregnancy. Nearly one-fourth of the never-married women (24.2%) and those having been married for more than 16 years (23.4%) had also sought abortion from a nurse/ANM/LHV.

Self-reported abortion complications and likelihood of their occurrence

Nearly one in every five women who had an induced abortion (18.1%) reported some kind of complication (Table 4). As high as 27% of those women who had sought their last induced abortion in the second trimester of pregnancy reported some complications. Nearly one in every four women in the age group 40–49 years and those with no living child also reported (24.0% in each) some complications. However, across other backgrounds, not much variation in self-reported abortion complications was noticed.

Results obtained from the multiple logistic regression analysis reveal that age of women, number of living children, region to which the women belong, gestational age, place of seeking abortion, and type of providers are statistically significant and associated with likelihood of reporting abortion complications. Controlling for other background characteristics, women who sought an abortion in the age-groups 20–29, 30–39, and 40–49 were 1.84, 1.91, and 2.25 times more likely to report complications than their younger counterparts in the age group 15–19 years. With the increase in the number of living children, the proportion of women reporting any abortion-related complication was found to decrease. Women with two living children were 46% less likely to report any complications compared with women who did not have any living child. Women in the western region were 41% less likely to report any abortion complication compared to women in the northern region. Women in the northeastern region showed the lowest odds for reporting abortion complications (odds ratio = 0.396 with 99% confidence interval [CI]: 0.313–0.596).

By gestational age, women who had sought abortion in the second trimester of the pregnancy had 1.84 times higher odds (99% CI:

1.463–2.312) of reporting abortion complications as compared to those who had sought abortion in the first trimester. The likelihood of reporting abortion complications was higher among women who had sought abortion at private health facilities (odds of 1.409 times with 99% CI: 1.134–1.751) or at home (odds of 1.59 times with 95% CI: 1.034–2.445) than among those who underwent an abortion at public health facilities. Apart from the place of abortion, the type of provider also is also associated and statistically significant for reporting any abortion complication. Women who did not go to any provider for seeking an abortion (0.636) had lower odds with 95% CI (0.426–0.948) of reporting any complication than those who went to a doctor. Similarly, those women who had sought abortion from a nurse/ANM/LHV has lower and statistically significant odds (0.814 with 90% CI: 0.649–1.019) of reporting pregnancy complications compare with those who had sought from a doctor.

Discussion

Abortion is still a strictly personal and a highly stigmatized event in a woman's life; more so in the Indian context. Therefore, a large-scale sample survey like the National Health and Family Welfare Survey (2015–2016), conducted through face-to-face interviews, suffer from underreporting due to the pressure felt by those surveyed to provide socially desirable responses (Jagannathan, 2001). In addition, despite abortion being legal in a country, if the sociopolitical and religious environment is not conducive to women's right to access abortion, a woman may deliberately choose not to report any such outcome to field investigators even after their best efforts of probing.

Nevertheless, analyzing self-reported prevalence of abortion, characteristics of women who had reported abortions along with additional insights into the place of abortion, the type of service providers and the occurrence of abortion complications can offer critical inputs to health program managers and policy makers. The results of this article conform to those of other studies (Agrawal, 2008; Bose & Trent, 2005; Chae, Desai,

Table 4. Odds Ratios of Reporting Abortion Complications and Their 95% Confidence Interval (CI) by Selected Background Characteristics, India.

Background characteristics	Complications	Sig (Chi-square)	n	Exp (B)	Sig ($P > t $)	95% CI	
						Lower	Upper
Age		<i>ns</i>					
15–19	14.4		196	1.000			
20–29	17.8		4243	1.841	0.020	1.100	3.083
30–39	18.1		2985	1.909	0.024	1.088	3.348
40–49	24.0		459	2.253	0.020	1.136	4.467
Living children		$p < .001$					
None	24.2		722	1.000			
One	16.8		2101	0.625	0.004	0.453	0.862
Two	15.6		2662	0.558	0.001	0.393	0.793
Three and more	20.3		2398	0.643	0.030	0.432	0.957
Residence		<i>ns</i>					
Urban	17.0		2657	1.000			
Rural	18.9		5226	1.060	0.599	0.852	1.320
Years of schooling		$p < .001$					
No schooling	20.7		1676	1.000			
<7 years	19.7		1578	1.185	0.206	0.910	1.542
8–11 years	16.4		2811	1.004	0.973	0.774	1.304
12 or more years	16.9		1818	1.051	0.771	0.753	1.465
Religion		$p < .05$					
Hindu	17.3		5943	1.000			
Muslim	20.8		1244	1.243	0.101	0.959	1.611
Others	21.5		696	1.325	0.161	0.891	1.969
Caste/tribe		<i>ns</i>					
Scheduled caste	17.8		1439	1.000			
Scheduled tribe	21.3		898	1.375	0.064	0.982	1.926
Other backward classes	18.0		3131	0.999	0.995	0.797	1.253
Others	17.8		2415	1.031	0.831	0.779	1.364
Wealth index		<i>ns</i>					
Lowest	20.4		1101	1.000			
Second	19.8		1661	1.047	0.736	0.799	1.373
Middle	18.1		1838	0.976	0.876	0.722	1.320
Fourth	16.5		1734	0.857	0.365	0.613	1.197
Highest	16.9		1549	0.807	0.297	0.538	1.209
Region		$p < .001$					
Northern	22.9		1276	1.000			
Central	21.2		2323	0.8681	0.316	0.697	1.104
Eastern	16.9		1319	0.578	0.001	0.456	0.812
Northeastern	12.2		1612	0.396	0.000	0.313	0.569
Western	17.0		464	0.592	0.009	0.410	0.883
Southern	14.9		889	0.494	0.000	0.333	0.617
Gestational age		$p < .001$					
First trimester	16.6		6882	1.000			
Second trimester	27.0		1001	1.839	0.000	1.463	2.312
Place of abortion		$p < .05$					
Public	15.2		2003	1.000			
Private	19.6		3721	1.409	0.002	1.134	1.751
Home	17.2		2159	1.590	0.034	1.034	2.445
Type of provider		<i>ns</i>					
Doctor	18.6		4098	1.000			
Nurse/ANM/LHV	19.0		1440	0.814	0.073	0.649	1.019
Self	15.9		1998	0.636	0.026	0.426	0.948
Others	20.7		347	0.862	0.559	0.523	1.420
India	18.1		7883				

Note. OBCs = other backward classes; ANM/LHV = auxiliary nurse midwife/lady health visitor; CI = confidence interval.

Crowell, Sedgh, & Singh, 2017; Elul, 2011) in that women at a higher age, those residing in urban areas, those who are more educated, those belonging to well-off households, and those who belong to social groups other than scheduled castes (SCs)/scheduled tribes (STs), and other backward classes experienced a relatively higher rate of pregnancy ended in induced abortion than their counterparts in the respective

subgroups of background characteristics. Further, the analysis of the percentage distribution of women who had an induced abortion by background characteristics gives the contribution of each subgroup to the total reported induced abortions. Mathematically, this depends on two factors—the rate of reported induced abortion and the number of total pregnancies in a given subgroup of women. Therefore, a subgroup of

women even with low abortion rate (measuring as abortion per pregnancy) but with a large number of pregnancies may result a considerably high contribution to the total number of abortions, or vice versa. For example, 59% of the total abortions were reported in rural areas even though the reported rate of abortion was about 1.7 times higher in urban areas. A similar contradiction is seen in the case of reproductive age, where the majority of women aged 20–29 years reported termination of their last pregnancy whereas only less than five percent of women aged 40–49 years reported so. However, the rate of reported abortion was 2.4 times higher (6.1 per 100 pregnancies) in the former age group than in the latter (2.5 per 100 pregnancies). Therefore, any strategy or health initiative to reduce number of abortions must look into both these aspects. This study also reveals that a relatively larger proportion of abortions comes from Hindu women, women from other classes, women with two living children, those with 8–11 years of education, and those living in the central region.

The gestational age at which the pregnancy was terminated has a direct bearing on the health and mortality risks to women seeking an induced abortion. Induced abortion at an early gestational age has no risks to women's health (Agrawal, Unisa, & Agrawal, 2013). Our study also finds that only one in every seven abortions done 5 years prior to the survey date was sought in the second trimester of pregnancy and this is fairly close to the proportion of the second-trimester abortions reported by the GoI in 2004–05 (GoI, 2007) and other studies (Boland, 2010; Kalyanwala, Zavier, Jejeebhoy, & Kumar, 2010; Stillman et al., 2014). Perhaps this can be attributed to an early detection of pregnancy through the use of urine-based pregnancy detection kits that are distributed to Indian women free of charge or at a low cost of about 60–70 Indian Rupees (that is, nearly one U.S. dollar). The credit for this initiative goes to the GoI, which equips grass-roots level health functionaries, Accredited Social Health Activists (ASHA), and ANMs with the *Nischay* (means decision) kit. Women even from rural and socioeconomically weaker backgrounds today have access to the kit and, hence, have enough time to make a decision

about whether or not to continue to the full term of pregnancy.

Our analysis also revealed that a slightly higher proportion of women in the southern region and women with no living children sought induced abortion in the second trimester compared with their other counterparts. It is important to understand the root causes of such exceptions, however, is beyond the scope of this article.

One of the critical aspects of this article was to analyze the type of health facilities Indian women prefer to access for pregnancy termination. Like other studies (Chaturvedi et al., 2015; Duggal, 2004; Johnston, 2002), this study also shows that private sector health facilities are the place of choice for seeking abortions as more than 50% of all induced abortions are done there. The share of the private sector among the places for seeking abortion increases with an increase in women's socioeconomic status. About two-thirds of abortions were reported by women who had 12 or more years of education, belonged to the highest wealth quintile, and lived in the southern region were done in private health facilities. On the contrary, as many as nearly two in five women from the lowest wealth quintile and living in the central region reported that abortions had been done at home. There should not be a matter of worry as long as women in this region use the medical methods of abortion up to the prescribed gestational age on their own at home. The method is clinically safe and has enhanced women's access to abortion (GoI, 2014; WHO, 2012).

Among the three major places of seeking abortion, categorized in this article, public health facilities contribute the least to induced abortions except in the northeast region. Only about one in every five women reported seeking an induced abortion in a public health facility. However, we were not able to determine the level of public health facilities in terms of whether they were primary health centers, community health centers, or subdivisional or district hospitals because of smaller sample size for some of these sources. This missing piece of information is critical in the context of findings that a significant proportion of women from the rural areas, those who are poor, those who belong to SCs/STs, and those who live in the northern and the northeastern

regions still depend on public health facilities for abortion-related services. It might be because of the low presence of private sector health institutions offering abortion services in this region.

This work also provides potentially important information regarding the type of providers whom women had sought induced abortions in the country. It shows that women depend to a large extent on medical doctors (a similar fact also stated in the CAC guidelines provided by the GoI). The number of women seeking abortion from doctors could be high due to their faith in the surgical method used by doctors for carrying out abortion and also mandated by the law in case of second trimester abortion. The results of this study are in line with the expectation that women who are more educated, live in urban areas, have been in marriage for a shorter duration, belong to the highest wealth quintile, and live in the western, southern and northeastern regions are disproportionately high in number in seeking abortion from doctors. Nurses, ANMs, and LHV's together were the providers for about 17% of all reported abortions.

Among women living in the central and eastern regions, those belonging to the lowest quintile households, and those with three or more living children, self-induced abortion was common, with more than one-third of them reporting having abortions themselves. In view of abortion safety, determining whether these abortions were carried out using medical methods of abortion or if there were any barriers to accessing MMA or safe abortion services from a qualified health professional becomes necessary. Nevertheless, induced abortions in India are mostly done by using medical methods of abortion (Singh et al., 2018). It is essential that women be provided appropriate health, referral and other critical information on safe methods, especially MMA, which is legal up to seven weeks of gestational age and declared safe even till nine weeks by the WHO (2012). According to the WHO (2012) guidelines also, information on the method used is an important programmatic tool regarding accessing abortion and its safety. In the absence of such information, women are likely to resort to harmful methods that can create severe

postabortion complications or pose risks to life (Singh et al., 2018; Winikoff & Sheldon, 2012).

This article, using multivariate logistic regression analysis and controlling for other sociodemographic factors, estimated the likelihood of abortion complications by gestational age, place of abortion, and type of service provider. The types of method used for carrying out abortion could not be determined due to the unavailability of information in the survey. It is encouraging to see that 82% of the women who had reported an abortion did not experience any complications. Also, a very large proportion (83%) of those who did experience complications sought treatment (IIPS & ICF, 2017), which is a positive indication towards reducing abortion associated morbidity and mortality in the country.

By sociodemographic variables, women aged 15–19 years, with no living child, and from the northern region had a higher likelihood of reporting postabortion complications compared to their counterparts in the corresponding categories. Therefore, any comprehensive programmatic strategy for abortion care must focus on specific barriers faced by women seeking abortion, reasons for delaying pregnancy termination at early gestational age (within the first trimester), the choice of safe methods available, the follow-up and referral service, and treatment seeking for complications. The effective and voluntary use of contraceptive methods aiming to prevent unintended pregnancies must be emphasized in such strategy.

The findings of our study are in keeping with other studies that found that women who delayed seeking induced abortion (beyond the first trimester of the gestational age) significantly increased the likelihood of reporting postabortion complications (Bartlett et al., 2004; Dalvie, 2008; Gaufberg, 2007; Guttmacher & IPAS, 2010). In contrast to other studies, however, our study found that women who induced abortion themselves or went to public health facilities had lower odds of reporting abortion complications. Women who had self-induced abortion and having a lower likelihood of reporting postabortion complications is very much possible if most of them had used the medical method of abortion. As for the public sector facilities having a lower

likelihood of postabortion complications, it could be due to that most lower level public health facilities might be referring complicated or expected to be complicated abortion cases to nearby private facilities. Such a pattern of behavior has also been reported for other reproductive health services (delivery complications or post-delivery complications) in the past (Benson et al., 2015). Yet another reason could be that the law in India mandates second-trimester abortion cases to seek medical advice from two doctors. Given that most primary health centers and, in fact, many community health centers are equipped with only one doctor, and hence public health facilities could be referring second trimester abortion cases to private sector health facilities.

A critical finding of this work from program and policy perspective is observed in the case of the type of providers, wherein those who sought abortion from a nurse/ANM/LHV or opted for a self-induced abortion had a lower chance of experiencing any postabortion complications than those who went to doctors. Therefore, this finding clearly supports to expending the basket of abortion services providers including nurses/ANM/LHV allowing them to provide abortion up to certain limits of gestational age. This study also suggests that the proposed amendment in the MTP Act in 2014 should be passed soon by the Parliament.

This is the first time in India that a study has used women's responses on various aspects of induced abortion from a nationally representative survey and has revealed that women seeking induced abortions are primarily dependent on private sector facilities. However, many abortion seekers cannot afford private health care because a majority of them are poor and less educated and come from rural and less developed regions of the country. This is why a large number of abortions are conducted either by women themselves by using unsafe methods or under the supervision of less qualified health personnel. Going by the extent of self-reported complications, we suggest that abortion services in the public health sector be improved with a sense of urgency. The public sector abortion-related service provisions should include early detection of

pregnancy, awareness generation, counseling, referral services, and ensuring trained personnel, equipment, and supply in place. In 2014, the GoI released operational guidelines on comprehensive abortion care services aiming to improve the quality and uptake of abortion services primarily in the public sector. The impact of those initiatives on the utilization of public health is yet to be evaluated through a scientifically well-designed study. A recent study by Shekhar et al. (2017) in six large Indian states, representing different regions of the country, also reveals that lack of trained personnel and shortage of functional equipment and drug supply associated with abortion services were major barriers in public facilities.

Like other studies, this article also has a few shortcomings due to data limitations. For example, NFHS-4 sought detailed information only on abortion from the last pregnancy that ended between January 1, 2009 and the date of survey. The survey did not ask the abortion history, unlike the complete birth history of the surveyed woman. Therefore, one cannot derive some important correlates from the available information—for example how primigravida women seeking pregnancy termination differ by background characteristics from those who did so for higher order pregnancies. The lack of information also restricted us to assess the repeated rate of abortion.

In the survey, symptoms of abortion complications were not asked, which limited the ability of the authors of this article to interpret or assess whether a woman in reality had any postabortion complications. This is significant because sometimes the normal course of heavy bleeding or uterine cramping during abortion may be mistaken for a complication especially when it is self-induced medical abortion. Therefore, one needs to be cautious before drawing any ambitious policy implication regarding prevalence of abortion complication based on the available information available in the survey.

Owing to data limitations only, this study could not explore the main reason behind the reported induced abortion and the type of method used. Both have several significant policy and programmatic implications for improving

reproductive health of women in general and abortion-related care, in particular. We hope that data collectors will incorporate such critical information through adding scientifically pre-tested questions on such essential aspects of abortion in the future NFHS rounds.

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The authors declare that they have no conflict of interest.

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