

# A Cross-Sectional Epidemiological Study of Abortions in a Rural Area of Delhi

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## Abstract

**Background:** Abortions in India are increasing despite the laws to legalize them. Many abortions are conducted through unsafe practices and are underreported. To determine the prevalence of abortions in women of a reproductive age group in a rural area of Delhi and to determine associated factors. **Methodology:** A cross-sectional study was conducted among married women in the reproductive age group residing in Barwala village, Delhi/NCR. An interview schedule was used to interview 315 women, and information was obtained for socio-demography, use of contraceptives, medical history, and history of abortions. Chi-square and Fisher's exact test were used for analyzing the association of abortions with other variables. **Results:** Of all 315 women, 47% had a history of one or more abortions. Of all pregnancies (n = 953), 25.6% ended in abortions (n = 244). Of the total number of abortions reported, 60.7% (n = 148) were induced, while 39.3% (n = 96) were spontaneous. Of induced abortions, only 35% were safe, while 65% were unsafe abortions. Age of mother, age at marriage, history of contraception use, and gender of first child were significantly associated with abortions. However, no significant association was found with socio-economic status, education, and occupation of women and their spouses. Only 1.3% women knew that abortions are legal in India. **Conclusion:** A high proportion of women are going for induced abortions, of which a greater proportion is that of unsafe abortions. There is also lack of knowledge about the legalisation of abortions in India.

**Keywords:** Abortion, contraceptive use, safe abortions, unsafe abortions

## BACKGROUND

Globally, nearly 25% of all pregnancies end in abortions, both spontaneous and induced.<sup>[1]</sup> It is estimated that 14.9% of all maternal deaths are caused by abortions.<sup>[2]</sup> While the abortion rates have been declining in the developed countries, they are on the rise in developing countries. Spontaneous abortions which occur due to complications during the pregnancy are commonly termed as miscarriages, but when deliberate steps are taken to end a pregnancy, it is termed as induced abortion. According to WHO, every year in the world, there are an estimated 40–50 million induced abortions.<sup>[3]</sup> Induced abortions can be safe or unsafe based on where and in what conditions they are performed. The United Nations mentions in the Worldwide Abortion Report 2013, that of its 193 member countries, only 58 countries have legalized abortion on request. The highest proportion of unsafe abortions occurs in places where abortion is illegal, and they result in 20% of all maternal deaths.<sup>[4,5]</sup> WHO states that nearly half of the abortions worldwide are unsafe, and of all the unsafe abortions, 98%

occur in developing countries. In addition to legal restrictions, lack of trained providers for services related to abortions is a major contributory factor to unsafe abortions.<sup>[6]</sup>

In India, nearly 15.6 million abortions took place in the year 2015.<sup>[7]</sup> 10% of all the maternal deaths are attributed to abortions in India. Even after legalization of abortion, India has the highest number of unsafe abortions (two-thirds of all abortions performed are illegal).<sup>[8]</sup> Only 6.9% of young women in India are aware that abortion has been legalized.<sup>[9]</sup> While the number of facilities has increased in India after the amendment of MTP Act in 2002, there is limited access to safe abortion services in rural areas. Even where approved facilities exist, the services in the public sector are rarely

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or erratically provided due to lack of trained manpower or equipment or both.<sup>[10]</sup>

With inadequate knowledge about methods and importance of contraception and preference for a male child, abortions continue to be on rise. Furthermore, lack of awareness about abortions and related laws and associated social stigma result in increased prevalence of unsafe abortions. Hence, there is a dire need to study the factors that are associated with one of the common causes of maternal deaths to achieve better maternal health. Further, there are even fewer studies to explore the epidemiology of abortions in rural areas of India. With this in mind, the present study aims to study the prevalence of abortions in a rural area of Delhi and also study the factors that might be associated with it.

## METHODOLOGY

It was a cross-sectional study conducted in Barwala village, a rural field practice area of Rural Health Training Centre (RHTC) associated with Department of Community Medicine of a tertiary care teaching hospital after obtaining prior approval from the Institutional Ethics Committee. There were 906 households with a total population of 6407 as per survey by RHTC conducted in 2017. The families residing in the area belonged to all classes of socio-economic strata. The majority of the residents were migrants from Bihar, Uttar Pradesh, and other adjoining states.

Using global prevalence of abortions as 25% and an allowable absolute error of 20%, our required sample size came out to be 300 using the formula  $4pq/(L)^2$ .<sup>[11]</sup> Ever married women in the reproductive age group (15–44 years), residing in the Barwala village for at least 6 months, were included in the study. Systematic random sampling was done to reduce the possibility of selection or survey bias. An eligible subject from every third household was interviewed after obtaining informed consent. If a house was locked in spite of three visits or there was unavailability of an eligible study subject, the next household was included. The interview was conducted in the vernacular language (Hindi) using an interview schedule. At the end of the interview, each woman was given relevant information and health education. Based on the medical history, referrals to nearby health facilities were made, wherever necessary. We assessed 418 women for eligibility and ended up interviewing a total of 315 eligible women in the village [Figure 1].

Information was obtained on, socio-demographic data, medical history, obstetric history, and history of contraceptive use. In subjects with a history of one or more abortions, detailed history was obtained about the method of abortion, the qualifications/background of the person performing the procedure, the facility where the procedure was performed, precipitating factors in case of spontaneous abortions, reasons for induced abortion, the gestational age at abortion, and complications, if any, following the abortion.

Primary outcome variables: sociodemographic variables like age of the subject, age at the time of marriage, socio-economic status, education of both the subject and her spouse, prevalence of induced and spontaneous abortions, and prevalence of safe and unsafe abortions.

Secondary outcome variables: Gestational age at abortion and prevalence of contraceptive use.

The following operational definitions were used for the purpose of this study:

**Abortion:** Termination of pregnancy prior to 20 weeks' gestation or a fetus born weighing less than 500 g.<sup>[11]</sup>

**Safe abortions:** Abortions taking place in a skilled facility performed by skilled personnel. Skilled facility is an environment that meets minimum medical standards for conducting abortions. Skilled personnel are healthcare providers who have been trained in providing medical and surgical abortion services.<sup>[12]</sup>

**Unsafe abortions:** Abortions performed by persons lacking the necessary skills or in an environment not in conformity with minimal medical standards or both.<sup>[12]</sup>

**Statistical analysis:** Data collected were entered in MS Excel and SPSS 24 were used to analyze it. Descriptive statistics were presented to define the characteristics of the study subjects. Chi-square and Fisher exact tests were used to determine the association of abortions with sociodemographic factors and other factors like history of medical illness, gender of first child, and use of contraceptives. Binary logistic regression analysis was done to determine the odds ratio. A two-tailed *P*-value of < 0.05 was considered to be statistically significant.

## RESULTS

**Characteristics of sample:** A total of 315 ever married women in the age group of 15–44 years were interviewed (*N* = 315).

The mean age of the study subjects was 30 ( $\pm 7.3$ ) years. More than half of the subjects (53.3%, *n* = 168) belonged to the age group of 18–29. About 31.1% (*n* = 98) belonged to the age group of 30–39 years, almost 15% (*n* = 47) of them were above 40 years of age, and only 0.6% (*n* = 2) of them were below 18 years of age. The lowest age limit was found to be 16 years, and the highest age limit was 44 years. About 48.3% of all women were married at an age below 18 years. The majority of them belonged to the middle class (38.1%), followed by upper middle class (27.1%) as per BG prasad scale for socio-economic status.<sup>[13]</sup> Of all the subjects, 25.7% (*n* = 81) gave a history of suffering from one or more medical illnesses, with hypothyroidism being the most common, in nearly 22% (*n* = 18).

**Obstetric History:** The mean age at first childbirth was 18.3 ( $\pm 6.09$ ) years. The total number of pregnancies reported was 953. Of these, 244 pregnancies ended in abortions. The total number of children born to the study subjects was 709,

of which 51.8% ( $n = 367$ ) were males and 48.2% ( $n = 342$ ) were females. Nearly 7.9% ( $n = 25$ ) of the subjects had no child or live issue.

**Prevalence of abortions:** Of all the subjects, 47% ( $n = 148$ ) women gave a history of one or more abortions ever. The total number of pregnancies reported in the study sample ever was 953, of which 25.6% ( $n = 244$ ) ended in abortions, both spontaneous and induced, with 15.5% being induced abortions and 10.1% being spontaneous abortions. The lowest age at first abortion was 13 years, while the highest age was found to be 40 years. 30% of all abortions were in the age group of 18–25 years. The mean age at first abortion was 23.24 ( $\pm 7.4$ ) years. Nearly 69% ( $n = 168$ ) of all abortions occurred at a gestational age of 8 weeks or less. The lowest gestational age for abortion was found to be 5 weeks ( $n = 29$ ), while the highest was 20 weeks ( $n = 10$ ). Of these subjects who had abortions, 50% ( $n = 74$ ) had induced abortions, while 42.6% ( $n = 63$ ) of the subjects had spontaneous abortions and 7.4% ( $n = 11$ ) had a history of both types of abortions.

Of the 96 spontaneous abortions, only 3.1% ( $n = 3$ ) had a predisposing event. While two of them gave a history of fall or trauma preceding the abortion, one subject reported that she was diagnosed with Rubella infection. In the rest 96.9% ( $n = 93$ ), there was no history of any predisposing event. Of the 148 induced abortions, almost 98% ( $n = 145$ ) abortions were reported to be because of unplanned pregnancy, while

of the rest 2%, two went for induced abortions as advised by physicians owing to health reasons and one subject gave a history of female feticide. The most common method of induced abortions was by means of medication. Of those who went for induced abortions, 77.6% ( $n = 66$ ) women induced the abortion by use of medicines. Among the rest, 5.9% ( $n = 5$ ) went for surgical procedures while 14.1% ( $n = 12$ ) used both methods because of failed or incomplete abortion by medicines. Remaining 2.4% ( $n = 2$ ) of women used some home remedies as advised by their mothers-in-law.

Only 35% ( $n = 52$ ) of all induced abortions were performed at a skilled facility by a skilled personnel, and the rest 65% ( $n = 96$ ) were unsafe abortions, having been performed at home or other unskilled facilities by self or by unskilled personnel like quacks.

Of all abortions, 42.6% ( $n = 104$ ) had no complications. In about 36.9% ( $n = 90$ ) abortions, subjects complained of lower abdominal pain for several days following the abortion. For almost 16.8% ( $n = 41$ ), there was a history of fever and vaginal discharge following the abortion suggesting infection. In 2.8% ( $n = 7$ ) of abortions, there were reports of profuse bleeding for many days following the abortion.

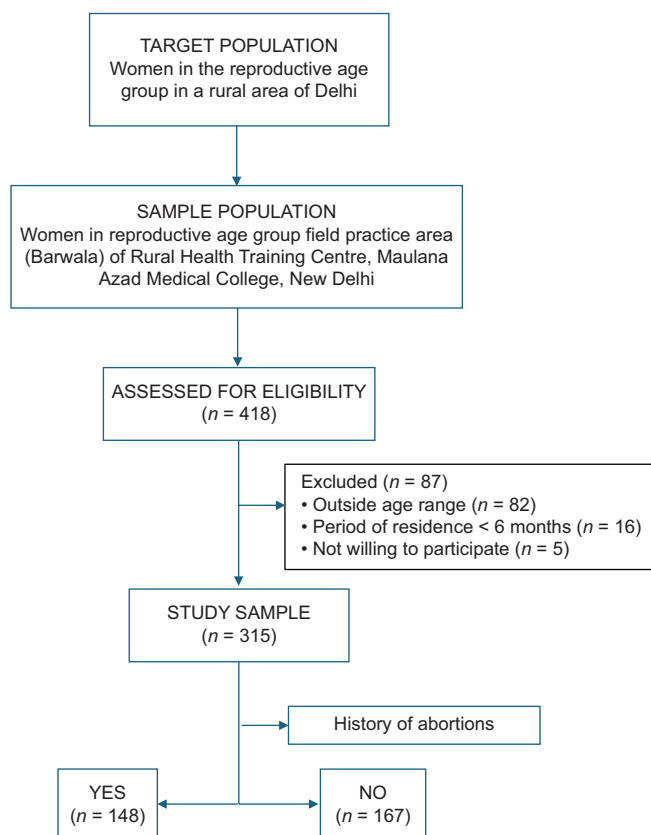
### Association of abortions with other factors

Table 1 shows the association of socio-demographic factors with history of abortions. Age group (30–39 years), age at marriage (>18 years), gender of first child (female), and history of use of contraceptives (never used) were significantly associated with history of abortions.

**History of contraceptive use:** Of all the study subjects, 68.6% ( $n = 216$ ) reported to have never used any method of contraception. The most common reason for not using contraceptives was willingness to conceive in 26.4% ( $n = 57$ ) of the women followed by lack of knowledge in 24.5% ( $n = 53$ ). Nearly 13.4% ( $n = 29$ ) said they had experienced discomfort and side effects on prior use and so preferred not using it, 12% ( $n = 26$ ) said they had heard about various side effects from others and were apprehensive to use, and 11.1% ( $n = 24$ ) were planning for tubal ligation once their family was complete. The rest 12.5% ( $n = 27$ ) of the participants said that they did not feel the need to use contraception because they were having lactational amenorrhea or were abstaining from sex or were not living with their husbands. Of the women who wished to conceive, 33.3% ( $n = 19$ ) clearly stated that they desired for a male child and would continue to conceive till they have a male child.

### DISCUSSION

The present research was conducted to study the prevalence of abortions in a rural area of Delhi and to evaluate the various socio-demographic factors associated with abortions. Of all the pregnancies in the present study that ended in abortions, induced abortions were more as compared to spontaneous abortions. This finding contrasted with another study conducted



**Figure 1:** Study profile diagram

**Table 1: Socio-demographic variables associated with abortions**

Socio-demographic factors	History of abortions		P	Crude OR (CI)	Adjusted OR (CI)
	Yes n (%)	No n (%)			
Total	148 (100)	167 (100)			
Age of subjects					
≤29 years	72 (48.6)	98 (58.7)	0.02	Reference	Reference
30–39 years	58 (39.2)	40 (24.0)		1.689 (1.023–2.789)*	1.687 (0.969–2.935)
≥40 years	18 (12.2)	29 (17.3)		0.718 (0.368–1.399)	0.755 (0.357–1.599)
Age at marriage					
Below 18 years	62 (41.9)	90 (53.9)	0.03	Reference	Reference
18 years and above	86 (58.1)	77 (46.1)		1.621 (1.038–2.533)*	1.472 (0.853–2.541)
Religion					
Hindu	144 (97.3)	162 (97.0)	0.49	Reference	Reference
Others	4 (2.7)	5 (3.0)		0.900 (0.237–3.416)	0.626 (0.152–2.576)
Education of the subject					
Graduate and above	15 (10.1)	17 (10.2)	0.51	Reference	Reference
High school	35 (23.6)	48 (28.7)		0.826 (0.364–1.876)	0.779 (0.306–1.982)
Middle school	46 (31.1)	37 (22.1)		1.409 (0.622–3.193)	1.744 (0.660–4.609)
Primary school	15 (10.2)	15 (9.0)		1.133 (0.418–3.072)	1.567 (0.492–4.989)
Illiterate	37 (25.0)	50 (30.0)		0.839 (0.372–1.893)	1.292 (0.462–3.612)
Socio economic status (BG prasad classification, 2018)					
Upper class	20 (13.5)	26 (15.6)	0.98	Reference	Reference
Upper middle class	43 (29.1)	45 (27.0)		1.242 (0.606–2.545)	0.965 (0.415–2.243)
Middle class	56 (37.8)	64 (38.3)		1.137 (0.574–2.255)	0.961 (0.417–2.214)
Lower middle and lower class	29 (19.6)	32 (19.1)		1.178 (0.546–2.544)	0.839 (0.327–2.152)
History of medical illness					
Yes	41 (27.7)	40 (24.0)	0.44	0.822 (0.496–1.363)	0.760 (0.429–1.347)
No	107 (72.3)	127 (76.0)		Reference	Reference
Gender of the first child					
Male child	48 (32.4)	89 (53.3)	<0.001	0.388 (0.241–0.624)**	0.332 (0.198–0.555)**
Female child	89 (60.1)	64 (38.3)		Reference	Reference
No child	11 (7.5)	14 (8.4)		0.565 (0.241–1.325)	0.699 (2.71–1.
History of contraceptive use					
Yes	56 (37.8)	43 (25.7)	0.01	0.574 (0.355–0.929)*	0.578 (0.338–0.990)*
No	92 (62.2)	124 (74.3)		Reference	Reference

\* $P < 0.05$ . \*\* $P < 0.001$ . OR – Odds Ratio, CI – Confidence Interval (95%). Pearson's Chi-squared, adjusted according to Bonferroni. Fisher's exact test.

Binary logistic regression for crude and adjusted odds ratio with 95% Confidence Interval

in a similar setup of rural field practice area, by Kant S. *et al.*,<sup>[14]</sup> according to which the rates of spontaneous abortions were nearly twice that of the induced abortions with 7.2% and 3.8% of all pregnancies, respectively. This difference in the pattern could be the result of under-reporting or misreporting of induced abortions owing to stigma attached with it. Since the present study was conducted in the community setting with a one-on-one interview, the subjects were more comfortable and hence more likely to report induced abortions, whereas the other studies were conducted by analysis of records in the health system, and hence, there could have been an increased possibility of misreporting.

The various risk factors for spontaneous abortions include maternal age of more than 30 years, alcohol consumption during pregnancy, smoking, lifting heavy weight (>20 kg) daily, being underweight, and obesity.<sup>[15]</sup> According to another study based in China, women living in urban areas were at a higher risk for spontaneous abortions as compared

to women living in the rural areas. In addition, women with low socio-economic status and low education levels were more at risk for spontaneous abortions.<sup>[16]</sup> However, in our study sample, presence of any such risk factor could not be established. Certain illnesses like thyroid disorders and diabetes are known to be associated with high risk of spontaneous abortions. However, no significant association could be established in our study.

The most common reason for the subjects in the present study to opt for induced abortions was unplanned pregnancy. Due to lack of knowledge about contraceptives and fear of side effects, most of the women found it easier to go for induced abortions as they said the medications were available over the counter. While there was a history of desire for a male child in many subjects and the pattern of abortions in some was suggestive of female feticide, no history could be obtained except in one subject. In a comparable study by Pattankaik, that included all women with history of induced abortions, self-reported



reasons for opting for induced abortions were bleeding per vaginum (23%), unwanted pregnancy (16%), and unviable fetus diagnosed by ultrasonography (11%). Eight percent of the induced abortions were due to the female sex of the foetus.<sup>[17]</sup> In the present study, only one subject gave a history of female feticide. This low number can be attributed to social desirability bias in the interview.

In the present study, the majority of induced abortions were by means of medications, while only a few had to go for surgical methods. A few women had used some indigenous method as home-made remedy. This was consistent with the findings of another study where 81% abortions were medically induced, 14% were surgically induced, and 5% were induced by other methods.<sup>[7]</sup> Also, the greatest number of abortions in the current study took place at a gestational age of 8 weeks or less. Similar findings were seen in another study where 88.5% of all abortions were at a gestational age of less than 8 weeks.<sup>[18]</sup> This could mean that the women in the reproductive age group are aware that it is safer to get abortion done early in first trimester. Also, the authorized, skilled personnel who provide abortion services are hesitant to perform abortions beyond the gestation age of 12 weeks as it is far more complicated.

More than half of all induced abortions in the present study were unsafe as they were performed by unskilled personnel and/or in unskilled facility. The prevalence of unsafe abortion was higher compared to that reported by the India Assessment project, which estimated that 50% of all abortions in India are unsafe. Another study conducted in Ghana reported that 45% of all abortions were unsafe.<sup>[19]</sup> It is apparent that the proportion of unsafe abortions is also much higher than otherwise estimated. The most common reason could be the stigma associated with abortions and the ease of availability of medications. In our study, the women inducing abortions by themselves claimed that they were able to manage to get the medications for abortions from nearby pharmacy stores. This saved them from the inconvenience of going to a health facility and risking their confidentiality.

Nearly half of all abortions in the current study were in the women who belonged to the age group of 18–29 years. The association of age with prevalence of abortions was found to be statistically significant. Several other studies report a similar finding. According to a study in United states by Rachel K Jones, the highest number of abortions occurred in the age group of 20–24 years (28 per 1000 women annually), followed by the second highest being in the age group of 25–29 years (22 per 1000 women annually).<sup>[20]</sup> Similar findings were seen in a study done in the Ballabgarh villages of India, where the highest number of abortions (43.1% of all abortions) were in the age group of 20–24 years, followed by the second highest (33.2%) in 25–29 years of age.<sup>[14]</sup> According to another study done in Nepal, the rates of abortions are the highest in the age group of 25–34 years.<sup>[21]</sup> There was another study in 2011 which showed that maximum abortions occurred in the age group of 20–29 years.<sup>[17]</sup> This is suggestive that younger

women are more likely to go for abortions because they are either not prepared to have a child or they are not aware of proper family planning methods.

In the present study, age at marriage was significantly associated with prevalence of abortions, with greater than half of all abortions taking place in women who were married at 18 years of age or more. Almost half (48.3%) of all women were married below the age of 18 years. Other studies also reported a similar finding. A Youth in India study states that 49% of the women got married when they were below 18 years of age, while according to NFHS 5 data, 23.3% women got married at below 18 years of age.<sup>[1,22]</sup> Those who were married below 18 years of age are less likely to be educated and more likely to be of the belief that abortion is a sin or a child is God's gift, which could explain the lower prevalence of abortions in them.

More than half of the women with abortions in the current study belonged to the middle class in terms of socio-economic status. A previous study done by Pattanaik reported a similar finding where 72.7% of the women with history of abortions belonged to the middle class. The women belonging to lower middle class and lower class are less likely to undergo abortions in a private clinic owing to the services being expensive and also at the authorized facilities because of less awareness, more stigma attached, and lack of confidentiality.<sup>[23]</sup> This is contrasted with a study by Rachel K Jones which suggested that less family income was associated with higher rates of abortion with 36.3 per 1000 in low-income group and 6 per 1000 in high-income group.<sup>[24]</sup> Another study by Sri BS also showed that women belonging to low socio-economic status were more likely to undergo abortions.<sup>[18]</sup> No such association based on difference between class could be established in our study.

Most of the women with abortions in the present study had education level up till the high school. However, the association of education with history of abortions was not statistically significant. Another study also showed that women with low education level were more likely to undergo abortion. According to the same study the women who were educated with a graduate degree had a lower abortion rate of 10.3 per 1000 as compared to 20 per 1000 in less educated ones.<sup>[24]</sup>

There was a significant association between use of contraception and abortions in the current study. Women who did not use contraceptive methods were more likely to undergo abortions. Of all the women who had a history of abortion, more than half reported that they do not use any contraceptive method. A study in Sri Lanka by Arambepola *et al.* mentions that women who had never used contraception were more likely to undergo abortions.<sup>[25]</sup> The nonuse of contraception was twofold risk factor for abortions as compared to the ineffective use of contraceptive methods. The women who do not use contraceptives are at risk of unplanned pregnancies which results in abortion. According to the current study the most common reason for not using contraceptives was willingness to conceive, followed by lack of knowledge about

various methods of contraception and fear of side effects of contraceptives. This needs to be addressed by increasing awareness and knowledge among such women.

In our study, gender of the first child was significantly associated with abortions. Of all women who had a history of abortion, more than half had female child in the first order. A few subjects whose first child was female had reported abortion(s) and the subsequent live issue was a male child, which is strongly suggestive of female feticide. There was another study by Babu PN that looked at the association between sex of previous child with induced abortions; however, no significant association could be established in our study.<sup>[26]</sup>

Female feticide is another issue of concern that is prevalent in India and contributes to a large number of illegal abortions which is reflected by the ever-declining sex ratio in India suggesting that sex-selective abortions are still in practice. Stringent implementation of PC-PNDT Act needs to be ensured.

With the ease of availability of medicines, the medical method of abortion seems to have replaced the various methods of birth control and because of lack of knowledge, women do not understand that even under the safest of conditions, abortions cannot be safe as efficient use of contraception.<sup>[27]</sup> A study by Sri BS *et al.* found that the women prefer getting abortion-related services from untrained and illegal providers because they are more confidential and more accessible.<sup>[18]</sup> In addition to this, the barriers to delivery of abortion-related services like unnecessary consent procedures and certain requirements for use of contraceptives cause delay and discourage the women to go to a skilled facility.<sup>[28]</sup> Furthermore, there are various cultural, financial and geographical barriers that women face because of which they tend to go for unsafe abortion practices.<sup>[29]</sup>

The recent amendments made to the MTP Act 1971 have made the laws less stringent for women who want to get abortions, with extension of permissible gestational age to 24 weeks under certain conditions and inclusion of unmarried women. However, there is a need to not only create awareness about these laws but also improve the provision of facilities. Hence, creating awareness, providing education about dangers of unsafe abortions and benefits of using contraceptives, and ensuring strict implementation of laws and capacity building will help in reducing the prevalence of abortions, especially the unsafe abortions and thus maternal deaths.

### Strengths and limitations

**Strengths:** The epidemiology of abortions is less studied in rural India, and the present study tried to address the socio-demographic factors associated with it. The sample size was adequate for generalizability to the study population. The study was conducted in the community setting which enabled the subjects to be comfortable during the interview process, thus improving the quality of responses. At the end of the interview, we provided relevant information and health

education to each subject, thus increasing their knowledge and awareness about abortions and related laws.

**Limitations:** The data were collected by means of history and considering the sensitivity of the topic of the study and the social stigma associated with it, the number of abortions might have been still under-reported, or some induced abortions might have been reported as spontaneous abortions despite the fact that we found out more induced abortions than spontaneous in our study population. There is also a possibility of recall bias. Because we had taken into account any abortion that a woman underwent throughout her reproductive life, people with a higher number of abortions may not have been able to remember correctly. The study was limited to married women only, and hence, it does not give a complete picture of all abortions in a rural area of Delhi.

### CONCLUSION

Abortions are the leading causes of maternal deaths.<sup>[30]</sup> From our study we can conclude that abortions are much more common than is apparent, with induced abortions being more common than spontaneous abortions. Despite legalisation of abortions, there is lack of awareness among the women, particularly in rural areas of India, and they resort to unsafe means of abortions. Lack of use of contraceptives is significantly associated with history of abortions. Lack of knowledge about contraceptives, followed by fear of side effects, was the common reason for lack of use of contraceptives. Most of the women who induced abortions by self were able to access the medicines from over the counter. Furthermore, history of first child being a female is also significantly associated with history of abortions, indicating a strong preference for male child.

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### Conflicts of interest

There are no conflicts of interest.

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