Original Research Article

https://doi.org/10.53339/aimdr.2026.12.1.6
E-ISSN: 2395-2822 | P-ISSN: 2395-2814

Risk factors associated with incomplete abortions: A retrospective study

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Abstract

Introduction: Incomplete abortion is a frequent complication of spontaneous and induced pregnancy loss and has a significant burden on the maternal morbidity, especially in low-resource environments. Issues such as advanced gestational age, late presentation, anemia, and unsafe abortion practices may predispose the risk of incomplete abortion and its associated complications. This paper will establish the risk factors that are linked to incomplete abortions.

Methods: This retrospective observational study was done at Popular Medical College, Dhaka, Bangladesh, between July 2024 and June 2025 and comprised 68 women who had incomplete abortion, which is defined as the retention of products of conception following spontaneous or induced abortion. The statistical analysis of the data obtained was done using the Statistical Package for the Social Sciences version 26.0.

Results: In 68 women who had incomplete abortion, the majority of those women were aged between 20 and 39 (75%), urban (57.4%), and multigravida (73.5%). All of them reported vaginal bleeding, 85.3% complained of abdominal pain. Risk factors such as anemia (39.7%), late presentation (>24 h) (29.4%), and misoprostol use without supervision (22.1) were common. The predominant method of management was manual vacuum aspiration (60.3%), with complications in 38.2% of cases, most often infection (16.2%).

Conclusion: This research discovered that incomplete abortions were prevalent among women aged between 20 and 29 years, those with lower socioeconomic statuses, and those with multiparous status. The percentage of abortions attempted after 8–12 weeks of gestation and with the attempts having been medical or unsafe by the time they were attempted, with the provided example being frequently an untrained provider.

Keywords: Anemia, incomplete abortions, manual vacuum aspiration

Introduction

Incomplete abortion, the inability to expel all the products of conception following an automatic loss of pregnancy or an induced loss of pregnancy, is a frequent and probably severe complication of pregnancy termination and miscarriage, particularly when the care is delayed and/or not done to the recommended norms.[1,2] Tens of millions of abortions take place annually all over the world, and a large fraction of this number are of the less safe or least safe type, putting women at risk of experiencing heavier crashes, incomplete abortion, bloodshedding, and infection.[2,3] The World Health Organization highlights the role of incomplete abortion in contributing to morbidity and mortality in places where unsafe abortion procedures and late post-abortion care are prevalent and supports evidence-based abortion care and post-abortion care in a timely manner to help

reduce adverse events.[1,4] This knowledge of the risk factors related to incomplete abortion is vital in very important aspects; this enables clinicians and health systems to recognize the high-risk patients, maximize the population of those at risk during early diagnosis, and choose the right management approach (expectant, medical, or surgical). According to previous studies, there are a number of patient-level and system-level determinants. Patient factors repeatedly associated with adverse post-abortion outcomes include advanced maternal age, higher body mass index, anemia, and prior uterine instrumentation or prior pregnancy loss(s).[5-8] For example, retrospective analyses of first-trimester pregnancy losses and missed abortions have found age and elevated body mass index to be independent predictors of failed or complicated pregnancy resolution, which may manifest clinically as incomplete passage of tissue.[8] Uterine factors (anomalies, scarring from prior cesarean or curettage) and retained products after medical abortion are also well-documented contributors to incomplete evacuation.[6,7] Method and context of pregnancy termination are equally important. Studies comparing medical and surgical approaches report differing rates of incomplete abortion depending on gestational age, method used, and provider experience; inadequate or inappropriate technique and self-induced or clandestine procedures markedly increase the risk of incomplete abortion and severe complications.[5,6] Delays in seeking care – whether because of limited access, restrictive laws, stigma, or referral processes – are consistently linked to worse clinical presentations and higher rates of retained products and infection.[5,9] Health-system interventions such as routine screening, timely uterine evacuation, standardized post-abortion protocols, and access to the World Health Organization (WHO)-recommended methods have been shown to reduce complication rates and improve outcomes.[4,6] Despite growing evidence, heterogeneity in study designs, definitions (incomplete vs. missed vs. retained products), and local abortion practices complicates direct comparisons across settings. Recent retrospective and facility-based studies from low- and middle-income countries underscore a continued high burden of incomplete abortion among hospital admissions and point to modifiable factors – delayed presentation, self-induction, anemia, and prior obstetric history – that can be targeted by public health measures and clinical protocols.[5,9,10] This retrospective study aims to identify risk factors associated with incomplete abortions.

Methods

This retrospective observational study was conducted at Popular Medical College, Dhaka, Bangladesh, from July 2024 to June 2025, and included 68 women diagnosed with incomplete abortion, defined as retention of products of conception after a spontaneous or induced abortion. Inclusion criteria were women of reproductive age with confirmed incomplete abortion and complete hospital records, while exclusion criteria included missed abortions, molar pregnancies, ectopic pregnancies, and incomplete or missing records. Purposive sampling was employed to select all eligible cases during the study period. Data were extracted using a pre-designed data collection form, including sociodemographic characteristics, obstetric history, gestational age at abortion, method of abortion, clinical presentation, management, and complications. Data collected were keyed in the Statistical Package for the Social Sciences version 26.0. The data were summarized using descriptive statistics (frequencies, percentages, mean ± standard deviation). Informed written consent was secured by obtaining ethical approval from the institutional ethical review committee and the participants were informed. Acquired through interviews with respondents on hospital admission and the patient information have been kept secret throughout the study.

Results

Most participants were aged 20–29 years (38.2%) and 30–39 years (36.8%). A majority lived in urban areas (57.4%), and 41.2% had secondary education [Table 1].

Most women were multigravida (73.5%). A history of previous abortion was present in 30.9%, and 13.2% had prior uterine instrumentation [Table 2].

All participants had vaginal bleeding, and 85.3% reported abdominal pain. Fever was present in 27.9%, and 10.3% showed hemodynamic instability [Table 3].

The most common risk factor was anemia (39.7%), followed by delayed presentation (29.4%) and unsupervised misoprostol use (22.1%) [Table 4].

The majority were managed with manual vacuum aspiration (MVA) (60.3%), followed by dilatation and curettage (D&C) (29.4%). Medical management was used in 10.3% of cases [Table 5].

Table 1: Sociodemographic characteristics of participants (*n*=68)

Variable	Category	Frequency	Percentage
Age group (years)	<20	10	14.7
	20–29	26	38.2
	30–39	25	36.8
	≥40	7	10.3
Residence	Urban	39	57.4
	Rural	29	42.6
Education level	No formal education	11	16.2
	Primary	16	23.5
	Secondary	28	41.2
	Higher	13	19.1

Table 2: Obstetric history of participants (*n*=68)

Variable	Category	Frequency	Percentage
Gravidity	Primigravida	18	26.5
	Multigravida	50	73.5
Parity	Nulliparous	22	32.4
	Para 1–2	31	45.6
	Para ≥3	15	22.0
History of previous abortion	Yes	21	30.9
	No	47	69.1
Prior uterine instrumentation	Yes	9	13.2
	No	59	86.8

Complications occurred in 38.2% of participants, with infection reported in 16.2%. Most participants (61.8%) had no complications [Table 6].

Discussion

In this study, 26.5% of women presented with a gestational age beyond 12 weeks, and these individuals experienced higher complication rates. The same was observed by Gebresilassie

Table 3: Clinical presentation at admission (*n*=68)

Clinical feature	Present *n* (%)	Absent *n* (%)
Vaginal bleeding	68 (100)	0
Lower abdominal pain	58 (85.3)	10 (14.7)
Fever	19 (27.9)	49 (72.1)
Foul-smelling discharge	12 (17.6)	56 (82.4)
Hemodynamic instability	7 (10.3)	61 (89.7)

Table 4: Identified risk factors for incomplete abortion (*n*=68)

Risk factor	Present *n* (%)	Absent *n* (%)
Anemia (hemoglobin <11 g/dL)	27 (39.7)	41 (60.3)
Gestational age >12 weeks	18 (26.5)	50 (73.5)
Misoprostol use without supervision	15 (22.1)	53 (77.9)
Self-induced abortion attempt	10 (14.7)	58 (85.3)
Delayed presentation (>24 h)	20 (29.4)	48 (70.6)

Table 5: Management methods used (*n*=68)

Management method	Frequency	Percentage
MVA	41	60.3
D&C	20	29.4
Medical management (misoprostol)	7	10.3

MVA: Manual vacuum aspiration, D&C: Dilatation and curettage

Table 6: Complications observed (*n*=68)

Complication	Frequency	Percentage
Infection	11	16.2
Severe anemia	8	11.8
Need for blood transfusion	6	8.8
Uterine perforation	1	1.5
No complications	42	61.8

et al. in Ethiopia, in which abortions made above 12 weeks were strongly related to undesirable results (adjusted odds ratio [AOR] 3.39).[11] A different study in Northwest Ethiopia reported the same result where gestational age of over 13 weeks was a significant one prognosticator of problems after partial abortions.[12] Another interesting factor was delayed presentation. In our group, 29.4% of those who arrived later than 24 h after the onset of symptoms. Our data showed that delayed presentation was related to an increased rate of infection and anemia. Other similar results were made study, in which the duration of delay of more than 72 h substantially worsened the results of abortion (AOR 3.08).[9] Similarly, Getie *et al*. revealed that post-abortion was highly associated with delays of more than 24 h. such complications as sepsis and long hospital stay.[10] A third of our participants had anemia 39.7%. A number of them also acquired additional complications like infection or transfusion. A study conducted at Jimma University Medical Center determined that moderate anemia (hemoglobin 7–10 g/dL) was an important predictor of complicated abortion or post-second-trimester medical abortion.[9] In addition, Dibaba *et al*. revealed that the history of unsafe abortion played a significant role in predisposing women in reproductive age to anemia (AOR 5.40).[13] Misoprostol used without medical advice was 22.1% in our sample and 14.7% reported attempts of trying to abort oneself. Past researches have noted the harmfulness of unguarded medical abortion. An example is a Nigerian study conducted by Thapa *et al*. which found that the unsupervised use of misoprostol was responsible. High percentage of unsuccessful abortions that need surgical evacuation.[14] A study in India by Iyengar *et al*. also documented that abortifacient self-medication has also played a significant role as a contributing factor to incomplete or unsafe abortion cases.[15] Concerning management, 60.3% of our participants were subjected to the use of manual vacuum aspiration. The percentages of MVA, 29.4% under (D&C), and 10.3% under medical management were (MVA), 29.4 and (D&C), 10.3, respectively. Evidence from a WHO researcher has conducted a large multicountry analysis which suggests that MVA has fewer complications and hospital stay as opposed to D&C, and this makes sense in our situation where this treatment should be the one mainly used.[16] In addition, research conducted by Raghavan *et al*. showed that MVA is also related to considerably reduce intraoperative hemorrhage and decreased postoperative infections.[17] We have a higher complication rate (38.2) compared to the recent reports, including the work by Getie *et al*., of which only 12.3% attained adverse results.[10] Differences may be attributable to variations in referral patterns, delay before presentation, and local healthcare-seeking behaviors.

Limitations of the study

The study was conducted in a single hospital with a small sample size. Hence, the results may not represent the whole community.

Conclusion

This study found that incomplete abortions occurred most frequently among women aged 20–29 years, those from lower socioeconomic backgrounds, and multiparous women. A large proportion presented after 8–12 weeks of gestation and had undergone medical or unsafe abortion attempts, often by untrained providers. The most common complications were excessive bleeding and infection, indicating delays in seeking care and inadequate access to safe abortion services.

Recommendations

Enhancing access to safe, timely, and supervised abortion services is critical to lowering the incompleteness. abortions. Interventions on community health must concentrate on enhancing the level of awareness in terms of early care-seeking. employment of trained providers, and diffusion of contraceptive counseling to prevent unwanted pregnancy.

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How to cite this article: Khanam KA, Shetu SF, Begum K. Risk factors associated with incomplete abortions: A retrospective study. Ann. Int. Med. Den. Res. 2026;12(1):32-36.

Source of Support: Nil, **Conflict of Interest:** None declared

Received: 25-Dec-2025; **Revised:** 22-Jan-2026; **Acceptance:** 10-Feb-2026; **Published:** 10-Mar-2026