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Unsafe Abortion Presentation and Management Outcome Among Sudanese Women

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Abstract

Background: Complications of unsafe abortion remain high in developing countries with a significant morbidity rate and the potential for maternal death. Developing countries need to legalize abortion and improve the care system to reduce abortion-related maternal deaths.

Purpose: The main purpose of the study was to determine the prevalence, methods, complications, and management outcomes of unsafe abortion at Bashair Teaching Hospital.

Methodology: It was a descriptive, cross-sectional hospital-based study conducted at Bashair Teaching Hospital from October 2021 to March 2022. Data was collected by trained doctors in the emergency clinic and postoperative gynaecology ward. One hundred and twenty-two (122) women with unsafe abortions were included after informed consent.

Results: The prevalence of unsafe abortion was 9.2%. The onset of bleeding was spontaneous in 106(89.9%) and induced in 16(13.1%). The method of induction of abortion was herbal 7(5.7%), drug 4(3.3%), trauma to abdomen 3(2.5%) and manipulation by foreign body 2(1.6%). The duration of bleeding was 1-2 days 63(51.6%), between 3-5 days 38(31.1%) and more than 5 days 21(17.3%). The complications were shock 19(15.6%), septicaemia 15(12.3%) and uterine perforation 6(4.9%). Discharge well 97(79.5%), discharged after admission to the intensive care unit were23(18.9%), and 2(1.6%) were died.

Conclusions: Unsafe abortion women presented with significant severe bleeding, shock, septicaemia, and fever. The foreign body causes uterine perforation and internal bleeding, so women need laparotomy and blood transfusion. admission to the intensive care unit is high. Maternal death is due to massive bleeding and septicaemia.

Keywords: unsafe; abortion; presentation; management; outcome; Sudanese; women

Introduction

An unsafe abortion is completely avoidable. It is still a pandemic and a significant global public health concern [1]. According to the World Health Organization (WHO), an unsafe abortion is performed by someone who lacks the essential skills, takes place in a setting that does not meet the bare minimum of medical standards, or both [2].

Unsafe abortion is a healthcare issue that underdeveloped nations frequently ignore. Unsafe abortion practices have virtually not improved despite advances in medical technology. One of the main factors contributing to maternal morbidity and mortality is unsafe abortion [3]. Abortion is more prevalent in Sub-Saharan Africa, where it is typically illegal, dangerous, and contributes significantly to maternal death [4]. Around the world, a significant proportion of women pass away from childbirth and pregnancy-related problems, with low- and middle-income nations accounting for nearly 99.0% of the total [5]. Abortion is one of the leading causes of maternal death. The study found that abortion was responsible for 7.9% of maternal deaths that occurred between 2003 and 2009 in 115 different nations. The number of abortion-related deaths is probably underreported; therefore, it might be higher [6]. Unsafe abortion is one of the main causes of maternal death in low- and middle-income countries, among other things. Abortion can happen naturally or purposely; the latter is also referred to as induced abortion and can be safe or harmful. Abortion (particularly unsafe abortion) can have negative effects on one's health and lead to issues like hemorrhage, infection, and uterine perforation [7].

From 2003 to 2008, the global abortion rate remained stable at 2829/1000 women aged 1544 years, but the percentage of unsafe abortions grew from 44.0% to 49.0% [8]. Due to stringent anti-abortion laws in

many South Asian nations, the rate of unsafe abortions is quite high in South Asia (which makes up about one-third of the world's population). Due to the preference for a male kid, the rate of sex-selective abortion is also high in this area [9-10]. Most dangerous abortions take place in impoverished nations where it is forbidden, where access to inexpensive, skilled healthcare providers is limited, or where modern birth control is not widely available [11-14].

According to the World Health Organization (WHO), nearly all abortions (92%) are safe in industrialized regions, whereas more than half (55%) are dangerous in developing nations. According to other sources, unsafe abortion causes at least 8% of maternal fatalities and has a risk rate of 1/270, according to WHO statistics. Induced abortions are dangerous in 48% of cases worldwide [15]. Unsafe abortion techniques include using a sharp tool or wire (such as an unbent clothes hanger or knitting needle) to try to break the amniotic sac inside the uterus. This technique has the potential to kill by infecting or damaging internal organs, such as the uterus or intestine. Using a huge feather was one of the classic methods since the uterus relaxes during pregnancy and is very simple to puncture [16-19].

Injecting the woman's body with harmful substances including chili pepper mixes and chemicals like alum, Lysol, permanganate, or plant poison. The woman can experience toxic shock and die as a result of this technique [20-21]. Unsafe abortion can result in death and damage to women all around the world [22-24]. Medical care is something that is legally mandated to be given to patients because it could save their lives. Doctors are required by law to report cases of patients who have had any kind of abortion. The risks to women's lives and health increase with every delay in care [25-26].

Material and Methods

It was a descriptive prospective cross-sectional hospital-based study conducted at Bashair Teaching Hospital from October 2021 to March 2022. The Study population that was included all women diagnosed with unsafe abortion who came during the study period to the gynecology clinic and emergency room, and they agreed to participate in the study. About 122 women who were diagnosed with unsafe abortions were included. Convenience non-random technique was applied to select the study participants by including all the cases throughout the data collection period (6 months) convenience non-random technique was applied to select the study participants by including all the cases throughout the data collection period (6 months).

Data was collected by direct interview by using a well-structured questionnaire. The participants were interviewed about age, education, gestational age, parity, symptoms of presentation, type of management, and complications.

Statistical analysis was performed via SPSS software (SPSS, Chicago, IL, USA). Continuous variables were compared using the student's t-test (for paired data) or the Mann–Whitney U test for nonparametric data. For categorical data, a comparison was done using the Chi-square test (X2) or Fisher's exact test when appropriate. A P-value of <0.05 was considered statistically significant.

Written ethical clearance and approval for conducting this research were obtained from the Educational Development Centre (EDC), the ethical committee, and from Sudan Medical Specialization Board Ethical Committee. Written permission was obtained from the administrative authority of Bashair Teaching Hospital, Khartoum state, Sudan. Written consent was obtained from the study participants after a full explanation of the study-related issues and implications. Study data/information was used for research purposes only. The privacy issues were intentionally considered. Confidentiality of participants' data was considered by coding the questionnaire.

Results

During the study period total number of women admitted to the gynecological department of the hospital was 1319, and 122 were diagnosed with unsafe abortion so the incidence of unsafe abortion is found (122/1319) in approximately 9.2% of all early pregnancy women. Sociodemographic distribution of unsafe abortion, Women aged most below ≤ 19 years were 56.6% while lest distribution between 31 – and 40 years was 10.6%. Most women were housewives 52.5%, and their educational level.

Most were Illiterate women 46.7%, The women from rural areas were 63.9% while from urban areas were 36.1%, 90.2% were married, 5.7% were unmarried, 2.5% were divorced, and 1.6% were widowed. Most women were multipara women 52.5%, primigravida 39.3% and grand multipara 8.2%. Table 1.

Table 1: Sociodemographic characteristics of Unsafe Abortion (n=122).

Sociodemographic	Frequency	Percent
Age <19	69	56.6
20-30	16	13.1
31-40	13	10.6
>40	24	19.7
Occupation		
Housewife	64	52.2
Laborer	33	27
Employee	20	16.4
Professional	5	4.1
Education		
Illiterate	57	46.7
Primary school	33	27
Secondary school	17	13.9
University	15	12.4
Residence		
Rural	78	63.9
Urban	44	36.1
Marital status		
Married	110	90.2
Unmarried	7	5.7
Divorced	3	2.5
Wido	2	1.6
Gravity		
Primigravida	48	39.3
Multiparous	64	52.5
Grand Multiparous	10	8.2
Total	122	100

All women presented with vaginal bleeding, 45(36.9%) fever, 44(36.1%) offensive vaginal discharge, 37(30.3%) abdominal pain and 29(23.8%) expulsion of tissue Table 2.

Table 2: Unsafe abortion symptoms of presentation (n=122).

Presentations	Had symptoms		Not had symptoms		Total	
	N	%	N	%	N	%
Vaginal bleeding	122	100.0	0	0.0	122	100
Fever	45	36.9	77	63.1	122	100
Vaginal discharge (offensive)	44	36.1	78	63.9	122	100
Abdominal pain	37	30.3	85	69.7	122	100
Expulsion of tissue	29	23.8	93	76.2	122	100

The duration of bleeding was 1-2 days 63(51.6%) had shock 4(6.3%), septicemia 1(1.6%), uterine perforation 2(3.2%) and no complication 56(88.9%), between 3-5 days 38(31.1%) had shock 5(13.2%), septicemia 10(26.3%), uterine perforation 2(5.3%) and no complication 21(55.3%) and more than 5 days 21(17.3%) had shock 10(47.6%), septicemia 4(19%), uterine perforation 2(9.2%) and no complication 5(23.8%). The estimated amount of bleeding was severe 43(35.2%), had shock17(39.5%), septicemia 13(30.2%), uterine perforation 6(14%) and no complication 7(16.3%), moderate 40(32.8%) had shock 2(5%), septicemia 2(5%), no uterine perforation and no complication 36(90%) and minimal 39(32%) no complication 39(100%) Table 3.

Table 3: Unsafe abortion complications about the duration and degree of bleeding (n=122).

Complications	Duration of Vaginal Bleeding						P-value
	1 - 2 days		3 -5 days		> 5 days		
	N	%	N	%	N	%	
Shock (hemorrhage)	4	6.3	5	13.2	10	47.6	
Septicemia	1	1.6	10	26.3	4	19.0	0.019
Uterine perforation	2	3.2	2	5.3	2	9.5	
No complications	56	88.9	21	55.3	5	23.8	
Complications	Degree of Vaginal Bleeding						
	Minimal		Moderate		Severe		
	N	%	N	%	N	%	
Shock (hemorrhage)	0	0.0	2	5.0	17	39.5	
Septicemia	0	0.0	2	5.0	13	30.2	0.014
Uterine perforation	0	0.0	0	0.0	6	14.0	
No complications	39	100.0	36	90.0	7	16.3	
Total	39	100.0	40	100.0	43	100.0	

Poor outcome of unsafe abortion (admission to intensive care unit and death) was significantly associated with duration of bleeding 3 days or more, severe amount of bleeding, and complications such as shock and septicemia (P value < 0.05). The outcome of the majority of the women 97(79.5%) were discharged well and had a duration of vaginal bleeding1-2days58(59.8%),3-5days 27(27.8%),> 6 days (12(12.4%), had minimal bleeding (39(40.2%), moderate bleeding 38(39.2%), severe bleeding 20(20.6%), 23(18.9%) discharged after admission to the intensive care unit had a duration of vaginal bleeding1-2days5(21.7%),3-5days 10(43.7%%),>6days 8(34.8%), no woman had minimal bleeding, moderate bleeding 2(8.7%), severe bleeding 21(91.3%), and 2(1.6%) died 1(50%) had bleeding >6days and1(50%) bleeding 3-5days both had severe vaginal bleeding. Table 4.

Table 4: Unsafe abortion outcome about the duration and degree of bleeding (n=122).

Duration of vaginal bleeding	Outcome						P-value
	Discharged well		Admitted to ICU		Death		
	N	%	N	%	N	%	
1 - 2 days	58	59.8	5	21.7	0	0.0	
3 -5 days	27	27.8	10	43.5	1	50.0	0.011
> 6 days	12	12.4	8	34.8	1	50.0	
Total	97	100.0	23	100.0	2	100.0	
Degree of vaginal bleeding	Outcome						
	Discharged well		Admitted to ICU		Death		
	N	%	N	%	N	%	
Minimal	39	40.2	0	0.0	0	0.0	
Moderate	38	39.2	2	8.7	0	0.0	0.001
Severe	20	20.6	21	91.3	2	100.0	
Total	97	100.0	23	100.0	2	100.0	

Outcome of unsafe abortion after management discharge well 97(79.5%) shock 4(4.1%), septicemia 5(5.2%), uterine perforation 6(6.2%) and no complications 82(84.5%), admitted to ICU 23(18.8%) shock 14(60.9%), septicemia 9(39.1%), no uterine perforation and no complications, death 2(1.6%) shock 1(50%) and septicemia 1(50%). The complications of unsafe abortion among the women in this study were significantly common in women with a duration of bleeding 3 days or more and a severe amount of bleeding (P value < 0.01). Table 5.

Table 5: Unsafe abortion outcome about complications (n=122).

Complications	Outcome						P-value
	Discharged well		Admitted to ICU		Death		
	N	%	N	%	N	%	
Shock (hemorrhage)	4	4.1	14	60.9	1	50.0	
Septicemia	5	5.2	9	39.1	1	50.0	0.014
Uterine perforation	6	6.2	0	0.0	0	0.0	
No complications	82	84.5	0	0.0	0	0.0	
Total	97	100.0	23	100.0	2	100.0	

The gestational age at presentation was less than or equal to 12 weeks 43(35.2%), between 13 – 20 weeks 40(32.8%) and more than 20 weeks 39(32%) Figure 1.

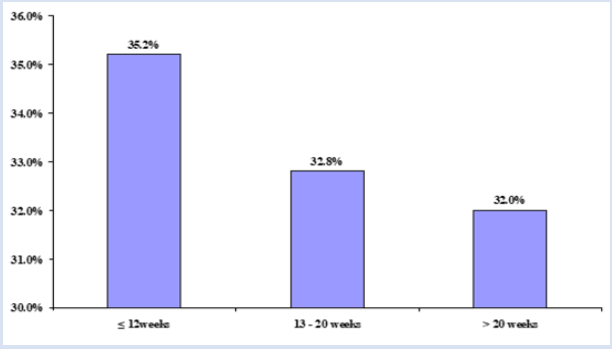

Figure 1: Unsafe abortion gestational age at presentation distribution (n=122).

The onset of bleeding was spontaneous in 106(89.9%) and induced in 16(13.1%) Figure 2.

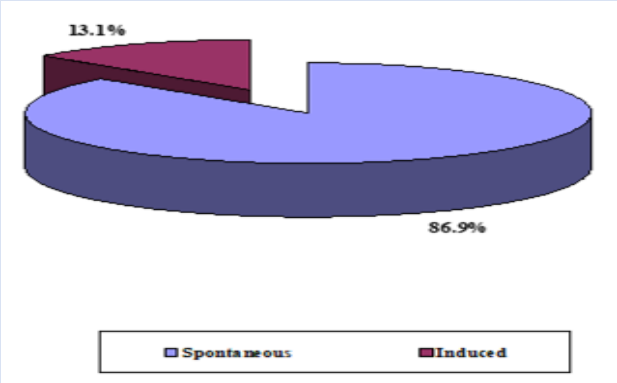

Figure 2: Unsafe abortion onset of bleeding distribution(n=122).

The method of induction of abortion was herbal 7(5.7%), drug 4(3.3%), trauma to abdomen 3(2.5%) and manipulation by foreign body 2(1.6%) Figure 3.

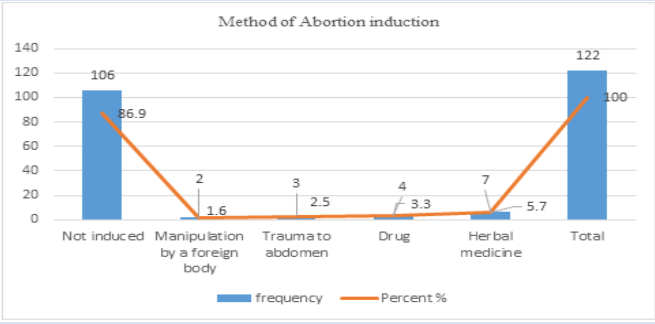

Figure 3: Unsafe abortion method of induction (n=122).

Discussion

This study found the prevalence of unsafe abortion in this setting during the study period was 9.2%, which is lower than Ngowa, et al [27] in Cameron who reported that the prevalence of unsafe abortion was 26.3%. According to Fusco et al's estimation of the incidence of hazardous abortion in Brazil, the five-year prevalence of abortion was 21.1% among women of reproductive age who had ever terminated a pregnancy, and 16.0% of all abortions were unsafe [28]. This study found a prevalence rate of 24.8% of abortions, which is high [29]. In Brooke et al study, abortion incidence complications methodology was used to estimate levels of induced abortion in Malawi. e. It was estimated that 70,194 induced abortions (range 50,696-89,692) occurred in Malawi in 2009, yielding an abortion rate of 24.0 abortions per 1000 women aged 15-44 (range 17.4-30.7) [30]. All women presented with vaginal bleeding, 36.9% of women presented with fever, 36.1% with offensive vaginal discharge,30.3% presented with abdominal pain, and 23.8% presented with the expulsion of tissue. Similar to Melese et al in Ethiopia [31-32]. Based on varying socioeconomic levels, this study found significant disparities in unsafe abortion procedures. For instance, there is a strong correlation between unsafe abortion and women who work as housewives and have only received an elementary education. These results were consistent with research from Brazil [33] and Mexico [34], where it was discovered that low-income and uneducated women were more likely to undergo unsafe abortions. The legality of abortion differed from state to state in Mexico; Mexico City allows abortions up to 13 weeks gestation, but Brazil allows abortions if the pregnancy was brought on by rape or incest or if the mother's or the fetus' lives were in danger [35].

The method of inducing abortion was herbal 5.7%, drug 3.3%, trauma to the abdomen 2.5%, and manipulation by a foreign body 1.6%. The commencement of bleeding was spontaneous in 89.9% of cases and induced in 13.1% of cases. Contrary to Melese et al.'s findings, which indicated that 3.9% of abortions were patient-induced, the majority of abortions (95.5%) were found to be spontaneous. Eighty-two women, or 67.2%, reported no complications. Shock (15.6%), septicemia (12.3%), and uterine perforation (6(4.9%)) were the consequences. With mild to severe vaginal bleeding, unsafe abortion patients with prolonged vaginal bleeding have a likelihood ratio of 17.812 and a 95% confidence interval of.093(.053-.164) to present with septicemia. 90.954 percent chance of septicemia in women with a Likelihood Ratio of 22.643 95% Confidence interval (CI) of 11.700(6.468-21.164) for septicemia discharge. Unsafe abortion for intensive care unit (ICU) admission, women with septicemia had a likelihood ratio of 44.051 95% CI 18.833(8.645-41.028). The likelihood ratio between septicemia and maternal death is 4.252,95 % The Congo study's [36] Confidence Interval of 8.643(5.281-14.144) is comparable. Another study revealed that induced abortion-related complications among women who were hospitalized included retained fetal products (50%) as well as bleeding (34%), fever (34%), and other symptoms similar to [37]. The majority of the women had successful outcomes, with 79.5% being discharged in good condition, 18.9% being released after being admitted to the intensive care unit, and 1.6% dying. On the other hand, a prolonged period of vaginal bleeding and a considerable amount of bleeding were significantly associated with problems and outcomes. Additionally, prolonged bleeding of three days or longer, severe amounts of blood, and complications including shock and septicemia were significantly linked with poor results of unsafe abortion (admission to critical care unit and death) (P value 0.05). Similar to Kalilani-Phiri et al [38] in Malawi, who noted that fever (12.3%), sepsis (13.7%), and retained fetal products (12.7%) were the most frequent sequelae. The likelihood that an unsafe abortion will occur in a woman who has moderate to severe vaginal bleeding is 31.944, and the likelihood that an unsafe abortion will result in shock is 3.765, with a 95% confidence interval.947 (.852-1.053). The likelihood ratio for ICU hospitalization for women who had unsafe abortions was 70.273 (95% CI: 19.516 (8.246-46.1890), while the likelihood Ratio for shock-related discharge was 70.984. Likelihood Ratio 2.83195% Confidence Interval. 938 (.891-.987) All women who underwent unsafe abortions and had perforations were successfully discharged.

Emechebe et al [39] evaluated the prevalence, sociodemographic features, and complications of induced abortion. They calculated the case fatality rate as 387 fatalities per 100,000 postabortion care operations. Moreover, to ascertain the role that induced abortion plays in maternal mortality in Nigeria. In Sudan, rape or situations when the woman's life is in danger are the only legal grounds for an abortion. Access to post-abortion treatment is

difficult. Mid-level clinicians are not permitted to give post-abortion care or provide contraception in a nation that struggles with poverty, internal displacement, rural housing, and a lack of qualified doctors [40].

Strength and Limitations

One of the study's limitations was the fact that only one hospital's data was collected. However, the hospital is unable to offer thorough postabortion treatment since it receives complex cases from other medical facilities. Another drawback was the small number of cases that were found. In our study, the death rate from unsafe abortions was 1.6%, which is less than in other studies. The fact that accessing hospitals in Sudan that perform unsafe abortions is stigmatized to a high degree and that hospitalization leads to a police report because abortion is illegal may be the cause of this. As a result, women may not seek medical attention or may hide the fact that they had an abortion.

Conclusion

According to the study, the three worst consequences include substantial morbidity from unsafe abortion, septicaemia, and uterine perforation. Both the likelihood of maternal mortality and ICU admission are very high. The provision of safe abortion services is not supplied owing to religion; hence contraception should be accessible to help reduce unsafe abortion practices in Sudan. It took a hospital setting and qualified medical staff to manage unsafe abortion consequences like shock, extensive vaginal bleeding, septicaemia, and uterine perforation. Among unsafe abortions, the practice of blood transfusion is lifesaving. When healthcare providers give their patients the best possible care, positive results are attained.

Recommendation

There is a need for health education for women of reproductive age about the urgency of seeking instant care after notice of any signs of unsafe abortion. There is a need for clinical audits on post-abortion care to ensure the implementation of the standard protocol and reduce complications. For managing women who present with unsafe abortion doctors should have and maintain a high index of suspicion that unsafe abortion may have occurred and be alert to the possibility of delayed presentation and rapid decompensation patient may be near missed, early use of intravenous broad-spectrum antibiotic and antipyretics will reduce septicaemia and hyperpyrexia complications, availability of ICU for unsafe abortion and trained staff for early intervention, health worker training and community education. Also, postabortion care services should be available in hospitals, and auditing of the practice of outcomes of unsafe abortion.

Declarations

This article is our original work. The Submitted manuscripts contain original and authentic results, data, and ideas, that were not published elsewhere. No material from other publications is reproduced in our article. All my co-authors should not submit the same manuscript, in the same language simultaneously to more than one journal. The author of this paper has read and approved the final version submitted.

Ethical clearance

Ethics approval was obtained from the Research and Ethics Committee of the hospital (Bashair Teaching Hospital). Ethical principles of autonomy, beneficence, non-maleficence, and justice, as stipulated in the ethical guidelines of the Sudan Medical Specialization Board (SMSB), and Medical Research Council, were upheld throughout the study. Informed written consent was obtained from every respondent who agreed to participate in the study.

Availability of data and materials

All data and materials are available when requested.

Competing interest

The authors declare that they have no financial or personal relationships which may have inappropriately influenced them in writing this paper. No direct or indirect financial interests or conflicts exist and all authors agreed with the content of the manuscript and there are no conflicts of interests between or among them.

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Authors contribution

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Abbreviations

CI: Confidence Interval
ICU: Intensive Care Unit
WHO: World Health Organization

References

1. Rehnström Loi, U., Gemzell-Danielsson, K., Faxelid, E., & Klingberg-Allvin, M. (2015). Health care providers' perceptions of and attitudes towards induced abortions in sub-Saharan Africa and Southeast Asia: a systematic literature review of qualitative and quantitative data. *BMC Public Health*, *15*(1).
2. World Health Organization. (2017). HRP annual report 2016 (No. WHO/RHR/HRP/17.06). *World Health Organization*.
3. World Health Organization. (2016). Interagency list of medical devices for essential interventions for reproductive, maternal, newborn, and child health.
4. Kulczycki, A. (2016). The imperative to expand provision, access, and use of misoprostol for post-abortion care in sub-Saharan Africa. *African journal of reproductive health*, 20(3):22-25.
5. World Health Organization. (2015). Trends in maternal mortality: 1990-2015: estimates from WHO, UNICEF, UNFPA, World Bank group and the United Nations population division. *World Health Organization*.
6. Say, L., Chou, D., Gemmill, A., Tunçalp, Ö., Moller, A. B., Daniels, J., ... & Alkema, L. (2014). Global causes of maternal death: a WHO systematic analysis. *The Lancet Global Health*, 2(6):323-333.
7. Meaidi, A., Friedrich, S., Gerds, T. A., & Lidegaard, O. (2019). Risk factors for surgical intervention of early medical abortion. *American journal of obstetrics and gynecology*, 220(5):478.
8. Sedgh, G., Singh, S., Shah, I. H., Åhman, E., Henshaw, S. K., & Bankole, A. (2012). Induced abortion: incidence and trends worldwide from 1995 to 2008. *The Lancet*, *379*(9816):625-632.
9. Valente, C. (2014). Access to abortion, investments in neonatal health, and sex-selection: Evidence from Nepal. *Journal of Development Economics*, 107:225-243.
10. World Health Organization. (2003). Safe abortion: technical and policy guidance for health systems. *World Health Organization*.
11. Naoom, S. F., Van Dyke, M., Fixsen, D. L., Blasé, K. A., & Villagomez, A. N. (2012). Developing implementation capacity of organizations and systems to support effective uses of family literacy programs. *Handbook of family literacy*, 447-464.
12. Haddad, L. B., & Nour, N. M. (2009). Unsafe abortion: unnecessary maternal mortality. *Reviews in obstetrics and gynecology*, *2*(2):122.
13. Ganatra, B., Gerdts, C., Rossier, C., Johnson, B. R., Tunçalp, Ö., Assifi, A., ... & Alkema, L. (2017). Global, regional, and subregional classification of abortions by safety, 2010–14: estimates from a Bayesian hierarchical model. *The Lancet*, 390(10110):2372-2381.
14. World Health Organization. (2011). Unsafe abortion: global and regional estimates of the incidence of unsafe abortion and associated mortality in 2008. *World Health Organization*.
15. Nour, N. M. (2008). An introduction to maternal mortality. *Reviews in obstetrics and gynecology*, 1(2):77.
16. Rahaman, M., Roy, A., Chouhan, P., Das, K. C., & Rana, M. J. (2023). Revisiting the predisposing,

enabling, and need factors of unsafe abortion in India using the Heckman Probit model. *Journal of Biosocial Science*, 1-21.

17. Giorgio, M. M., Utomo, B., Soeharno, N., Aryanty, R. I., Besral, Stillman, M., ... & Sedgh, G. (2020). Estimating the incidence of induced abortion in Java, Indonesia, 2018. *International Perspectives on Sexual and Reproductive Health*, 46:211-222.
18. Farrar, R. (2020). Women's Rights are Human Rights: Finding the Right to Access an Abortion in International Law. *NY Int'l L. Rev*, 33:19.
19. Grimes, D. A., Benson, J., Singh, S., Romero, M., Ganatra, B., Okonofua, F. E., & Shah, I. H. (2006). Unsafe abortion: the preventable pandemic. *The Lancet*, 368(9550):1908-1919.
20. Soomar, S. M., & Ramzan, R. (2023). Pakistan's Safe Abortion Law: An Analytical Perspective based on Public Health Ethics. *Pakistan Perspectives*, 28(1).
21. Barot, S. (2018). The roadmap to safe abortion worldwide: lessons from new global trends on incidence, legality, and safety. *NY Guttmacher Inst*, 21:6.
22. Ganatra, B., Gerdts, C., Rossier, C., Johnson, B. R., Tunçalp, Ö., Assifi, A., ... & Alkema, L. (2017). Global, regional, and subregional classification of abortions by safety, 2010–14: estimates from a Bayesian hierarchical model. *The Lancet*, 390(10110):2372-2381.
23. Jewkes, R., Rees, H., Dickson, K., Brown, H., & Levin, J. (2005). The impact of age on the epidemiology of incomplete abortions in South Africa after legislative change. *BJOG: An International Journal of Obstetrics & Gynaecology*, 112(3):355-359.
24. Bateman, C. (2007). Maternal mortalities are 90% down as legal ToPs more than triple. *South African Medical Journal*, 97(12):1238.
25. Yokoe, R., Rowe, R., Choudhury, S. S., Rani, A., Zahir, F., & Nair, M. (2019). Unsafe abortion and abortion-related death among 1.8 million women in India. *BMJ global health*, 4(3):00149.
26. Bell, S. O., Omoluabi, E., OlaOlorun, F., Shankar, M., & Moreau, C. (2020). Inequities in the incidence and safety of abortion in Nigeria. *BMJ Global Health*, 5(1):001814.
27. Ngowa, J. D. K., Neng, H. T., Domgue, J. F., Nsahlai, C. J., & Kasia, J. M. (2015). Voluntary induced abortion in Cameroon: prevalence, reasons, and complications. *Open Journal of Obstetrics and Gynecology*, 5(9):475.
28. Yogi, A., KC, P., & Neupane, S. (2018). Prevalence and factors associated with abortion and unsafe abortion in Nepal: a nationwide cross-sectional study. *BMC pregnancy and childbirth*, 18:1-10.
29. Fusco, C. L., Silva, R. D. S. E., & Andreoni, S. (2012). Unsafe abortion: social determinants and health inequities in a vulnerable population in São Paulo, Brazil. *Cadernos de saude publica*, 28(4):709-719.
30. Levandowski, B. A., Mhango, C., Kuchingale, E., Lunguzi, J., Katengeza, H., Gebreselassie, H., & Singh, S. (2013). The incidence of induced abortion in Malawi. *International Perspectives on Sexual and Reproductive Health*, 88-96.
31. Melese, T., Habte, D., Tsima, B. M., Mogobe, K. D., Chabaesele, K., Rankgoane, G., ... & Moreri-Ntshabele, B. (2017). High levels of post-abortion complication in a setting where abortion service is not legalized. *PloS one*, 12(1):0166287.
32. Akinlusi, F. M., Rabiu, K. A., Adewunmi, A. A., Imosemi, O. D., Ottun, T. A., & Badmus, S. A. (2018). Complicated unsafe abortion in a Nigerian teaching hospital: pattern of morbidity and mortality. *Journal of Obstetrics and Gynaecology*, 38(7):961-966.
33. Sousa, A., Lozano, R., & Gakidou, E. (2010). Exploring the determinants of unsafe abortion: improving the evidence base in Mexico. *Health Policy and Planning*, 25(4):300-310.
34. Fusco, C. L. B. (2013). Unsafe abortion: a serious public health issue in a poverty-stricken population. *Reprodução & Climatério*, 28(1):2-9.
35. Kulczycki, A. (2011). Abortion in Latin America: changes in practice, growing conflict, and recent policy developments. *Studies in family planning*, 42(3):199-220.
36. Akilimali, P., Moreau, C., Byrne, M., Kayembe, D., Larson, E., & Bell, S. O. (2023). Estimating induced abortion incidence and the use of non-recommended abortion methods and sources in two provinces of the Democratic Republic of the Congo (Kinshasa and Kongo Central) in 2021: results from population-based, cross-sectional surveys of reproductive-aged women. *Sexual and Reproductive Health Matters*, 31(1):2207279.
37. Bankole, A., Adewole, I. F., Hussain, R., Awolude, O., Singh, S., & Akinyemi, J. O. (2015). The incidence of abortion in Nigeria. *International*

perspectives on sexual and reproductive health, 41(4):170.

38. Kalilani-Phiri, L., Gebreselassie, H., Levandowski, B. A., Kuchingale, E., Kachale, F., & Kangaude, G. (2015). The severity of abortion complications in Malawi. *International Journal of Gynecology & Obstetrics*, 128(2):160-164.
39. Emechebe, C. I., Njoku, C. O., Udofia, U. M., & Ukaga, J. T. (2016). Complications of induced abortion: Contribution to maternal mortality in a tertiary center of a low resource setting. *Saudi Journal for Health Sciences*, 5(1):34-38.
40. Kinaro, J., Mohamed Ali, T. E., Schlangen, R., & Mack, J. (2009). Unsafe abortion and abortion care in Khartoum, Sudan. *Reproductive health matters*, 17(34):71-77.

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