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The Burden of Unsafe Abortion Six Years before the COVID-19 Era in a Nigerian Tertiary Hospital: An Analytical Retrospective Study

Le Fardeau de l'Avortement à Risque Six Ans avant l'Ère COVID-19 dans un Hôpital Universitaire Nigérian : Une Étude Analytique Retrospective

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ABSTRACT

BACKGROUND: Unsafe abortion remains a leading cause of maternal mortality and morbidity, especially in developing countries with restrictive abortion laws. Disease containment measures during the COVID-19 pandemic have reduced access to contraception and safe abortion care, potentially increasing rates of unintended pregnancies and unsafe abortion.

OBJECTIVE: To evaluate the morbidity and mortality burden of unsafe abortion before the COVID-19 pandemic.

METHODS: A six-year analytical retrospective study of unsafe abortion at the Federal Medical Centre, Lokoja, Nigeria. All case records of unsafe abortion managed within the study period were retrieved, and relevant data extracted using a purpose-designed proforma. Data obtained was analysed using the IBM SPSS Statistics for Windows, version 25 (IBM Corp., Armonk, N.Y., USA). Associations between categorical independent and outcome variables were assessed using the Chi square test at 95% confidence level. A p-value of <0.05 was considered statistically significant.

RESULTS: The prevalence of unsafe abortion was 8.6 per 1,000 deliveries. More than one-half (37, 52.9%) were medical abortions using misoprostol tablets. The mean age of the women was 23.15±3.96 years, and most of them were single (49, 70%), with primary/secondary education (42, 60%), and of low socioeconomic status (67, 95.7%). Nearly one-half (33, 47.1%) had either never used any modern contraceptive (9, 12.9%) or only used emergency contraception (24, 34.3%). The predominant complications of unsafe abortion included retained product of conception (69, 98.6%), haemorrhagic shock (22, 31.4%), and sepsis (19, 27.1%). There were two maternal deaths, giving a case fatality rate of 2.9%.

CONCLUSION: Unsafe abortion remains a significant cause of maternal mortality and morbidity in our setting. Improving access to effective modern contraceptives and liberalizing our abortion laws may reduce maternal morbidity and mortality from unsafe abortion.

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Keywords: Family planning, Illegal/criminal abortion, Maternal morbidity and mortality, Retained product of conception, Unmet need.

RÉSUMÉ

CONTEXTE: L'avortement à risque reste l'une des principales causes de mortalité et de morbidité maternelles, en particulier dans les pays en développement où les lois sur l'avortement sont restrictives. Les mesures de confinement de la maladie pendant la pandémie de COVID-19 ont réduit l'accès à la contraception et aux soins d'avortement sûrs, augmentant potentiellement les taux de grossesses non désirées et d'avortements à risque.

OBJECTIF: Évaluer le fardeau de morbidité et de mortalité de l'avortement à risque avant la pandémie de COVID-19.

METHODES: Une étude rétrospective analytique de six ans sur l'avortement à risque au Fédéral Médical Center, Lokoja, Nigeria. Tous les dossiers de tous les cas d'avortement à risque pris en charge au cours de la période d'étude ont été récupérés et les données pertinentes extraites à l'aide d'un formulaire conçu à cet effet. Les données obtenues ont été analysées à l'aide d'IBM SPSS Statistiques pour Windows, version 25 (IBM Corp., Armonk, N.Y., USA). Les associations entre les variables indépendantes catégorielles et les variables de résultat ont été évaluées à l'aide du test du chi carré à un niveau de confiance de 95 %. Une valeur de p < 0,05 était considérée comme statistiquement significative.

RESULTATS: L'prévalence des avortements à risque était de 8,6 pour 1 000 accouchements. Plus de la moitié (37, 52,9%) étaient des avortements médicamenteux utilisant comprimés de misoprostol. L'âge moyen des femmes était de 23,15± 3,96 ans, et la plupart d'entre elles étaient célibataires (49, 70%), avec une éducation primaire/secondaire (42, 60%) et de statut socio-économique bas (67, 95,7%). Près de la moitié (33, 47,1%) n'avaient jamais utilisé de contraceptif moderne (9, 12,9%) ou n'avaient utilisé qu'une contraception d'urgence (24, 34,3%). Les complications prédominantes comprenaient la rétention du produit de conception (69, 98,6 %), le choc hémorragique (22, 31,4 %) et la septicémie (19, 27,1 %). Il y a eu deux décès maternels, soit un taux de létalité de 2,9 %.

CONCLUSION: L'avortement à risque reste une cause importante de mortalité et de morbidité maternelles dans notre contexte. L'amélioration de l'accès à des contraceptifs modernes efficaces et la libéralisation de nos lois sur l'avortement réduiront la morbidité et la mortalité maternelles dues à l'avortement à risque. **WAJM 2023; 40(1): 90–96.**

Mots-clés: Planification familiale, Avortement illégal/criminel, morbidité et mortalité maternelles, Produit de la conception retenu, Besoin non satisfait.

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INTRODUCTION

The World Health Organization (WHO) defines unsafe abortion as “any procedure for the termination of an unwanted pregnancy that is performed either by a person lacking the requisite skills, or in an environment that does not conform to the minimal medical standards, or both”.¹ Globally, 49% of the estimated 43.8 million abortions performed annually, are unsafe.² Unsafe abortion is the third leading cause of maternal mortality after haemorrhage and sepsis, accounting for 13% of maternal mortality globally, with 68,000 annual related-deaths.^{3,4} Ninety eight percent of all unsafe abortions, and 99.8% of unsafe abortion related-deaths occur in developing countries, where one woman dies every eight minutes, from complications of unsafe abortion.³

Nigeria, despite constituting only 2% of the world’s population, contributes the largest proportion of 19% and 29%, respectively, to the global and sub-Saharan Africa (SSA) burden of maternal mortality.^{5,6} Complications of unsafe abortion account for 30–40% of the maternal deaths in Nigeria.⁷ A National survey in 2012 indicated that 56% of unwanted pregnancies in Nigeria were aborted, putting the estimated number of induced abortions at 1.25 million (33 abortions per 1,000 women aged 15–49 years). Of this number, 212,000 women were treated for complications of unsafe abortion, constituting 60% of all women treated for any abortion-related complication, while another 285,000 women suffered untreated complications.⁸ The high unmet need for family planning (FP) of 19% and restrictive abortion laws are significant contributors to the high unintended pregnancy and unsafe abortion rates in Nigeria.^{7,9} These rates will potentially increase during the COVID-19 pandemic, owing to disease containment measures including lockdowns, isolation and quarantine, women expressing fear of contracting the COVID-19 virus in hospitals, cancellation/postponement and deprioritization of other health care services, including family planning, in favour of mitigating further spread of the COVID-19 virus, all of which have contributed to impeding access to

contraception and safe abortion care globally.¹⁰

Maternal deaths from unsafe abortion are highly preventable. Averting these preventable deaths can contribute significantly to achieving the third Sustainable Development Goal (SDG 3) target of reducing global maternal mortality ratio from 216 to less than 70 per 100,000 live births by 2030.¹¹ There is therefore, an urgent need for evidence-based policies and interventions to tackle the causes of unsafe abortion in Nigeria. These however depend on reliable facility-based, regional and national data, which are lacking in Nigeria, owing to an almost non-existent civic registration and national health information system in the country.¹² This six-year analytical retrospective review of unsafe abortions at the Federal Medical Centre, Lokoja, Kogi State, Nigeria, therefore, sought to evaluate the incidence, mortality and morbidity burden of unsafe abortion in the hospital facility before the COVID-19 pandemic, and make relevant recommendations that would improve access to safe abortion services.

MATERIALS AND METHODS

An analytical retrospective study of all cases of unsafe abortion managed at the Federal Medical Centre, Lokoja (FMCL), between 1st January 2014 and 31st December 2019, was conducted. FMCL is a tertiary hospital located in Kogi State, North-Central Nigeria, which provides primary, secondary and tertiary healthcare services to the populace in Kogi State, as well as the neighbouring States of Nassarawa, Benue, Niger, Kwara, and Abuja, in North-Central Nigeria; Ondo and Ekiti, in South-West Nigeria; Enugu and Anambra, in South-East Nigeria; and Edo and Delta, in South-South Nigeria.

The case records of all the patients managed for unsafe abortion within the study period were retrieved from the Medical Records Unit of the hospital. A case was defined as “unsafe abortion” if the woman had induced abortion in a setting that fulfilled the WHO definition/criteria for an unsafe abortion.¹ Cases of unsafe abortion with incomplete records, spontaneous abortions, and induced abortions that met the WHO definition/

criteria for a safe abortion, were excluded from the study. An abortion was considered safe “if carried out using a method recommended by WHO, appropriate to the pregnancy duration, and by someone with the necessary skills”.¹³ Using a purpose-designed proforma, relevant data, including sociodemographic characteristics, clinical characteristics, presentation, interventions and complications of unsafe abortion, were extracted from the case records that met the inclusion criteria.

Data obtained were analysed using the IBM Statistical Package for the Social Sciences (SPSS) Statistics for Windows, version 25 (IBM Corp., Armonk, NY, USA). Results were presented in percentages and tables, and associations between categorical independent and outcome variables were assessed, where applicable, using the Chi square test at 95% confidence level. A p-value of <0.05 was considered statistically significant.

RESULTS

Within the study period, there were 76 cases of unsafe abortion and 8,873 total deliveries at the FMCL, giving a prevalence of unsafe abortion of 0.86% (8.6 per 1,000 deliveries). Of the 76 case notes, 70 were retrieved from the Medical Records Department, and suitable for analysis, putting the retrieval rate at 92.1%.

Sociodemographic and Gynaecologic Characteristics of the Study Population

The age range of the patients in this study was 16–36 years, with a mean and modal age group of 23.15±3.96 years and 21–25 years (34, 48.6%), respectively. Most were single (49, 70%), with primary/secondary education (42, 60%), and overwhelmingly of low socioeconomic status (67, 95.7%).

Majority (42, 60%) of the women had had a previous abortion. Nearly one-half (33, 47.1%) had either never used any modern contraceptive (9, 12.9%) or only used emergency contraception following unprotected sexual intercourse (24, 34.3%). Nearly two-third (43, 61.4%) had multiple sexual partners. These characteristics are shown in Table 1.

Clinical Characteristics and Presentation of Unsafe Abortion

An overwhelming majority (67, 95.7%) of the cases were first trimester pregnancy terminations. More than one-half (37, 52.9%) of the women underwent medical abortion using misoprostol tablets only. Nearly one-fifth (13, 18.6%) took either herbal concoction only or a combination of herbal concoction and misoprostol tablets, a tenth (7, 10%) had dilatation and curettage (D&C) only, and slightly more than one-tenth (8, 11.4%), a combination of misoprostol tablets and either D&C or manual vacuum aspiration (MVA).

The most common presenting symptoms were bleeding per vaginam (70, 100%), pelvic pain (70, 100%), fever (15, 21.4%), and abnormal vaginal discharge (14, 20%). More than three-fourth (55, 78.6%) of the women presented within a week of abortion, as seen in Table 2.

Complications of Unsafe Abortion, Interventions and Associated Factors

An overwhelming majority (69, 98.6%) of the women had retained product of conception (RPOC). About a third (22, 31.4%) presented in haemorrhagic shock, and more than a fourth (19, 27.1%), with sepsis. Four (5.7%) women each had paralytic ileus and abdominopelvic abscess, while 2, 2.9%, had uterine perforation. Two women died, giving a case fatality rate of 2.9% (Table 2). The two women that died had the multiple complications of RPOC, uterine perforation, sepsis, abdominopelvic abscess, and paralytic ileus.

All the patients were administered broad spectrum antibiotics. All of those with RPOC had MVA done to evacuate the RPOC. All the four women with abdominopelvic abscess had exploratory laparotomy and drainage of abscess. More than two-fifth (32, 45.7%) of the women received blood transfusion, while 5, 7.1%, were admitted to the intensive care unit (ICU) (Table 2).

The need for blood transfusion increased significantly with increasing gestational age at abortion. Whereas only slightly more than two-fifth (29, 43.3%) of women who had abortion at ≤ 13 weeks were transfused, all the women who had abortion at 13 weeks or more,

Table 1: Sociodemographic and Gynaecologic Characteristics of the Study Population

Characteristic	Frequency, n=70	Percentage (%)
Age (years)		
≤ 20	15	21.4
21–25	34	48.6
26–30	18	25.7
>30	3	4.3
Marital Status		
Single	49	70.0
Married	12	17.1
Divorced/Separated/Widowed	9	12.9
Level of Education		
Primary	6	8.6
Secondary	36	51.4
Tertiary	28	40.0
Social Class		
Low	67	95.7
Middle	3	4.3
High	0	0
Previous Abortion		
Yes	42	60
No	28	40
Contraception		
Emergency contraception only	24	34.3
Condom only	17	24.3
Condom + Emergency contraception	15	21.4
Depo Provera	5	7.1
None	9	12.9

were transfused with blood. Complications that were significantly associated with blood transfusion included haemorrhagic shock ($p=0.001$), sepsis ($p=0.020$), abdominopelvic abscess ($p=0.025$) and paralytic ileus ($p=0.025$). These findings are shown in Table 3.

Abortion at > 13 weeks gestation ($p=0.008$), late hospital presentation > 1 week after abortion ($p=0.001$), use of a combination of misoprostol and D&C for abortion, and the complications of abdominopelvic abscess ($p=0.001$), sepsis ($p=0.001$), uterine perforation ($p=0.001$), and paralytic ileus ($p=0.001$), were all significantly associated with exploratory laparotomy (Table 4). These complications were also significantly associated with ICU admission ($p=0.001$ each), and maternal mortality ($p=0.001$, 0.019, 0.001, 0.006, respectively), as in Tables 5 and 6.

Other characteristics that were significantly associated with ICU admission included abortion at >13 weeks

($p=0.001$), presentation more than one week after abortion ($p=0.001$), and use of a combination misoprostol and herbal concoction ($p=0.001$) for abortion (Table 5). Maternal death was also significantly associated with abortion done at >13 weeks ($p=0.003$), late presentation >1 week after abortion ($p=0.023$) and use of a combination of misoprostol and D&C for abortion ($p=0.001$), as depicted in Table 6.

DISCUSSION

The unsafe abortion rate of 8.6 per 1,000 deliveries in this study is lower than the rates reported in other parts of the country.^{14,15} Abortion rates in Nigeria show marked regional variations, being lowest in the North-Central (NC, where our hospital is located) and South-Western (SW) parts of the country (27 per 1,000 reproductive age women in each of the two regions), and highest in the North-East (NE, 41 per 1,000) and South-South (SS, 44 per 1,000).⁸ These variations are explained by differences in

Table 2: Clinical Characteristics, Interventions and Outcomes of Unsafe Abortion

Characteristic	Frequency, n=70	Percentage (%)
GA at pregnancy termination (weeks)		
≤13	67	95.7
>13	3	4.3
Interval between TOP and presentation (weeks)		
≤1	55	78.6
>1	15	21.4
Presenting symptoms*		
Vaginal bleeding	70	100.0
Pelvic pain	70	100.0
Fever	15	21.4
Abnormal vaginal discharge	14	20.0
Vomiting	5	7.1
Abdominal swelling	4	5.7
Method of Pregnancy Termination		
Misoprostol only	37	52.9
Herbal concoction only	10	14.3
D&C only	7	10.0
MVA only	5	7.1
Misoprostol + D&C	4	5.7
Misoprostol + MVA	4	5.7
Misoprostol + herbal concoction	3	4.3
Complications*		
Retained product of conception	69	98.6
Haemorrhagic shock	22	31.4
Sepsis	19	27.1
Paralytic ileus	4	5.7
Abdominopelvic abscess	4	5.7
Uterine perforation	2	2.9
Maternal death	2	2.9
Interventions*		
Antibiotics	70	100.0
MVA	69	98.6
Blood transfusion	32	45.7
ICU admission	5	7.1
Exploratory laparotomy	4	5.7

*Multiple symptoms, complications, and interventions in many patients, hence total >70. TOP = Termination of Pregnancy; D&C = Dilatation and Curettage; MVA = Manual Vacuum Aspiration; ICU = Intensive Care Unit.

fertility rate, contraceptive use and unmet need for FP across the regions. While the NC region has the lowest total fertility rate (TFR) (5.0 children per woman versus 6.1 in the NE and 6.6 in the North-West, NW) and the highest modern contraceptive use rate (13.8% versus 7.8% in the NE and 6.2% in the NW) of the three northern regions in Nigeria, the SW has the lowest TFR (3.9) and the highest modern contraceptive use rate (24.3%) in the entire country. In contrast, even though the SS has the second lowest TFR (4.0) and the second highest modern

contraceptive use rate (15.8%), it has the highest unmet need for FP (27.8%) in the country.⁹ These findings indicate that women in NC Nigeria have a relatively strong desire (compared to women in the other northern regions) to limit their family size, and hence, less tendency for unwanted pregnancy/unsafe abortion. More so, a Health Facilities Survey showed that only 35% of women with unsafe abortion complications in NC Nigeria presented to public hospitals for treatment.⁸ These possibly explain the low abortion rate in this study; our

hospital being a public hospital in NC Nigeria. However, for every hospital case of unsafe abortion, there are many others who do not seek medical care.¹⁴

Seventy percent and 95% of unsafe abortions in our study occurred in women under 25 and 30 years of age, respectively. This is in consonance with the age pattern of unsafe abortion in Africa, where 60% and 80% of unsafe abortions occur among women less than 25 and 30 years, respectively.¹⁶ Seventy percent of the women in our study were single. In many societies, sexual activity among young unmarried people is highly stigmatized and even criminalized, and as such, they are often denied access to adequate sexual and reproductive health services and information.^{17,18} In Nigeria, despite the fact that 70% of women would have initiated sexual intercourse by 20 years, only 27.7% of sexually active single women use any modern method of contraception.⁹ In our study, even though more than 60% of the women had multiple sexual partners, nearly 50% of them had either never used any modern contraceptive, or only used emergency contraception following unprotected sexual intercourse.

More than 50% of the induced abortions in this study were medical abortions with misoprostol tablets. Misoprostol use for induced abortions in Nigeria has significantly increased over the years, owing largely to its cheap cost, and availability over-the-counter in pharmacies and drug stores.¹⁹ It is associated with less risk of serious post-abortion complications, but higher risk of haemorrhage and incomplete abortion.²⁰ Misoprostol has a complete evacuation rate of 92.2 to 98.8% compared to 100% with MVA, making infectious morbidity a more likely complication with misoprostol.²¹⁻²³ These possibly explain why the most common abortion complications in this study were RPOC, haemorrhagic shock, and sepsis, with severe complications seen in less than a third of the cases.

The low frequency of serious abortion complications in our study may also be explained by the fact that 95% of the unsafe abortions were first trimester pregnancies. Compared to first trimester abortion, second trimester abortion is

Table 3: Association between Need for Blood Transfusion and Clinical Characteristics of Unsafe Abortion

Variable	Blood Transfusion		χ^2	p-value
	Yes (%), n=32	No (%), n=38		
GA at TOP (weeks)				
≤13	29 (43.3)	38 (56.7)	9.190	0.010
>13	3 (100.0)	0 (0)		
Interval between TOP and Presentation (weeks)				
≤1	23 (41.8)	32 (58.2)	3.235	0.198
>1	9 (60.0)	6 (40.0)		
Method of TOP				
Misoprostol only	16 (43.2)	21 (56.8)	7.301	0.294
Herbal concoction only	5 (50.0)	5 (50.0)		
Misoprostol + D&C	3 (75.0)	1 (25.0)		
Misoprostol + herbal concoction	3 (100.0)	0 (0)		
D&C only	2 (28.6)	5 (71.4)		
Misoprostol + MVA	2 (50.0)	2 (50.0)		
MVA only	1 (20.0)	4 (80.0)		
Complications*				
Retained product of conception	32 (46.4)	37 (53.6)	0.854	0.355
Haemorrhagic shock	20 (90.9)	2 (9.1)	26.407	0.001
Sepsis	13 (68.4)	6 (31.6)	5.418	0.020
Abdominopelvic abscess	4 (100.0)	0 (0)	5.038	0.025
Paralytic ileus	4 (100.0)	0 (0)	5.038	0.025
Uterine perforation	2 (100.0)	0 (0)	2.445	0.118

*Multiple complications in many patients, hence total > 70.

Table 4: Association between Exploratory Laparotomy and Clinical Characteristics of Unsafe Abortion

Variable	Exploratory Laparotomy		χ^2	p-value
	Yes (%), n=4	No (%), n=66		
GA at TOP (weeks)				
≤13	3 (4.5)	64 (95.5)	9.537	0.008
>13	1 (33.3)	2 (66.7)		
Interval between TOP and Presentation (weeks)				
≤1	0 (0)	55 (100.0)	15.556	0.001
>1	4 (26.7)	11 (73.3)		
Method of TOP				
Misoprostol + D&C	2 (50.0)	2 (50.0)	23.157	0.001
D&C only	1 (14.3%)	6 (85.7)		
Misoprostol + herbal concoction	1 (33.3)	2 (66.7)		
Herbal concoction only	0 (0)	10 (100.0)		
Misoprostol only	0 (0)	37 (100.0)		
Misoprostol + MVA	0 (0)	4 (100.0)		
MVA only	0 (0)	5 (100.0)		
Complications*				
Retained product of conception	4 (5.8)	65 (94.2)	0.061	0.804
Abdominopelvic abscess	4 (100.0)	0 (0)	70.000	0.001
Sepsis	4 (21.1)	15 (78.9)	11.388	0.001
Uterine perforation	2 (100.0)	0 (0)	33.971	0.001
Paralytic ileus	2 (50.0)	2 (50.0)	37.800	0.001
Haemorrhagic shock	0 (0)	22 (100.0)	1.944	0.163

*Multiple complications in many patients, hence total > 70.

associated with a higher risk of morbidity and mortality, even when done under the best of conditions.^{24,25} To buttress this fact, the second trimester abortions in our study were significantly associated with the need for blood transfusion, exploratory laparotomy, ICU admission and maternal mortality.

We found that D&C was more commonly used than MVA in the cases of unsafe abortion in this study, and the former was significantly associated with need for exploratory laparotomy, and maternal mortality. Surgical complications are commoner with D&C than with MVA, which is less traumatic; D&C is however, more likely and commonly used in illegal abortions.²⁰ Nearly all the patients in this study had uterine evacuation with MVA following presentation in our hospital, being that the abortions were overwhelmingly first trimester terminations, nearly all complicated with RPOC, and MVA is considered the safest method for evacuating the uterus following first-trimester miscarriages.²⁵

This study is limited by its retrospective design and being a single facility-based study, generalizing the findings is difficult. These limitations notwithstanding, the study provides important data upon which policies and interventions to reduce the morbidity and mortality burden of unsafe abortion in Lokoja, Kogi State, and by extension, Nigeria, can be planned.

CONCLUSION AND RECOMMENDATIONS

Unsafe abortion is a significant cause of maternal morbidity and mortality. Improving access to safe and effective modern contraceptives will prevent unwanted pregnancy in the first instance, and consequently, reduce the risk of unsafe abortion. Facilities providing FP services should be adolescent-friendly (i.e., accessible, acceptable, equitable, appropriate, and effective). Adequate contraceptive counselling and provision by healthcare providers during post-abortion care will reduce subsequent unwanted pregnancy/unsafe abortion. Sexual and reproductive health education should be incorporated into secondary and university curricula, as this period corresponds to the age of sexual debut

Table 5: Association between ICU Admission and Clinical Characteristics of Unsafe Abortion

Variable	ICU Admission		χ^2	p-value
	Yes (%), n=5	No (%), n=65		
GA at TOP (weeks)				
≤13	3 (4.5)	64 (95.5)	20.886	0.001
>13	2 (66.7)	1 (33.3)		
Interval between TOP and Presentation (weeks)				
≤1	0 (0)	55 (100.0)	19.744	0.001
>1	5 (33.3)	10 (66.7)		
Method of TOP				
Misoprostol + herbal concoction	2 (66.7)	1 (33.3)	31.949	0.001
Misoprostol + D&C	2 (50.0)	2 (50.0)		
D&C only	1 (14.3)	6 (85.7)		
Herbal concoction only	0 (0)	10 (100.0)		
Misoprostol only	0 (0)	37 (100.0)		
Misoprostol + MVA	0 (0)	4 (100.0)		
MVA only	0 (0)	5 (100.0)		
Complications*				
Retained product of conception	5 (7.2)	64 (92.8)	0.078	0.780
Sepsis	5 (26.3)	14 (73.7)	14.453	0.001
Paralytic ileus	4 (100.0)	0 (0)	55.152	0.001
Abdominopelvic abscess	4 (100.0)	0 (0)	55.152	0.001
Uterine perforation	2 (100.0)	0 (0)	26.765	0.001
Haemorrhagic shock	0 (0)	22 (100.0)	2.468	0.116

*Multiple complications in many patients, hence total > 70.

Table 6: Association between Maternal Mortality and Clinical Characteristics of Unsafe Abortion

Variable	Maternal Outcome		χ^2	p-value
	Dead (%), n=2	Alive (%), n=68		
GA at TOP (weeks)				
≤13	1 (1.5)	66 (98.5)	11.589	0.003
>13	1 (33.3)	2 (66.7)		
Interval between TOP and Presentation (weeks)				
≤1	0 (0)	55 (100.0)	7.549	0.023
>1	2 (13.3)	13 (86.7)		
Method of TOP				
Misoprostol + D&C	2 (50.0)	2 (50.0)	33.971	0.001
D&C only	0 (0)	7 (100.0)		
Misoprostol + herbal concoction	0 (0)	3 (100.0)		
Herbal concoction only	0 (0)	10 (100.0)		
Misoprostol only	0 (0)	37 (100.0)		
Misoprostol + MVA	0 (0)	4 (100.0)		
MVA only	0 (0)	5 (100.0)		
Complications*				
Abdominopelvic abscess	2 (50.0)	2 (50.0)	33.971	0.001
Sepsis	2 (10.5)	17 (89.5)	5.526	0.019
Retained product of conception	2 (2.9)	67 (97.1)	0.030	0.863
Uterine perforation	1 (50.0)	1 (50.0)	16.486	0.001
Paralytic ileus	1 (25.0)	3 (75.0)	7.494	0.006
Haemorrhagic shock	0 (0)	22 (100.0)	0.944	0.331

*Multiple complications in many patients, hence total > 70.

for the majority of females, and hence, highest risk of unwanted pregnancy and unsafe abortion. The abortion law in Nigeria should be revised and liberalized. A further study that will compare the burden of unsafe abortion pre-COVID-19 and during COVID-19 is recommended, to determine any differences in incidence, morbidity and mortality.

Ethical Consideration

Being a retrospective study, and a Gynaecologic Long Commentary presented by the first author in partial fulfilment of the requirements for the Part 1 Fellowship Examination in Obstetrics and Gynaecology of the National Postgraduate Medical College of Nigeria (NPMCN), Ethics clearance was not sought for this study, but due Institutional approval was obtained for the study, in line with the Institutional and College guidelines.

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Statement of Prior Presentation and/or Abstract/Poster Presentation

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Data Availability

Available on demand.

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Conflicts of Interest

The authors declare that they have no conflicts of interest.

REFERENCES

1. World Health Organization. The prevention and management of unsafe

- abortion: report of a technical working group, Geneva, 12–15 April 1992. World Health Organization [Internet]. 1993 [cited 2022 Apr 5]. Available from: <https://apps.who.int/iris/handle/10665/59705>.
2. Sedgh G, Singh S, Shah IH, Åhman E, Henshaw SK, Bankole A. Induced abortion: incidence and trends worldwide from 1995 to 2008. *The Lancet*. 2012; **379**: 625–632.
 3. Shah IH, Åhman E, Ortayli N. Access to safe abortion: progress and challenges since the 1994 International Conference on Population and Development (ICPD). *Contraception*. 2014; **90**: S39–48.
 4. Gebremedhin M, Semahegn A, Usmael T, Tesfaye G. Unsafe abortion and associated factors among reproductive aged women in Sub-Saharan Africa: a protocol for a systematic review and meta-analysis. *Syst Rev*. 2018; **7**: 130.
 5. World Health Organization, UNICEF, UNFPA, World Bank & United Nations. Trends in maternal mortality: 1990 to 2015. Estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. Geneva: WHO [Internet]. 2015 [cited 2022 Apr 5]. Available from: <https://apps.who.int/iris/handle/10665/193994>.
 6. Alkema L, Chou D, Hogan D, Zhang S, Moller A, Gemmill A, *et al*. Global, regional, and national levels and trends in maternal mortality between 1990 and 2015, with scenario-based projections to 2030: a systematic analysis by the UN Maternal Mortality Estimation InterAgency Group. *Lancet*. 2015; **6736**: 828–837.
 7. Oye-Adeniran BA, Umoh AV, Nnatu SNN. Complications of unsafe abortion: a case study and the need for abortion law reform in Nigeria. *Reprod Health Matters*. 2002; **10**: 19.
 8. Bankole A, Adewole IF, Hussain R, Awolude O, Singh S, Akinyemi JO. The incidence of abortion in Nigeria. *Int Perspect Sex Reprod Health*. 2015; **41**: 170–181.
 9. National Population Commission [Nigeria] and ICF International. Nigeria Demographic and Health Survey 2018. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF International [Internet]. 2019 [cited 2022 Apr 10]. Available from: https://www.rhsupplies.org/uploads/tx_rhscpublications/Nigeria_-_2019.pdf
 10. Ijarotimi OA, Ubom AE, Igbodike EP, Orji EO. Women and the COVID-19 pandemic: consequences of disrupted access to contraception in Nigeria. *Journal of Gynaecology and Obstetrics*. 2021; **9**: 231–236.
 11. Hodin SM, Caglia JM, Baye M, Bewa J, Waiswa P, Langer A. From MDGs to SDGs: implications for maternal newborn health in Africa. *Afr J Reprod Health*. 2016; **20**: 26–28.
 12. Awowole IO, Badejoko OO, Kuti O, Ijarotimi OA, Sowemimo OO, Ogunduyile IE. Maternal mortality in the last triennium of the Millennium Development Goal Era at the Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Nigeria. *J Obstet Gynaecol*. 2018; **38**: 189–193.
 13. World Health Organization. Abortion [Internet]. 25 November 2021 [cited 16 Apr 2022]. Available from: <https://www.who.int/news-room/fact-sheets/detail/abortion>.
 14. Akinlusi FM, Rabiou KA, Adewunmi AA, Imosemi OD, Ottun TA, Badmus SA. Complicated unsafe abortion in a Nigerian teaching hospital: pattern of morbidity and mortality. *J Obstet Gynaecol*. 2018; **38**: 961–966.
 15. Ikeako LC, Onoh R, Ezegwui HU, Ezeonu PO. Pattern and outcome of induced abortion in Abakaliki, Southeast of Nigeria. *Annals Med Health Sci Res*. 2014; **4**: 442–6.
 16. Shah I, Åhman E. Age patterns of unsafe abortion in developing country regions. *Reprod Health Matters*. 2004; **12**: 9–17.
 17. Anderson R, Panchaud C, Singh S, Watson K. Demystifying data: a guide to using evidence to improve young people's sexual health and rights. New York: Guttmacher Institute [Internet]. 2013 [cited 2022 Apr 16]. Available from: <https://www.guttmacher.org/sites/default/files/pdfs/pubs/demystifying-data.pdf>
 18. Fasubaa OB, Akindele ST, Ezechi OC. Illegal induced abortion in Nigeria: An examination of its consequences and policy implications for social welfare and health policy makers. *J Hum Ecol*. 2003; **14**: 433–443.
 19. Bryne ME, Omoluabi E, OlaOlorun FM, Moreau C, Bell SO. Determinants of women's preferred and actual abortion provision locations in Nigeria. *Reprod Health*. 2021; **18**: 240.
 20. Bello FA, Fawole B, Oluborode B, Awowole I, Irinyenikan T, Awonuga D, *et al*. Trends in misoprostol use and abortion complications: a cross-sectional study from nine referral hospitals in Nigeria. *PLoS One*. 2018; **13**: e0209415.
 21. Fawole AO, Diop A, Adeyanju AO, Aremu OT, Winikoff B. Misoprostol as first-line treatment for incomplete abortion at a secondary-level health facility in Nigeria. *Int J Gynaecol Obstet*. 2012; **119**: 170–173.
 22. Sochet T, Diop A, Gaye A, Nayama M, Sall AB, Bukola F, *et al*. Sublingual misoprostol versus standard surgical care for treatment of incomplete abortion in five sub-Saharan African countries. *BMC Pregnancy Childbirth*. 2012; **12**: 127.
 23. Chigbu B, Onwere S, Aluka C, Kamanu C, Ezenobi O. Is misoprostol a suitable alternative to the surgical evacuation of incomplete abortion in rural South-Eastern Nigeria? *East Afr Med J*. 2012; **89**: 172–177.
 24. Harris LH, Grossman D. Confronting the challenge of unsafe second-trimester abortion. *Int J Gynecol Obstet*. 2011; **115**: 77–79.
 25. Henshaw SK, Adewole I, Singh S, Bankole A, Oye-Adeniran BM, Hussain R. Severity and cost of unsafe abortion complications treated in Nigerian hospitals. *Int Fam Plan Perspect*. 2008; 40–50.