

The use of misoprostol for postpartum haemorrhage among midwives in primary healthcare facilities in Edo state, Nigeria.

Eseine O. Catherine¹, Jeremiah Israel², Adamolekun A. Patience³.

¹Department of Nursing Sciences,
Ambrose Alli University, Ekpoma, Edo State.

²Department of Obstetrics and Gynaecology,
Niger Delta University, Amassoma, Bayelsa State.

³Faculty of Nursing Sciences,
University of Medical Sciences Ondo, Ondo State.

Corresponding author:
Jeremiah Israel. MBBS, FWACS, FICS.
Department of Obstetrics and Gynaecology,
Niger Delta University, Amassoma, Bayelsa State.
Email: israel.jeremiah@ndu.edu.ng
Phone: 08035009848

How to cite this article:

Eseine O. C, Jeremiah I., Adamolekun A. P.: **The use of misoprostol for postpartum haemorrhage among midwives in primary healthcare facilities in Edo state, Nigeria.** NDJMS 2024; 3(4): 8-17

Received 16th May, 2024

Accepted 19th June 2024

Published 20th July 2024

Abstract

Background: Postpartum haemorrhage is a leading global cause of maternal morbidity and mortality. The use of misoprostol in the prevention and treatment of PPH has been shown to be effective particularly in low resource settings where regular supply and maintenance of efficacy of oxytocin and ergometrine cannot be ensured. This study aimed to determine midwives' knowledge and usage of misoprostol in the management of Postpartum haemorrhage in Edo Central Senatorial District.

Methodology: It was a descriptive cross-sectional survey involving 126 midwives. An all-inclusive sampling was adopted for the study. Data was collected by means of a structured questionnaire. Collected data were analysed and presented by means of frequencies and percentages. Pearson's correlation analysis was used to test the hypotheses.

Results: This study showed that 40.5% and 42.9% of respondents knew the correct dose, 77% and 46.8% knew the correct route and 37.3% and 77.8% knew the correct time of administration for prevention and treatment of PPH respectively. In the prevention of PPH, 42.9% of respondents administer misoprostol at the correct time, 46.8% at the correct dose and 66.7% through the correct route whereas, in the treatment of PPH, 62.7% of respondents administered misoprostol at the correct time, 43.7% at the correct dose and 54% through the correct route. Only 38% of respondents had received training on use of misoprostol for PPH. Factors influencing misoprostol use among the

participants were training, adequate knowledge, availability, and effectiveness of misoprostol. There was a significant relationship between midwives' professional qualifications and years of service and correct use of misoprostol.

Conclusion: *The knowledge of misoprostol use was still low, and midwives still used misoprostol incorrectly in the management of PPH. It is recommended that relevant authorities should invest in training and retraining of midwives on use of misoprostol for the management of PPH.*

KEYWORDS: *Post Partum Haemorrhage, misoprostol, prevention, treatment, factors.*

Introduction

Postpartum hemorrhage (PPH) is a leading global cause of maternal morbidity and mortality. Approximately 14 million women suffer PPH annually and at least 128,000 of these women bleed to death within four hours of delivery. Majority of these deaths occur in developing countries of the world where there are poor facilities and paucity of trained birth attendants¹. The causes of PPH can be broadly categorized as the 4 Ts- tone, tissue, trauma and thrombin. Of these causes, the most common by a wide margin is uterine atony which is the failure or the inability of the uterus to contract and retract following delivery². Several treatment options for PPH are available including the use of drugs, surgical intervention, and use of aortic compression devices. The drugs include uterotonic agents such as Oxytocin and Ergometrine, haemostatics such as tranexamic acid and misoprostol which is a prostaglandin E1 analogue^{3,4}. Uterine atony can be prevented through active management of third stage of labour (AMTSL) which includes prompt administration of a potent uterotonic drug. The World Health Organisation (WHO) recommends the use of intravenous oxytocin or ergometrine⁴. However, there are limitations to the routine use of oxytocin and ergometrine in low resource settings because they are only available in injection form and require refrigeration. They have short half-lives and can quickly lose

potency if not stored appropriately⁵. The use of misoprostol in the prevention and treatment of PPH has evolved due to its long shelf life and multiple administration routes, especially in settings which have minimal resources and limited skilled providers⁶. It is particularly suitable for use in the prevention and treatment of PPH in low resource settings where regular supply and maintenance of efficacy of oxytocin and ergometrine cannot be ensured⁷.

In general practice for management of PPH, the International Federation of Gynaecology and Obstetrics (FIGO) and the International Confederation of Midwives (ICM) jointly recommend misoprostol as a technology to control PPH⁸. The FIGO guidelines recommend the use of Misoprostol in the prevention of PPH using a single dose of 600mcg orally. It also recommends that Misoprostol should be administered immediately after delivery of the new-born after performing an abdominal palpation to confirm that there are no additional babies in-utero. For PPH treatment, one dose of misoprostol 800mcg sublingually or 1000mcg rectally is recommended (irrespective of the prophylactic measures)⁹.

The Federal Ministry of Health in Nigeria also recommends 600 mcg of oral/sublingual misoprostol for prevention and 800mcg-1000mcg

administered rectally for treatment of PPH. For prevention, it recommended that misoprostol 600mcg should be administered immediately after the baby's birth before delivery of the placenta. For treatment, 1000mcg tablets should be inserted rectally after blood loss exceeding 500mls. If bleeding persists, dose should not be repeated but patient should be referred to the nearest hospital¹⁰.

Based on the consensus that misoprostol is a first-line alternative where conventional uterotonic use is not practicable, midwives at the Primary Health facilities need to be aware of the numerous advantages and benefits of misoprostol and thus use it for the benefit of reducing PPH amongst women⁶. Promotion of Misoprostol use for the prevention and treatment of PPH at PHC level is necessary because PHCs are the basic health care units in the country and are located mainly in the rural communities that may not have access to secondary care and blood transfusion services. A large majority of deliveries take place in the rural communities. It is in these rural communities that most cases of maternal mortality occur⁷. Women needing delivery care first present at the Primary Health Care facilities and are only referred to secondary or tertiary care levels when they have complications. Primary PPH is often sudden and unheralded. It is expected that midwives will prevent and treat this complication promptly at the primary health facilities before referring them to secondary levels if necessary⁷. Increased awareness and knowledge of PPH and its effective management using Misoprostol will decrease maternal morbidity and mortality and lead to increased utilization of primary health facilities for maternal care. Post partum haemorrhage being a rapidly developing phenomenon may result in mortality before referral can be

accomplished⁷. Therefore, a practical approach to the prevention of maternal mortality associated with PPH is to ensure that efforts are put in place to prevent and treat PPH effectively when it occurs. Proper use of Misoprostol at the primary health facility level will reduce the need for referral and decrease associated morbidity and mortality.

This study therefore aimed to determine the knowledge and usage of misoprostol by midwives to prevent and treat PPH in primary healthcare facilities across Edo Central Senatorial District, Edo State. The study also seeks to determine the availability of misoprostol in these facilities and identify factors influencing the use of misoprostol by the midwives.

This study will help to identify lapses/gaps in the use of misoprostol among midwives in PHC facilities in Edo Central Senatorial District which can then be addressed for the purpose of improving management of PPH with overall reduction of maternal morbidity and mortality.

Methodology:

This was a descriptive cross-sectional study carried out in Primary Healthcare facilities in across the five local government areas that make up the Edo Central Senatorial District, Edo State between the 1st of July and 31st of August 2022.

The areas are essentially rural, and the people are predominantly farmers and traders. The study population included all the registered midwives employed and currently working in the Primary Health Care facilities within the Edo Central Senatorial District. At the time of this study, there were 128 midwives. All 128 midwives were recruited for the study but 2 declined participation.

Data was collected using a self-administered structured questionnaire. The questionnaire sought information on socio-demographic characteristics, level of knowledge, formal training on misoprostol use, availability of misoprostol, and pattern of misoprostol use (including dose, route and time of administration) by midwives in the prevention and treatment of PPH. A 5-point level Likert scale was used in the assessment of frequency of usage and factors influencing the use of misoprostol by the midwives. The instrument was tested for face and content validity, and reliability. Data collection for the study was completed in eight weeks. Ethical approval was obtained from the ethics and research committee of the Ministry of Health, Edo State.

Data obtained were entered into a spreadsheet, checked for errors and analyzed using Statistical Package for Social Sciences (SPSS) version 24. Data were analysed using frequencies and percentages and presented in tables. Pearson's correlation analysis was done to determine the strength and direction of the relationship between the socio-demographic characteristics (professional qualification and

years of experience) of the midwives and their correct use of misoprostol in prevention and management of PPH.

Results: All the 126 copies of questionnaires administered were retrieved. This gave a response rate of 100%.

Table 1 below shows that of the 126 respondents that participated in this study, 10 (7.9%) were within the ages of 25-29 years, 18 (14.3%) were between 30-34 years, 33 (26.2%) were between 35-39 years while 65 (51.6%) were 40 years old and above. With regards to the Professional Qualification, the table reveals that 34 (27%) were Registered Midwives (RM), 64 (50.8%) were Registered Nurse/midwives (RNM), 25 (19.9%) were Bachelor of Nursing Science (BNSc) holders while 3 (2.4%) were Masters of Science (MSc) Nursing holders. Also, the table reveals that 6 (4.8%) of the respondents had between 1-5 years working experience, 21 (16.7%) had 6-10 years working experience, 40 (31.7%) had 11-15 years working experience, 30 (23.8%) had 16-20 years working experience while 29 (23%) had worked for more than 20 years.

Table 1: Socio-demographic characteristics of the studied population

Socio-Demographic	Factors	Frequency	Percent (%)
Age	? 25 years	-	0
	25 – 29 years	10	7.9
	30 – 34 years	18	14.3
	35 – 39 years	33	26.2
	40 years and above	65	51.6
	Total	126	100.0
Qualification	RM	34	27.0
	RNM	64	50.8
	BNSc	25	19.8
	MSc	3	2.4
	Total	126	100.0
Years of experience	1 – 5 years	6	4.8
	6 – 10 years	21	16.7
	11 – 15 years	40	31.7
	16 – 20 years	30	23.8
	? 20 years	29	23
	Total	126	100.0

Based on data analysis, the major findings of this study are summarized as follows: Misoprostol was available in PHC facilities (n = 113, 89.7%) in Edo Central Senatorial District. In the prevention of PPH using misoprostol, 37.30% of midwives (n = 47) knew the correct time of administration, 40.48% of midwives (n = 51) knew the correct dose and 76.98% of midwives (n = 97) knew the correct route of administration. In the treatment of PPH using misoprostol, 77.78% of midwives (n = 98) knew the correct time of administration, 42.86% of midwives (n = 54) knew the correct dose and 46.83% of midwives (n = 59) knew the correct route of administration. In the prevention of PPH, 63.49% of midwives (n = 80) frequently used misoprostol while 80.95% of midwives (n = 102) frequently used misoprostol for the treatment of PPH. In the prevention of PPH, 42.9% of midwives (n = 54) administered misoprostol at the correct time, 46.80% of midwives (n = 59) administered the correct dose of misoprostol and 66.70% of midwives (n = 84) administered misoprostol through the correct route. In the treatment of PPH, 62.70% of midwives (n = 79) administered

misoprostol at the correct time, 43.70% of midwives (n = 55) administered the correct dose of misoprostol and 54.00% of midwives (n = 68) administered misoprostol through the correct route.

Factors that influenced misoprostol use for the prevention and treatment of PPH were training on misoprostol use (87.30%, n = 110), adequate knowledge on misoprostol use (71.40%, n = 90), availability of misoprostol (67.50%, n = 85), effectiveness of misoprostol (58.00%, n = 73) and concerns about misoprostol safety (51.60%, n = 65).

Only (38.10%) of midwives (n = 48) had been trained on the use of misoprostol for the prevention and treatment of PPH. Majority of midwives (76.98%, n = 97) indicated that they needed to be trained on the use of misoprostol in PPH prevention and treatment.

Table 2 shows there was a strong positive correlation between midwives' qualification and correct use of misoprostol in the prevention (Pearsons' correlation coefficient = 0.974) and treatment (Pearsons' correlation coefficient = 0.963) of PPH.

Table 2: Pearson's correlation table showing p-values and relationship between midwives' professional qualification and correct use of misoprostol in the prevention of PPH.

		Number of midwives per qualification	Number of midwives who use misoprostol correctly for PPT prevention
Number of midwives per qualification	Pearson Correlation	1	.974*
	Sig. (2-tailed)		.026
	N	4	4
Number of midwives who use misoprostol correctly for PPH prevention	Pearson Correlation	.974*	1
	Sig. (2-tailed)	.026	
	N	4	4

*. Correlation is significant at the 0.05 level (2-tailed).

Table 3 shows there was a strong positive correlation between midwives' years of experience and correct use of misoprostol in the prevention (Pearsons' correlation coefficient = 0.945) and treatment (Pearsons' correlation coefficient = 0.916) of PPH.

Table 3: Pearson's correlation table showing p-values and relationship between midwives' years of experience and correct use of misoprostol in the prevention of PPH.

		Frequency per years of experience	Number of midwives correctly using misoprostol for prevention of PPH
Frequency per years of experience	Pearson Correlation	1	.945*
	Sig. (2-tailed)		.015
	N	5	5
Number of midwives correctly using misoprostol for prevention of PPH	Pearson Correlation	.945*	1
	Sig. (2-tailed)	.015	
	N	5	5

*Correlation is significant at the 0.05 level (2 tailed).

There was a statistically significant relationship between midwives' professional qualification and correct use of misoprostol in the prevention and treatment of PPH (p value = 0.026, 0.037 respectively). There was also a statistically significant relationship between midwives' years of experience and correct use of misoprostol in the prevention and treatment of PPH (p value = 0.015, 0.029 respectively).

Discussion:

Results from this study indicated that misoprostol was available in 89.7% (n=113) of the primary health care facilities while 10.3% (n=13) indicated that it was not available. The availability of misoprostol in PHC facilities as observed in this study agrees with findings of a study carried out in Primary Health Care facilities in Lagos State, where 73.7% of the facilities which took part in the study had misoprostol¹¹. However, this was far higher than the low availability (17.1%) of misoprostol by respondents across Primary Health Care facilities from 12 states across the six geopolitical zones between 2013 and 2014¹². This discrepancy in levels of availability of misoprostol in PHC facilities establishes that there still exist levels of non-compliance to the 2011 inclusion of misoprostol in the essential drug list in Nigeria¹⁰. Ensuring that the drug is available at the LGA medical store with regular supply to the facilities will indicate that the LG authority supports the use of misoprostol, is compliant to FMOH inclusion of misoprostol as an essential drug and encourage midwives to use the drug. Making this drug available through regular supply by the LG pharmacy will also save midwives the time and stress of going to pharmacy and chemist shops to source for the drug. Lack of availability or non-provision of misoprostol by the

authority at Primary Health Care level will lead to inadequate use of misoprostol by the midwives. This will result in increased PPH incidence among women since the drug for its prevention is unavailable.

The midwives' knowledge of the correct time for misoprostol administration, dose required and adjunct administration of misoprostol with other uterotonics were low. On the other hand, they were knowledgeable on the route of administration, side effects and management of side effects. The midwives were also knowledgeable on the correct timing for misoprostol administration in PPH treatment. However, the knowledge of midwives on the dose required and route of administration of misoprostol in PPH treatment was below average. This was higher than in an earlier study where respondents when asked the route of administration and the dose of the drug for the prevention of PPH, only 8.2% could mention the correct dose and route of administration⁷. Only 10% of the respondents had a high level of knowledge of misoprostol for the prevention and treatment of PPH. The increase in the level of knowledge may be because some midwives have attended training.

Increased awareness and knowledge of PPH and its effective management using Misoprostol will decrease maternal morbidity and mortality and lead to increased utilization of PHCs for maternal care. This means that knowledge of misoprostol use by midwives for prevention and treatment of PPH still needs to be enhanced by training of midwives. Only 38% of the respondents in this study have been trained formally on misoprostol use for prevention and treatment of PPH. This is still quite low hence the need for more training as well and re-training of midwives to raise the number of formally trained midwives to a minimum of 75%. This knowledge impacts directly on the frequency and the pattern of

use of misoprostol by the midwives.

Findings from this study on the factors influencing the use of misoprostol among midwives in managing PPH showed that adequate knowledge on misoprostol use, training on misoprostol use, availability of misoprostol, and effectiveness of misoprostol were identified as the main factors influencing the use of misoprostol by midwives in the prevention and treatment of PPH. The result of this study is in agreement with the study which identified factors influencing the use of misoprostol to include lack of knowledge of providers and lack of comprehensive training and mentorship to midwives¹³. Training should therefore be on a continuous basis and those who attend such trainings should be encouraged to organize a step down for adequate dissemination. A study had earlier suggested the need for training and on-going education for providers which must include clear dosing information including routes and precautions associated with each type of use. Evidenced-based guidelines for misoprostol use for PPH prevention and treatment need to be put in place and supplemented by training and on-going education of providers¹⁴.

Findings from this study revealed that there is a strong positive correlation between midwives' professional qualification and correct use of misoprostol in the prevention and treatment of PPH. It showed that with higher professional qualification, there is a higher probability for correct use of misoprostol by midwives for the prevention and treatment of PPH. This is in agreement with the study that found out that professional qualification has significant impact on midwives' knowledge and skills in prevention and management of PPH¹⁵. The positive significant relationship between professional qualification and correct use of misoprostol could possibly be as a result

of more exposure to knowledge during learning activities. During academic programmes, hospital based practicals and attachments to tertiary and secondary health facilities organized as part of the curriculum also serve as opportunities for acquisition of more knowledge and skills by the midwife.

There was also a strong positive correlation between midwives' years of experience and correct use of misoprostol in the prevention and treatment of PPH. It showed that with higher years of service, there is a higher probability for correct use of misoprostol by midwives for the prevention and treatment of PPH. This is also in agreement with the study that observed the years of service has significant impact on midwives' knowledge and skills in prevention and management of PPH¹⁵. This is because over the years, more experience is acquired during practice. Usually, Primary Health Care Midwives are posted from one facility to another thus enhancing interaction and knowledge exchange amongst them. Occasional trainings organized by local government, state government and Non-Governmental Organizations also seem to favour the older midwives as attendance is sometimes based on seniority. Therefore, the more the years, a midwife has spent in service, the higher the likelihood of acquiring knowledge and skills in the use of misoprostol.

A limitation encountered in this study was the small number of midwives in the primary health care facilities spread across Edo Central Senatorial District. This necessitated the use of the all-inclusive sampling. This may be a potential source of bias.

Conclusion

The level of knowledge of misoprostol use in the prevention and treatment of PPH among midwives remains low, therefore

majority of the midwives do not correctly use misoprostol in the prevention and treatment of PPH. Major factors affecting misoprostol use by the midwives were adequate knowledge and training of the midwives. There was a significant relationship between professional qualification and years of service and the correct use of misoprostol in the prevention and treatment of PPH.

Recommendations:

Based on the findings, discussions and conclusions of this study, the following are our recommendations are:

- 1). There is need to invest in the training and retraining of midwives on evidence-based technologies including use of misoprostol for the prevention and treatment of PPH. This will improve maternal health and lead to a reduction of maternal morbidity and mortality.
- 2). There is need for adequate procurement and supply of misoprostol by the LG authorities to ensure its availability and use.
- 3). There is need for regular monitoring and supervision of all facilities to ensure that services rendered are correctly done.

REFERENCES:

1. Kinikanwo, I. G., John, D. O. and Mmon, C. F., (2015). Primary Postpartum Haemorrhage at the University of Port Harcourt Teaching Hospital: Prevalence and Risk Factors. *The Nigerian Health Journal*, Vol.15, No. 3 (111-117).
2. Smith, J. S., (2018). Postpartum Haemorrhage Treatment and Management. Medscape. <https://emedicinemedscape.com/article/275038-treatment>
3. Uthman, G. S., Kwanashie, H. O., Mairiga, A. G., Gamani, K. S., Isa, M. H., Abdu, I. A., Geidam, A. D. and Nwaosu, C. S. (2011). A randomized clinical trial comparing the efficacy of oxytocin injection and oral misoprostol tablet in the prevention of postpartum hemorrhage in Maiduguri Nigeria. *International Research Journal of Pharmacy* 2 (8): 76-81.
4. WHO, (2012). WHO recommendations for the prevention and treatment of postpartum haemorrhage. Available at: http://apps.who.int/iris/bitstream/10665/75411/1/9789241548502_eng.pdf.
5. Ononge, S., Campbell, O. and Mirembe, F. (2015). Effectiveness and Safety of misoprostol distributed to antenatal women to prevent postpartum haemorrhage after child-birth: a stepped-wedge cluster randomized trial. *Biomedcentral.com (BMC). Pregnancy and Child-birth. Article 315: 50-56.*
6. Prata, N. and Weidert, K. (2016). Efficacy of misoprostol for the treatment of postpartum hemorrhage: current knowledge and implications for health care planning. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4973720/#b19-ijwh-8-341>
7. Okonofua, F.E., (2010). Knowledge and correct use of misoprostol among primary health workers in Edo state. Retrieved from <http://where-online.org/sites/default/files/reports/Edo-Misofinal.report.2010>
8. International Confederation of Midwives (ICM) and International Federation of Gynaecology and Obstetrics (FIGO), (2017). Prevention and Treatment of

- Postpartum Haemorrhage: new world advances for low resource settings. *International Journal of Gynaecol Obstetrics*.**97**:160-3.
9. International Federation of Gynaecology and Obstetrics (FIGO), (2012). *Prevention of Postpartum Haemorrhage with Misoprostol*. Guideline in brief. Available at www.figo.org.
 10. Federal Ministry of Health (FMOM), (2011). Clinical guideline on use of misoprostol: an addendum to the National Clinical Service Protocol for Obstetric Care. Federal Ministry of Health Abuja.
 11. Duduyemi, A. O., Okafor, I. P. and Oridota, S. E., (2019). Misoprostol, Magnesium Sulphate and Anti-shock Garment: A Knowledge, Availability and Utilization Study at the Primary Health Care Level in Western Nigeria. Available at <https://pubmed.ncbi.nlm.nih.gov/30897096/>
 12. Abayomi, S. O., (2017). Assessment of Primary Health Care facilities' readiness in Nigeria. *Biomedcentral Health Services Research* 17(172) pp2-8. DOI10-1186/s12913-017-2112-8
 13. Baig, M., Jan, R., Lakhani, A., Ali, S. A., Mubeen, K., Ali, S. S., and Adnan, F., (2017). Knowledge, Attitude, and Practices of Mid-Level Providers regarding Post Abortion Care in Sindh, Pakistan. *Journal of Asian Midwives* **4**(1):21-34.
 14. Starrs, A. and Winikoff, B. (2012). Misoprostol for Postpartum Haemorrhage: Moving from evidence to Practice. *International Journal of Gynaecology and Obstetrics*.**116**:1-3.
 15. Kibusi SM, Mwampagatwa I, Angelina JA. Factors influencing nurses' knowledge and skills in the prevention and management of postpartum haemorrhage. *Afr J Midwifery*. 2019; 13(4): 1-12. <https://doi.org/10.12968/ajmw.2018.0018>