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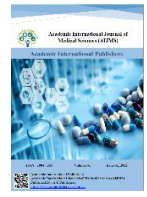

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Misoprostol In the Prevention of Postpartum Hemorrhage

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Abstract:

Misoprostol, an E1 prostaglandin analogue, induces uterine contractions. Because of this property, misoprostol has proven effective in preventing and treating postpartum haemorrhage (PPH) resulting from the failure of the uterus to contract fully after delivery. In this study, we tried to demonstrate the efficacy of misoprostol in preventing PPH.

Patients and methods: we collected samples of 500 women who attended Al-Batool Teaching Hospital from July 2022 to January 2023. We collected the information by direct interview through a prepared written questionnaire.

Results: 500 women were enrolled in the study, 4.8% had PPH despite the usage of misoprostol. All of them used the rectal route. We found a significant difference between the fibroid and the PPH ($P < 0.001$).

Conclusion:There is a significantly lower incidence of PPH in misoprostol intake.

Introduction:

In 2015, over 303,000 women died during pregnancy or because of birthing problems globally, with the vast majority of these tragic instances occurring in low to middle-income nations. Postpartum haemorrhage (PPH), sepsis, pre-eclampsia or eclampsia, difficulties during birth, and unsafe abortions were the primary causes of mother mortality. It is critical to remember that most of these reasons are avoidable [1].

A condition known as uterine atony is one of the leading causes of postpartum bleeding, a critical obstetric emergency. Uterine atony is an insufficient contraction of the myometrial cells in the corpus uteri in response to endogenous oxytocin release during birth. The delivery of the placenta disturbs the spiral arteries, which lack muscle and rely on contractions to manually seal them off and prevent

bleeding, resulting in postpartum haemorrhage. PPH is one of the top five causes of maternal mortality worldwide, accounting for roughly one-quarter of all maternal deaths [2].
The use of oxytocin, either intravenously or intramuscularly, is the recommended prophylactic strategy for PPH. Misoprostol, a medicine available in tablet form (600 mcg oral), can be feasible when oxytocin is unavailable [3]. When provided promptly after childbirth, misoprostol has proven to be a safe and effective approach for avoiding PPH. It comes in 200 mcg tablets, and therapeutic or preventive doses are usually three (600 mcg) or 4 (800 mcg). Misoprostol can be given by the mother herself or by skilled community health workers (CHWs) or traditional birth attendants (TBAs) [4].
Misoprostol, an E1 prostaglandin analogue, has the critical capacity to produce uterine contractions. Misoprostol was first approved to prevent gastric ulcers caused by the long-term use of nonsteroidal anti-inflammatory medicines. Still, it has also been shown to help prevent and treat postpartum haemorrhage (PPH) caused by insufficient uterine contractions after childbirth [5]. Extensive research over the last decade has thoroughly confirmed misoprostol's efficacy in PPH prevention, resulting in its inclusion in the World Health Organization's (WHO) Model List of Essential Medicines (EML) for PPH prevention in 2011 (600-g oral dose). Furthermore, data supporting the use of misoprostol for PPH treatment highlights its efficacy in decreasing excessive postpartum bleeding, providing a beneficial solution in areas where oxytocin is not easily available to women and healthcare providers [6].

Aim of study

To identify the role of misoprostol in preventing post-partum haemorrhage in women attending Al-Batool Teaching Hospital in Diyala province in Iraq.

Patients and Methods

This six-month cross-sectional study examined misoprostol as prophylaxis in 500 patients at risk for postpartum haemorrhage (PPH) from July 2022 to January 2023. The study participants were Al-Batool Teaching Hospital patients. Patients with retained placental fragments, iatrogenic injuries, thrombosis, and other PPH causes were excluded from the study; however, those who took misoprostol as a preventative step were eligible.
Carefully collected data about patients' medical history and demographics. A newly designed written questionnaire and patient interviews collected data on age, weight, birth route, haemorrhage, and chronic conditions. These data points were necessary to evaluate patients' characteristics and misoprostol's PPH prevention efficacy.
Participants' confidentiality and privacy were protected via strict procedures. The patients' identities were classified to reduce prejudice and protect critical medical data. This method safeguarded patients' privacy and improved the study's accuracy. The study was rigorously designed, and data was collected to provide useful insights into misoprostol's usage as a preventative measure for PPH in a cohort of patients with risk characteristics, adding to maternal healthcare knowledge.

Statistical analysis

SPSS Version 25 was used for the description of the data. We expressed the quantitative data by arithmetic mean, standard deviation, and mode and the qualitative data by frequencies. Chi-square was used to identify the association between the variables when the P value less than 0.05 was considered significant.

Results

The mean age of the patients was 27.79 ± 6.499 years. Their Number of previous pregnancies is demonstrated in table 1.

Table 1. Number of previous pregnancies

Gravida	Frequency	Percent%
0	4	0.8
1	107	21.4
2	122	24.4
3	97	19.4
4	76	15.2
5	49	9.8
6	20	4.0
7	11	2.2
8	8	1.6
9	2	0.4
10	4	0.8
Total	500	100%

As shown in Table 1, the majority of cases were gravida 1,2 and 3. 10.2 % of them suffered gestational diabetes mellitus, 71.8% suffered anaemia less than 11 g/dL, 24% of them had placenta previa, and 19.8% of them suffered preeclampsia during their current pregnancy.

15% of them have a history of misoprostol intake in previous pregnancies, and Table 2 summarizes the causes of intake.

The causes of previous misoprostol intake are summarized in Table 2.

Table 2. Causes of misoprostol intake

Causes	Frequency	Percent%
Post-Partum hemorrage	41	57.7
Post-abortion	30	42.3
Total	71	14.2

As shown in table 2, 57.7% took misoprostol after PPH and the rest due to post-abortion bleeding.

Figure 1. Causes of misoprostol intake: 25.4% have polyhydramnios, and only 1.8 % have uterine fibroids. 4.8 % of them suffered PPH, as in Table 3.

Table 3. Post-partum hemorrhage

Bleeding	Frequency	Percent%
No	467	95.6
Yes	24	4.8
Total	500	100.0

PPH after using misoprostol.

Figure 1: PPH after using misoprostol.

As shown in Table 3, 95.6% of them didn't experience PPH after taking misoprostol, which is significant compared to the normal range of PPH (4-11%).

There was a statistically significant difference between the PPH incidence and the existence of uterine fibroids, as shown in table 6.

Table 4. Hx of uterine fibroid

Bleeding		**No**	**Yes**	**Total**	Significance
Post-partum hemorrahge	No	476	3	376	
	Yes	24	6	124	P < 0.003
Total		491	9	500	

As shown in table 4 there was a strong association between the risk of PPH and uterine fibroid.

Discussion:

In this study, we set out to assess the efficacy of misoprostol as a preventive measure against postpartum haemorrhage (PPH) in a cohort of 500 women who had used the drug during their last pregnancies. Our findings provide valuable insights into the potential role of misoprostol in reducing the incidence of PPH, a significant obstetric complication [6,7].

Our results revealed that a remarkable 95.2% of the women in our study experienced no bleeding after taking misoprostol, suggesting a promising effectiveness in preventing PPH. This percentage starkly contrasts the usual public percentage of PPH, which hovers around 18% of all pregnancies, underscoring the potential impact of misoprostol as a preventive intervention [8].

One noteworthy discovery from our study was the strong association between the presence of uterine fibroids and PPH ($P < 0.001$) [9,10]. This finding adds to the growing body of evidence indicating that certain risk factors, such as uterine fibroids, may increase the likelihood of PPH and should be considered in clinical decision-making.

Our findings align with numerous prior studies exploring misoprostol's efficacy in managing postpartum haemorrhage. These studies collectively support the notion that misoprostol can effectively reduce the incidence of PPH and diminish the need for excessive oxytocin administration [11-15].

However, it is important to acknowledge the 4.8% of women in our study who experienced bleeding despite taking misoprostol. This finding may raise questions about the potential drug misuse or dosage variations. It is consistent with the findings of Mobeen et al., highlighting the need for proper education and adherence to recommended dosages to maximize the benefits of misoprostol.

It is worth noting that our results align with the findings of Mansouri et al. and Mirteimouri et al.,

which further corroborates the effectiveness of misoprostol in PPH prevention. On the contrary, our findings contradict those of Langenbach et al., Smith et al., and Diadhiou et al., suggesting further investigation and consideration of specific contextual factors that may influence the outcomes of misoprostol administration.

In conclusion, our study provides compelling evidence supporting the role of misoprostol as an effective prophylactic measure against PPH. The high percentage of women in our cohort who experienced no bleeding after taking misoprostol indicates its potential to significantly reduce the burden of PPH, especially in populations at risk. However, further research and monitoring are warranted to understand better the factors contributing to variations in outcomes and to refine guidelines for using misoprostol in PPH prevention. Ministries of Health should consider establishing dedicated supply systems and healthcare provider training programs to promote misoprostol's safe and effective use in maternal healthcare programs. [16,17].

Conclusions and Recommendation

This study found that misoprostol prevents postpartum haemorrhage (PPH) in Diyala women. Its primary goal of analyzing misoprostol's PPH preventive efficacy was met, highlighting the drug's potential to improve maternal healthcare outcomes; more study is needed to discover the best misoprostol administration route to improve clinical practice. Its substantial findings and clear inference that misoprostol can reduce PPH rates strengthen this study. Future studies should address methodological flaws and confounding factors to improve our understanding and use of misoprostol in obstetrics.

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