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Research Article

Effectiveness of Using Misoprostol and Oxytocin in the Management of Post Partum Haemorrhage

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Abstract

Aims: In 2020, the WHO estimated that as many as 295,000 women died during and after pregnancy and childbirth. Ninety percent of maternal deaths are caused by complications that arise during and after delivery, including hemorrhaging. Misoprostol, a prostaglandin analogue, is useful for treating postpartum hemorrhage for a number of reasons, including its efficiency, low cost, stability in heat, user-friendliness, and low risk of adverse effects. Oxytocin is a medication frequently used to induce labor.
Methods : Quasi experimental with one group pretest-posttest design. The sample in this study were all 18 pregnant women who experienced postpartum hemorrhage at TPMB "I" in June-December 2022, the sampling technique was total sampling.
Results : The average postpartum bleeding in laboring mothers before misoprostol and oxytocin was 406.39, and it was 141.67 afterward. Misoprostol and oxytocin are beneficial in reducing postpartum hemorrhage in TPMB "I" patients from June to December 2022 (p.value 0.000).
Conclusions and Suggestions: There is an effectiveness of using misoprostol and oxytocin in postpartum hemorrhage. It is expected that midwives can provide services in normal delivery using misoprostol and oxytocin safely.

Keywords:
Misoprostol, Oxytocin, Post partum haemorrhage

INTRODUCTION

Death during pregnancy or within 42 days of giving birth is considered a maternal death by the World Health Organization (WHO). According to the World Health Organization (WHO), as many as 295,000 women died during or shortly after giving birth in 2020. About 86% of all maternal deaths occur in Africa, sub-Saharan Asia, and South Asia. At least one million women's lives could be saved by 2020 (WHO, if the worldwide maternal mortality rate is reduced to below 70 per 100,000 live births) if current trends continue (1).

The success of initiatives to improve maternal health can be measured by looking at the Maternal Mortality Rate (MMR). The MMR fell from 390 to 305 per 100,000 live births in Indonesia during the years 1991 and 2015. With an MMR of 230 per 100,000 live births in 2020, Indonesia is well off track to meet the 2015 Millennium Development Goal target of 102 per 100,000 live births, notwithstanding a declining trend. The majority of the 4,627 maternal deaths in 2020 were due to hemorrhage, according to data from the Ministry of Health (2).

The World Health Organization (WHO) estimates that 95% of maternal deaths can be avoided with adequate antenatal care, 90% with skilled medical assistance during delivery, and 80% with postnatal care. Complications during labor and delivery are

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the leading cause of death for new mothers (90% of all maternal deaths). Bleeding (30%), hypertension (27.1%), infection (7.3%), extended labor (1.8%), abortion (1.6%), and other causes (40.8%) are all considered "Classical Triassic" causes. Anemia (Hb 11gr) and chronic energy deficiency (CED) account for 37% of maternal deaths, while anemia (Hb 11gr) accounts for 40% of maternal deaths. Ministry of Health of Rhode Island (2020) reports that these outcomes can be avoided with proper prenatal care. It is estimated that between 50 and 60 percent of maternal deaths in Indonesia are caused by hemorrhage. This is typically the result of poor treatment of the third stage of labor, which causes the delivery of the placenta to take longer and causes more bleeding. Postpartum hemorrhage can also be brought on by vaginal rips, placenta previa, or a ruptured uterus (3).

Misoprostol is a synthetic oral analogue of prostaglandin E1 which is currently increasingly popular in obstetrics. The most widely used is for labor induction because of its ability to ripen the cervix and stimulate myometrial contractions as well as in efforts to prevent and treat postpartum hemorrhage because of its strong effect as a uterotonic. (4)Apart from that, from an economic point of view, this drug is relatively cheap and resistant to tropical temperatures so it can last a long time. Misoprostol has been widely used in obstetrics and gynecology for induction of labor and abortion and for the treatment of postpartum hemorrhage. Rectal administration, half-life of less than 30 minutes and peak levels of less than 15 minutes, the effect is graded to reach maximum levels at 60-120 minutes (5). Oxytocin is a preparation that is often used for labor induction, but induction failure with oxytocin often occurs even though there are fewer complications for the fetus and mother, because the dose can be controlled. The side effects of giving oxytocin to pregnant women are nausea, vomiting and water intoxication. Misoprotol can be an alternative choice because as a prostaglandin analogue it has advantages due to its effectiveness, relatively low price, stability in hot conditions, ease of use and small side effect and a sizeable side effect on misoprostol is uterine rupture. Treatment if a uterine rupture occurs is to do a hysteroraphy or hysterectomy (6)

Based on a preliminary study that was carried out by researchers at two TPMB, namely between Midwife Rayung and Midwife Ita in June 2022, out of 10 mothers who gave birth at Midwife Rayung who experienced post partum bleeding, there were 2 people, while at Midwife Ita found mothers who experienced postpartum hemorrhage as many as 3 people. From the data above, it can be seen that many mothers who give birth experience postpartum bleeding, thus the management must be appropriate so that complications and death do not occur in post partum mothers. Therefore researchers will provide treatment with misoprotol and oxytocin to stop bleeding quickly. Based on these problems, the researchers were interested in conducting a study entitled "Effectiveness of using misoprostol and oxytocin in the treatment of post prtum bleeding at TPMB "I" in 2022.

METHODS

Design is quasi-experimental with a pre- and post-test for a single group. There were a maximum of 18 participants in this study, and all of them were birth moms who had postpartum hemorrhage at TPMB "I" between June and December 2022. Univariate and bivariate analysis using the Paired Samples Test are employed for data interpretation.

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RESULTS

Table 1. Characteristics of Respondents Based on Age and Parity in TPMB "I" in 2022

No.	Variable	frequency	%
1.	Age		
	< 20 year	3	16,7
	20-35 year	10	55,6
	> 35 year	5	27,8
	Total	**18**	**100,0**
2.	Paritas		
	Primipara	6	33,3
	Multipara	11	61,1
	Grandemultipara	1	5,6
	Total	**18**	**100,0**

According to the table above, the majority of the 18 respondents were aged 20-35 years, with as many as 10 individuals (55.6%), aged >35 years with as many as 5 people (27.8%), and aged 20 years with as many as 3 people (16, 7%). According to the parity of the 18 respondents, 11 people (61.1%) had multipara parity, 6 people (33.3%) had primipara parity, and 1 person (5.6%) had grandemultipara parity.

Table 2. Average Post Partum Hemorrhage Before and After Using Misoprostol and Oxytocin in TPMB "I" in 2022

Use of Misoprostol and Oxytocin				
	Mean	**Mean difference**	**Min**	**Max**
Pretest	406,39	264,72	325	500
Postest	141,67		100	215

According to the table above, postpartum bleeding before misoprostal and oxytocin had an average value of 406.39, but there was a decrease in postpartum bleeding after misoprostal and oxytocin with an average value of 141.67, resulting in the difference in the average value. The difference in postpartum bleeding before and after misoprostal and oxytocin was 264.72.

Table 3. Changes in Post Partum Bleeding Before and After Given Misoprostal and Oxytocin at TPMB "I" in 2022

Postpartum Hemorrhage	*Pretest*	*Posttest*	Mean difference	*P value*
	Mean	Mean		
Administration of misoprostol and oxytocin	406,39	141,67	264,72	0,000

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The findings of the postpartum bleeding change test with misoprostal and oxytocin utilizing the paired samples t-test yielded a significant value of 0.000 (0.05). These findings indicate that there are differences in postpartum bleeding before and after misoprostal and oxytocin administration.

DISCUSSION

Characteristics of Respondents

According to the study's findings, the majority of the 18 respondents were aged 20-35 years, with 10 people (55.6%), aged >35 years with 5 people (27.8%), and aged 20 years with 3 people (16, 7%). According to the parity of 18 respondents, 11 people (61.1%) had multipara parity, 6 people (33.3%) had primipara parity, and 1 person (5.6%) had grandemultipara parity.Women Because of the immaturity of the reproductive organs for pregnancy, becoming pregnant for less than 20 years can impair the mother's health as well as the fetus's growth and development (Manuaba, 2018).Furthermore, there will be food rivalry between the fetus and the mother, who is still growing, as well as hormonal growth during pregnancy. Meanwhile, pregnant women over the age of 35 are more prone to suffer from anemia, which is caused by the body's depleted iron reserves during the fertilization stage. The ovaries become less susceptible to gonadotropin stimulation as a woman's egg reserves diminish with age (7).

Pregnant women are most at risk between the ages of 20 and 35, when their reproductive organs are not fully formed for the development of a kid. All women in their reproductive years, particularly those under the age of 20 and over the age of 35, are more vulnerable to postpartum hemorrhage. Women who give birth to children under the age of 20 are at increased risk of postpartum hemorrhage, which can lead to maternal death. This is because women's reproductive function has not functioned perfectly under the age of 20, whereas above the age of 35, women's reproductive function has decreased compared to normal reproductive function, increasing the possibility of postpartum complications, particularly bleeding. Postpartum hemorrhage that causes maternal death in pregnant women under the age of 20 is 2-5 times more common than postpartum hemorrhage that occurs between the ages of 20 and 29. At the age of 35, a person's physical state will deteriorate owing to aging; the principal manifestation of the aging process is the diminished function of organs and bodily systems such as the muscular, neurological, cardiovascular, endocrine, and reproductive systems. This is also consistent with the popular belief on the relationship between parity and the prevalence of uterine atony, namely that a uterus that has given birth to many children is more likely to develop uterine atony (8).

According to (9), the majority of the respondents were of a healthy reproductive age between the ages of 20 and 35 years, with high-risk pregnancies (KRT) occurring after this age. The pelvis is not perfect in women under the age of 20, and women over the age of 35 are at danger of postpartum hemorrhage. One of the factors influencing the occurrence of primary postpartum hemorrhage is the mother factor, specifically age and parity. Mothers aged 20 years are still in the stage of growth and development that requires them to share their nutritional needs with the fetus they are carrying in order to meet their nutritional needs. Mothers over the age of 35, on the other hand, begin to display the impacts of their aging process, such as common disorders like hypertension and diabetes mellitus, which can hinder the entry of fetal nourishment through the placenta.

According to researchers' assumptions, as women get older, the function of their reproductive organs declines. The function of the reproductive organs, particularly the uterus, in which the uterine muscles must contract maximally quickly after the placenta is born in order to prevent bleeding. Furthermore, an increase in the incidence of degenerative disorders such as

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pre-eclampsia, hypertension, and diabetes mellitus in old age pregnancies would raise the risk of problems during delivery. Pregnancy at a young age carries a higher risk because organ function and egg cell maturity are not optimal, which increases the chance of premature delivery, placenta previa, abortion, and preeclampsia, all of which increase the risk of bleeding.

Postpartum Hemorrhage

According to the study's findings, postpartum bleeding before misoprostal and oxytocin received an average value of 406.39, while postpartum bleeding after misoprostal and oxytocin received an average value of 141.67, resulting in a difference in the average value. The difference in postpartum bleeding before and after misoprostal and oxytocin was 264.72. Postpartum hemorrhage is defined as bleeding that exceeds 500-600 ml within the first 24 hours after the infant is born (8). Postpartum hemorrhage is defined as vaginal bleeding that exceeds 500 mL or that comes out of the genital tract after giving birth. What happens within the first 24 hours following delivery (7).

Postpartum bleeding in less than an hour can cause death in the mother. One of the causes of postpartum hemorrhage is due to uterine atony where there are no contractions in the uterus after the third stage or where there are no contractions after the placenta is born. As a result, it can cause bleeding in the postpartum mother (10). The findings of this study are consistent with those of (11), who found changes in postpartum hemorrhage before and after misoprostol and oxytocin administration. The findings of this study were also corroborated by (12), which found variations in postpartum hemorrhage before and after misoprostol and oxytocin administration.

According to the researchers' assumption, postpartum hemorrhage must be addressed immediately because it results in maternal death. Administration of misoprostol and oxytocin is very appropriate to prevent bleeding. Because with fast and appropriate action by administering misoprostol and oxytocin can save a mother's life after giving birth. Postpartum bleeding is a scary thing because in some cases it is a problem that causes the highest death for postpartum mothers in a very short time, this is because after delivery the mother experiences shock and lowers consciousness due to the large amount of blood released. Various management of postpartum hemorrhage that has been known as an initial form of prevention and treatment of medical personnel when receiving patients with a diagnosis of primary and secondary postpartum hemorrhage. Therefore, the administration of misoprostol and oxytocin aims to prevent the risk of postpartum hemorrhage.

Changes in Post Partum Hemorrhage Before and After Given Misoprostal and Oxytocin

Using the paired samples t-test, the findings of the postpartum bleeding change test with misoprostal and oxytocin were shown to have a significant value of 0.000 (0.05). These findings indicate that there were differences in postpartum bleeding in TPMB "I" before and after misoprostal and oxytocin administration. Misoprostol is commonly referred to as Cytotec in the medical profession. Misoprostol tablets containing 100 g or 200 g are available. Misoprostol is commonly used to treat peptic ulcers (gastric and duodenal ulcers), particularly those induced by nonsteroidal anti-inflammatory medications (NSAIDs). The drug misoprostol is also often used in obstetric practice in cases of abortion with medical indications, cervical ripening, labor induction, and treatment of postpartum hemorrhage (13). Prophylactic oxytocin has often been used intramuscularly to prevent postpartum hemorrhage. However, a study published towards the end of 2018 indicated that giving oxytocin intravenously was better. Oxytocin is used as a uterotonic to stimulate rhythmic myometrial contractions in induction of term labor or incomplete

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abortion, prevention of postpartum hemorrhage, and initiation of breastfeeding. Oxytocin is a synthetic cyclic peptide of the hormone oxytocin which is naturally produced by the posterior pituitary gland (13).

The findings of this study are consistent with the findings of (12) study, which found that misoprostal plus oxytocin can prevent postpartum hemorrhage with a p value of 0.001. And (12) research found that misoprostal and oxytocin were beneficial in reducing postpartum hemorrhage with a p value of 0.001.

According to the researchers' assumptions, intramuscular and intravenous administration of oxytocin can significantly prevent PPH, but in this case intravenous administration reduces blood loss more rapidly, when oxytocin is given intravenously the achievement decreases with good concentrations after 30 minutes. In contrast, intramuscular results in slower action but produces a more lasting clinical effect. Misoprostol combined with oxytocin was more effective in reducing blood loss after vaginal delivery among women at risk for PPH, namely adding 400 g misoprostol sublingually and 10 IU oxytocin intramuscularly in the third stage of management of women at high risk for PPH in reducing bleeding than oxytocin alone. postpartum 500-999 ml. Sublingual misoprostol prophylaxis had similar outcomes to intramuscular oxytocin in the active treatment of the third stage of labor. However, misoprostol dramatically reduced postpartum blood loss when compared to oxytocin. Misoprostol has greater adverse effects, such as chills and fever. As a result, sublingual misoprostol is just as effective as injectable oxytocin as an oxytocic prophylaxis in the active control of the three phases of labor. So, in this study, researchers combined the administration of misoprostal and oxytocin in the treatment of postpartum hemorrhage, and the results demonstrated that misoprostal and oxytocin were helpful in the treatment of postpartum hemorrhage.

CONCLUSION

The study analyzed 18 pregnant women aged 20-35, with 55.6%) having multipara parity, 33.3% having primipara parity, and 5.6% having grandemultipara parity. Pregnant women are at higher risk of postpartum hemorrhage due to their incomplete reproductive organs. Postpartum bleeding is more common between 20 and 35, as women's physical state deteriorates due to aging. The study found that postpartum bleeding before misoprostal and oxytocin administration had an average value of 406.39, while after misoprostal and oxytocin administration had an average value of 141.67. Postpartum hemorrhage is a serious issue that can lead to maternal death. Misoprostol tablets, commonly used to treat peptic ulcers and postpartum hemorrhage, are effective methods to prevent bleeding and save a mother's life. However, misoprostol has greater adverse effects, such as chills and fever. Before misoprostol and oxytocin were commonly used, the average amount of postpartum bleeding in women giving delivery was 406.39. After receiving misoprostol and oxytocin, the average postpartum hemorrhage in women who had given birth was 141.67. Misoprostol and oxytocin are helpful (p0.0001) in reducing bleeding after childbirth.

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