Clinical Profile and Determinant Factors of Obstetric Complications Based on Data from Daya General Hospital, Makassar: A Retrospective Analysis

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ABSTRACT

Maternal Mortality Ratio (MMR), associated with pregnancy, childbirth, and the postpartum period, remains a significant global, national, and regional challenge. The development of a comprehensive clinical profile for mothers aims to provide an in-depth understanding of maternal health conditions, which serves as a foundation for formulating evidence-based health interventions. The research method used is a retrospective study evaluating 1,206 pregnancy and childbirth cases in 2024, managed at RSUD Daya Kota Makassar, one of the referral centers for maternal care. Cases were classified based on age determinants, parity, type of diagnosis, delivery method, and health insurance coverage. The results indicate that maternal complications during pregnancy, childbirth, and postpartum were most commonly caused by antepartum hemorrhage, which was the dominant complication (48.80%). All complications were more frequent among mothers in the active reproductive age group of 20-35 years (73.27%) and multiparas (45.67%). Delivery complications, such as preterm labor, prolonged pregnancy, and PROM, were also significant, while postpartum complications, especially hemorrhage (52.94%) and eclampsia, remain serious concerns. The study also revealed that only 57.87% of patients used the National Health Insurance (JKN), while the remaining 39.95% were covered by the regional government's health insurance program (Jamkesda), and 2.26% were self-paying general patients. This indicates that the utilization of health services needs to be improved to further prevent maternal risks.

Key Word :

Clinical Profile, Obstetric Complications, Age, Parity, Diagnosis

BACKGROUND

Maternal health is a crucial indicator for assessing the progress of a country's healthcare system. The Maternal Mortality Ratio (MMR), related to pregnancy, childbirth, and the postpartum period, remains a significant global challenge, especially in countries with limited resources. As outlined in the latest report by the World Health Organization (1), approximately 295,000 women die annually from complications arising during pregnancy

and childbirth, with the majority of these deaths occurring in low- and middle-income countries.

The global landscape of maternal health shows stark differences between countries. Developed nations have successfully reduced MMR to below 10 per 100,000 live births by improving access to quality healthcare, employing adequately trained healthcare professionals, and implementing effective antenatal and perinatal interventions. In contrast, many developing countries still face various barriers such as inadequate healthcare facilities, low public awareness, and difficult access to healthcare services, all of which continue to contribute to high maternal mortality rates. Indonesia has made various initiatives aimed at improving maternal health services, yet the national MMR remains high, recorded at 177 per 100,000 live births in 2023 (2), significantly exceeding the Sustainable Development Goals (SDGs) target, which aims to reduce maternal mortality to below 70 per 100,000 live births by 2030.

A regional investigation by the Central Statistics Agency in 2020 reported that the MMR in South Sulawesi Province was 192 per 100,000 live births, still far from the desired target. Makassar City, as the capital, plays a crucial role in modeling healthcare services in South Sulawesi Province, particularly in managing high-risk maternal health cases. RSUD Daya in Makassar, the only hospital owned by the Makassar City Government, serves as the primary referral hospital, accommodating many patients with complex pregnancy complications. Thus, data from this institution is essential in illustrating the maternal health profile in the local area. Findings from various cases leading to maternal death correlate with contemporary international studies that emphasize the importance of early detection and maternal risk assessment as fundamental strategies to reduce maternal mortality (3).

OBJECTIVES

The development of a comprehensive maternal health profile at RSUD Daya in Makassar can provide an in-depth understanding of maternal health conditions, serving as a foundation for the formulation of evidence-based health interventions. A thorough understanding of maternal health profiles and associated risk factors will strengthen efforts to design health programs, enhance healthcare facility capabilities, and improve service quality, which

significantly impacts the reduction of Maternal Mortality Ratio (MMR) and the enhancement of quality of life for both mothers and infants. Therefore, this study aims to provide a comprehensive overview of maternal health profiles at RSUD Daya in Makassar, while also contributing to the literature on maternal obstetric health.

METHODOLOGY

This retrospective study evaluates 1,104 cases of pregnancy, childbirth, and postpartum care in 2024, managed at RSUD Daya in Makassar, one of the maternal referral centers. Demographic characteristics are based on maternal age, gestational age, diagnosis, delivery method, and health insurance, as recorded in the Comprehensive Obstetric and Neonatal Care (PONEK) medical records. Maternal age is recorded as the age at delivery. Gestational age is determined based on the Last Menstrual Period (LMP), and if the patient is uncertain, it is determined based on ultrasound results. Diagnosis is based on examination results and documented according to the International Classification of Diseases, 10th Revision (ICD-10). The delivery method refers to the technique or procedure used to assist the birth, chosen based on the mother's condition, the fetus, and any complications that may arise during pregnancy and childbirth. Health insurance refers to the type of coverage used to cover medical expenses, including delivery and hospitalization costs. From the total number of patients, exclusions were made for conditions such as cases of violence against women, gynecological malignancies, and cases with incomplete data.

RESULT AND DISCUSSION

This study shows that there were 1,336 cases registered at RSUD Daya in Makassar from January to December 2024 through the Emergency Department of Comprehensive Obstetric and Neonatal Care (PONEK). Of the total cases, 1,104 cases were selected as the research subjects, classified as follows: 416 cases (34.49%) of pregnancy, 671 cases (55.64%) of childbirth, and 17 cases (1.41%) of postpartum. This distribution is clearly illustrated in the flowchart below:

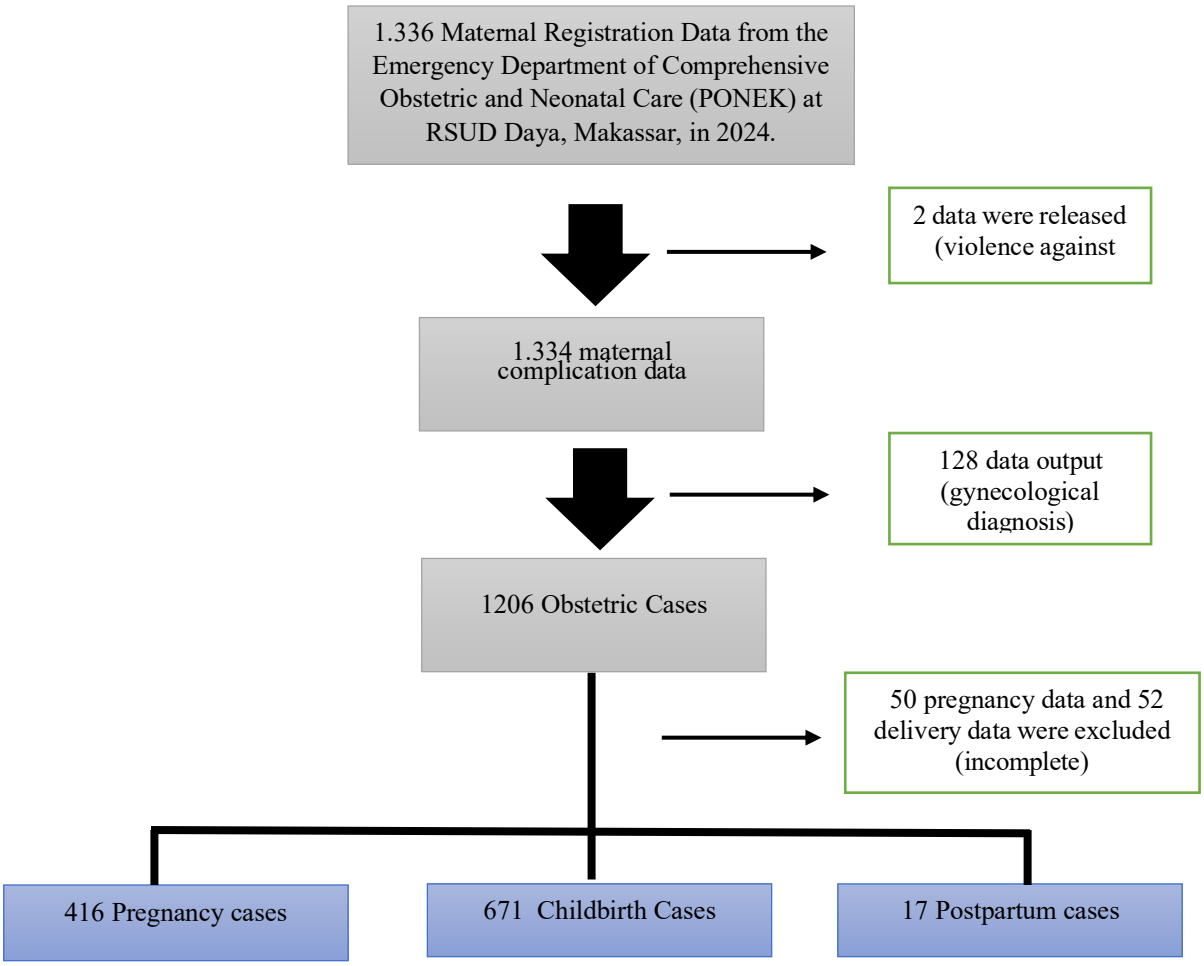

Chart 1: Selection of Research Population from Emergency Room Register Data of PONEK Daya Hospital, Makassar City 2024

Table 1. Distribution of Pregnancy Complications Based on Maternal Age and Parity at Daya Regional Hospital, Makassar City in 2024

Pregnancy Complications	Mother's Age								Parity									
	<20		20-35		>35		Total		Nullipara		Primipara		Multipara		Grande Multipara		Total	
	n (%)		n (%)		n (%)		n (%)		n (%)		n (%)		n (%)		n (%)		n (%)	
HEG	11	10.89	74	73.27	16	15.84	101	100	32	31.68	28	27.72	38	37.62	3	2.97	101	100
Anemia	3	21.43	8	57.14	3	21.43	14	100	5	35.71	2	14.29	6	42.86	1	7.14	14	100
Hypertension in Pregnancy	1	9.09	4	36.36	6	54.55	11	100	2	18.18	2	18.18	4	36.36	3	27.27	11	100
False Labour	10	16.13	46	74.19	6	9.68	62	100	15	24.19	18	29.03	26	41.94	3	4.84	62	100
Antepartum Hemorrahage	12	23.55	134	66.01	57	28.08	203	100	42	20.69	50	24.63	105	51.72	6	2.96	203	100
Severe Preeclampsia	0	0.00	16	64.00	9	36.00	25	100	6	24.00	6	24.00	11	44.00	2	8.00	25	100
Total	37	10.89	282	73.27	97	15.84	416	100	102	24.52	106	25.48	190	45.67	18	4.33	416	100

Source: Secondary Data from Daya Regional Hospital, Makassar City, 2024

Based on Table 1. the clinical profile of complications experienced by the mother is as follows: The important finding of this study is that as many as 203 cases (48.80%) of mothers experienced complications during pregnancy in the form of antepartum bleeding, 101 cases (24.28%) experienced hyperemesis gravidarum with metabolic disturbance, 62 cases (14.90%) experienced false labor before 37 weeks of pregnancy, 25 cases 6.0% experienced severe pre-eclampsia, 14 cases (3.37%) experienced anemia and 11 cases (2.64%) experienced gestational hypertension. This is particularly interesting given the high number of antepartum hemorrhage cases compared to similar studies in developing countries, where the incidence is typically only around 2-3% of all pregnancies (4,5). Antepartum hemorrhage is defined as bleeding from or into the genital tract after the point of fetal viability and before the birth of the baby. This condition undoubtedly requires serious obstetric management due to its potential to contribute to maternal mortality. Maternal and perinatal complications of antepartum hemorrhage include anemia, postpartum hemorrhage, shock, low birth weight, intrauterine fetal death, and birth asphyxia (6).

The determinant of the age of mothers who experience the above complications is the majority are in the active reproductive age range of 20-35 years as much as 73.27%. This is because this age range that the peak age range in the active reproductive period. Although in general it shows that maternal age has an influence on the risk pregnancy complications. A

review of several studies states that several studies showed that ages <20 years or 35 have a higher risk for complications specific to conditions such as very low birth weight, neonatal death, and preeclampsia (7). Given this condition, it is important for service providers to focus on intervention in the 20-35 age group.

According to the data obtained, the majority of pregnancy complications experienced by mothers occur in multiparas, namely 45.67%. According to Varney, multipara is a condition of women who have given birth two or more times, with a gestational age of 20 weeks or more, whether the baby is born alive or dies (8). In theory this is related with a decline in physiological conditions where repeated pregnancies can cause exhaustion of the uterine oxygenation, nutrition, and vascularization systems. The uterine wall becomes less elastic, blood vessels experience stress/damage, and vascular supply to the placenta is reduced optimally. One study even linked it to an increased risk of heart disease. Cardiovascular and metabolic diseases such as type 2 diabetes mellitus (9) (10). Further pregnancy is increasingly risky if the mother is a grand multipara (11).

Table 2. Distribution of Deliveries Based on Diagnosis, Maternal Age, and Parity at Daya Regional Hospital, Makassar City, in 2024

Labor	Mother's Age								Parity									
	<20		20-35		>35		Total		Nullipara		Primipara		Multipara		Grande Multipara		Total	
	n (%)		n (%)		n (%)		n (%)		n (%)		n (%)		n (%)		n (%)		n (%)	
Physiological Complications	49	10.43	337	71.7	84	17.87	470	100	0	0	144	30.64	299	63.62	27	5.74	470	100
Preterm	14	28.57	29	59.18	6	12.24	49	100	0	0	19	38.78	26	53.06	4	8.16	49	100
Post term	6	3.04	35	76.09	5	10.87	46	100	0	0	11	23.91	33	71.74	2	4.35	46	100
PROM	4	13.33	21	70	5	16.67	30	100	3	10	11	36.67	15	50	1	3.33	30	100
CPD	2	25	5	62.5	1	12.5	8	100	7	88	1	12.5	0	0	0	0	8	100
Fetal Distress	1	33.33	2	66.67	0	0	3	100	0	0	2	66.67	1	33.33	0	0	3	100
SC History	3	5.88	38	74.51	10	19.61	46	100	0	0	9	17.65	40	78.43	2	3.92	51	100
Failed Induction	1	100	0	0	0	0	1	100	0	0	1	100	0	0	0	0	1	100
Umbilical cord entanglement	0	0	0	0	1	100	1	100	0	0	1	100	0	0	0	0	1	100
Fetal position abnormality	0	0	1	100	0	0	1	100	0	0	1	100	0	0	0	0	1	100
Asthma	0	0	1	100	0	0	1	100	0	0	1	100	0	0	0	0	1	100
Intrauterine fetal death	2	14.29	9	64.29	3	21.43	14	100	1	7.1	7	50	5	35.71	1	7.14	14	100
Total	81	28.57	476	59.18	114	12.24	671	100	11	1.6	204	30.4	419	62.44	37	5.51	671	100

Source: Secondary Data from Daya Regional Hospital, Makassar City, 2024

Table 3. Distribution of Deliveries Based on Delivery Method, Maternal Age, and Parity at Daya Regional Hospital, Makassar City, in 2024

Method Labor	Mother's Age								Parity									
	<20		20-35		>35		Total		Nullipara		Primipara		Multipara		Grande Multipara		Total	
	n (%)		n (%)		n (%)		n (%)		n (%)		n (%)		n (%)		n (%)		n (%)	
Pervaginam	78	12.58	438	70.65	104	16.77	620	100	11	1.77	195	32.45	379	62.13	35	5.16	620	100
SC	3	5.88	38	74.51	10	19.61	51	100	0	0	9	17.65	40	78.4	2	3.92	51	100

Source: Secondary Data from Daya Regional Hospital, Makassar City, 2024

In cases of childbirth, complications occurred in 29.96% or 201 cases, with 51 cases (7.60%) requiring cesarean section. The three most common diagnoses in childbirth complications at RSUD Daya Makassar were preterm spontaneous labor, accounting for 24.38%, prolonged pregnancy at 22.86%, and premature rupture of membranes (PROM) at 14.93%. PROM, in several other studies, has been identified as a major trigger for preterm labor, contributing to 30-40% of cases. PROM is the condition where the amniotic sac ruptures before labor begins, resulting in the spontaneous leakage of amniotic fluid (12). PROM occurs in approximately 5%-10% of all pregnancies, with around 80% of these occurring at term. PROM is also associated with three other causes: infection, maternal behavioral factors, and obstetric complications (13).

Given the high rate of preterm births, this aligns with the global trend between 2010 and 2020, which showed significant regional and national disparities. Approximately 65% of preterm births in 2020 occurred in Sub-Saharan Africa and South Asia. The preterm birth rate in countries such as Bangladesh (16.2%), Malawi (14.5%), and Pakistan (14.3%) was 3-4 times higher than in countries like Serbia (3.8%), Moldova (4%), and Kazakhstan (4.7%). However, preterm birth is not only a problem in low- and middle-income countries, as data clearly shows it affects maternal health conditions worldwide. The incidence of preterm birth of 10% or higher also occurs in several high-income countries, such as Greece (11.6%) and the United States (10%) (14). Maternal health risks, such as adolescent pregnancy, infection, malnutrition, and preeclampsia, are closely associated with preterm birth. High-quality antenatal care is essential for detecting and managing complications, ensuring accurate

gestational age determination through early ultrasound scanning, and, if necessary, delaying delivery with approved treatments (15).

Another complication in childbirth is prolonged pregnancy, defined as a pregnancy lasting more than 42 weeks, which increases the risk of fetal conditions such as macrosomia and placental insufficiency. Maternal risk also rises in this complication due to the need for emergency cesarean section. In the UK, routine induction of labor is offered at 41 weeks as a measure to minimize risks, with the understanding that women must still feel supported by healthcare professionals if they choose expectant management or decline the offered induction (16). Post-term pregnancy requires early detection and appropriate termination planning. Induction of labor should be offered to these women before 42 weeks of gestation to avoid adverse maternal and perinatal outcomes (17).

Table 4. Distribution of Postpartum Complications Based on Maternal Age and Parity at Daya Regional Hospital Makassar City in 2024

Postpartum Complication	Mother's Age								Parity							
	<20		20-35		>35		Total		Primipara		Multipara		Grande Multipara		Total	
	n (%)		n (%)		n (%)		n (%)		n (%)		n (%)		n (%)		n (%)	
Postpartum Bleeding	0	0	7	77.78	2	22.22	9	100	2	22.22	7	77.78	0	0.00	9	100
Eclampsia	1	20.00	3	60.00	1	20.00	5	100	3	60.00	2	40.00	0	0.00	5	100
Infection	0	0	3	100	0	0.00	3	100	1	33.33	1	33.33	1	33.33	3	100
Total	1	5.88	13	76.47	3	17.65	17	100	6	35.29	10	58.82	1	5.88	17	100

Source: Secondary Data from Daya Regional Hospital, Makassar City, 2024

Besides the pregnancy and delivery period, the investigation in this study also covered postpartum complications that occurred throughout the year 2024. The cases described in this study do not include prospective cases resulting from deliveries that occurred in the hospital, but only cases that were admitted directly with a diagnosis of postpartum, accompanied by complications. There were 17 cases that occurred, consisting of 9 cases (52.94%) due to postpartum hemorrhage, whether early, late, or unspecified, 5 cases (29.41%) of eclampsia, and 3 cases (17.65%) of infection. In more detail, the dominant complications occurred in the age range of 20-35 years and in women with a multipara parity status. This indicates that postpartum hemorrhage (PPH) remains a national problem as one of the causes of maternal

mortality. Postpartum hemorrhage (PPH) is defined as a blood loss of more than 500 ml after a normal delivery or more than 1000 ml after a cesarean section. This incidence is supported by factors such as age, parity, and anemia (18). The WHO recommends the use of a "treatment bundle" for PPH management, which includes the administration of oxytocin, tranexamic acid, and uterine balloon tamponade (1). Meanwhile, the International Federation of Gynecology and Obstetrics (FIGO) suggests administering intravenous oxytocin as the first-line uterotonic drug, and if unavailable or ineffective, ergometrine, an oxytocin-ergometrine combination, or prostaglandins such as sublingual misoprostol 800µg may be used (19).

The next complication after postpartum hemorrhage is eclampsia. Eclampsia is a seizure that occurs in pregnant or postpartum women caused by pre-existing preeclampsia. A retrospective study in a hospital in India in 2023 reported that the incidence of eclampsia was 1.36% of a total of 2,200 obstetric patients, with an average age of 25.93 years. Most cases occurred in primipara (53.3%), and a smaller proportion in multipara (46.7%) (20). The International Academy of Perinatal Medicine (IAPM) emphasizes the importance of identifying high-risk pregnancies, calcium and acetylsalicylic acid (ASA) supplementation, along with basic antenatal care and timely referral, to prevent preeclampsia and eclampsia (9). As a practical recommendation, eclampsia management involves the administration of magnesium sulfate to prevent seizures, as well as blood pressure control with antihypertensives according to guidelines. If the gestational age is ≥34 weeks or there are severe symptoms, induction of labor or cesarean section must be considered.

Another complication illustrated by this study, as seen in Table 4, is postpartum maternal infection. A similar study occurred in East Ethiopia, where postpartum infection was a major cause of maternal morbidity. A case-control study at a general hospital in Harar found that the main risk factors for postpartum infection consisted of unsterile medical procedures, maternal anemia, and poor nutritional status (21). This requires all delivery attendants to pay attention to hygiene and aseptic techniques during delivery for infection prevention, periodic monitoring of the mother's postpartum body temperature as a form of early detection, and collaboration in administering appropriate empiric antibiotics. The WHO

recommends the use of prophylactic antibiotics before invasive procedures and the management of infection with antibiotics according to microbial sensitivity (22).

Table 5. Recapitulation of Maternal Patient Guarantees/Insurance at Daya Regional General Hospital, Makassar City, Year 2024

Insurance Coverage	JKD		JKN		GENERAL		TOTAL	
	n	%	n	%	n	%	n	%
Amount	441	39.95	638	57.79	28	2.26	1104	100

Source: Secondary Data from Daya Regional Hospital, Makassar City, 2024

A no less interesting finding from this study is the picture of the health insurance used by patients experiencing maternal complications. The data shows that out of 1,104 cases served, 57.79% used the National Health Insurance (JKN), 39.95% used the Regional Health Insurance (Jamkesda), and the remaining 2.26% were patients paying privately/general. This data indicates that the ownership and utilization of JKN for pregnancy and childbirth are still low. For Makassar City itself, the government allocates health funds from the Regional Budget (APBD) for residents who do not own JKN and are categorized as pre-prosperous families. This guarantee can be used by the Makassar city community by presenting a Certificate of Indigence from the local government and an official identity card as a Makassar resident. However, this system certainly has a limitation: if a referral is needed, it cannot be applied at hospitals other than Daya Regional General Hospital (RSUD Daya) in Makassar City. Therefore, other programs need to be designed to provide easier access for people in need.

CONCLUSION

A study at Daya Regional General Hospital (RSUD Daya) in Makassar City during 2024 revealed that out of 1,104 cases of maternal complications occurring during pregnancy, labor, and postpartum, the diagnosis of antepartum hemorrhage was the most dominant complication (48.80%). This complication was more frequent in mothers of active reproductive age (20−35 years) (73.27%) and those who were multipara (45.67%). Labor complications such as preterm labor, prolonged pregnancy, and PROM were also significant,

while postpartum complications, especially hemorrhage and eclampsia, remained serious issues contributing to maternal mortality. The study also disclosed that the majority of patients used National Health Insurance (JKN) (57.79%), but access to and utilization of health services still need to be improved to prevent further maternal risks. This research must continue with larger data sets, and it may also be possible to prospectively analyze the infant outcomes from these emergency cases.

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