



(RESEARCH ARTICLE)



## Level of education and economy on maternal death in Kolaka District, Southeast Sulawesi Province: A study of maternal perinatal audit in Indonesia

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### Abstract

**Background:** The issue of maternal mortality in Indonesia remains a current problem, with several studies demonstrating that economic and educational levels can contribute to this factor. This study aims to analyze maternal mortality in a specific region in Indonesia, in order to determine the extent to which low education and low economic status contribute to maternal deaths.

**Methods:** This study used a longitudinal retrospective approach using secondary data. The data source for the Maternal Perinatal Death Notification was precisely the Maternal Perinatal Surveillance and Response Audit.

**Results:** The death of the mother occurred more frequently among individuals with low levels of education, but not generally among those with low levels of economic status.

**Conclusion:** Policies made to reduce maternal mortality must consider education and economic levels, because these two things will influence mothers in decision making.

**Keywords:** Maternal mortality; Education; Economic; Delay; Decision Making

### 1. Introduction

Maternal death is a problem in Indonesia to this day. In 2020, Indonesia's maternal mortality rate was 189 per 100,000 live births. The SDGs set a target of 70/100,000 live births, which this figure still falls short of (Ministry of Health of the Republic of Indonesia, 2021). . The maternal mortality rate in Southeast Sulawesi experienced a fairly rapid increase in 2021, reaching 117 cases, and in 2022 there will be 82 cases. Kolaka is one of the regions in Indonesia that has a high number of maternal deaths. The Ministry of Health of the Republic of Indonesia ranked Kolaka sixth out of 17 regencies and cities in Southeast Sulawesi Province in 2021 (Ministry of Health of the Republic of Indonesia, 2021).

The three-delay theory states that the mother's socio-demographic characteristics are the first type of delay that influences decision-making (Thaddeus and Maine, 1994). There are several sociodemographic characteristics possessed by mothers, including education, income, occupation, ethnicity or tribe, and religion (Thaddeus and Maine, 1994). Researchers obtained information from a preliminary study that late decision-making contributes to high maternal mortality in the area. This happens because of the mother's helplessness. The husband and other trusted individuals make the decisions. Education has a significant influence on maternal mortality; a study states that the longer a mother is in education, the lower her risk of death is (Karlsen et al., 2011). This pertains to the mother's capacity for decision-making, enabling her to exercise greater authority over her own destiny. According to survey results from

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developing countries, delays in referrals, particularly in the decision-making process, are the primary cause of maternal deaths. Their level of education and knowledge greatly influence this (Baim-Lance et al., 2019; Tuncalp et al., 2014).

Economic level is also a risk factor in the decision-making process. Income inequality is a factor that influences maternal mortality. The mother's ability to access health services plays a significant role in this (Vilda et al., 2019; Souza et al., 2024). Health insurance can effectively cover the costs of health services, but using these services also incurs additional costs such as transportation and accommodation (Comfort et al., 2013). Research from other regions of Indonesia indicates that health insurance does not cover the higher costs of accommodation compared to health services (Farizi et al., 2021). In Kolaka, transportation is an obstacle because the road conditions make it difficult to pass. Even though there are ambulances, women cannot access all of them.

This research aims to identify the educational and economic characteristics of mothers who died in Kolaka district, Southeast Sulawesi.

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## 2. Methods

This research used a longitudinal retrospective method on secondary data. Maternal Perinatal Death Notification, specifically the Maternal Perinatal Surveillance and Response Audit, served as the data source. We conducted the research from February 1–27, 2024. The study's population consisted of 41 mothers who had died. This study employed a total sampling method, which included all mothers who passed away between 2018 and 2022. Additionally, an audit was conducted to ensure that the available data was complete and accessible through the application. The analysis was carried out using a descriptive approach, namely by describing existing data based on prevalence and percentage. Data analysis using the Excel 2010 application. This research was accepted by the health research ethics committee of Airlangga University School of Medicine (No. 85/EC/KEPK/FKU/2024).

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## 3. Results

Researchers analyzed 40 mothers who died, 1 mother who died was not included because complete data was not available.

**Table 1** Characteristics Education level of maternal death

Education Characteristics	Frequency (n)	Percentage (%)
Elementary school	29	72.5
Junior high school	3	7.5
Senior High School	5	12.5
Undergraduate	3	7.5
Total	40	100

According to Table 1, the largest proportion of women who passed away having completed only elementary school (72.5%), specifically 29 deaths. Following the junior high school education level, there is the senior high school education level, which is comprised of 5 mothers.

**Table 2** Characteristics of the Economic Level of the maternal death

Economic Characteristics	Frekuensi (n)	Presentase (%)
Less	16	40
Sufficient	24	60
Total	40	100

According to Table 2, the majority (60%) of mothers who died had an economic level that was considered sufficient. This corresponds to a total of 24 deaths. However, the difference is not significant compared to moms who had a lower mortality rate of 40%, specifically resulting in 16 deaths.

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#### 4. Discussion

The goal of this study is to determine the relationship between maternal mortality and mothers' educational achievement. The acquired data indicates that 72.5% of the deceased mothers had completed elementary school education. The percentage breakdown is as follows: senior high school (12.5%), followed by junior high school and undergraduate (7.5%). This study aligns with the research carried out by Puspitasari (2021) in Grobogan Regency, Central Java, from 2016 to 2018. The majority of maternal deaths occur among moms with only an elementary school education, specifically accounting for 42.9% of cases. Mothers with only an elementary school education have been the primary cause of maternal fatalities over the past three years. Notoatmodjo (2018) states that an individual's level of education is a determining element in their knowledge acquisition. Education is a fundamental necessity for human beings and plays a crucial role in personal growth.

Furthermore, Masrida Sinaga (2007) in NTT supports this research. Education is critical in decreasing the maternal mortality ratio (MMR) because of its correlation with maternal health knowledge. The results of the Maternal Perinatal Audit (AMP) indicate a higher incidence of maternal mortality among moms with a primary level of education. The level of education, particularly the mother's education, has a significant impact on an individual's chances of survival. Higher education empowers women with knowledge about health facilities, care, and effective communication with medical professionals. Women's education has the potential to change the power dynamics within families, especially in cultures where men typically hold decision-making authority and pregnant women often face delays in seeking medical care. Educational attainment in NTT remains at a low level. The average educational attainment for females in NTT is less than 6 years, indicating a significant number of women who have not completed primary education. This study contradicts the findings of Hazar Rochmatin's (2018) investigation conducted in Sidoarjo Regency. Women with a high school education background experience the greatest number of maternal deaths, whilst women with a tertiary degree experience the fewest. These findings suggest that the mother's death was indirectly influenced by her high school education.

This research aligns with Asrina (2023) study. Families with stable economic conditions can access the best healthcare services and provide their babies with good nutrition, which can contribute to their intellectual development. However, sometimes a mother's expectation of excellent delivery services can become a controversial issue in decision-making. This is because some mothers prefer to go directly to elite facilities rather than first-level healthcare facilities, which can pose a risk of death if the desired facility is unaware of the mother's pregnancy history. Meanwhile, poor economic conditions in Kolaka Regency resulted in the deaths of 16 mothers. As we know, one of the government's programs to accelerate the reduction of the maternal mortality rate (MMR) in Indonesia is the guarantee of childbirth health. However, research by Soltani, Takian and Sari, (2019) shows that insufficient economic resources still lead to the death of mothers. The lower the family income, the greater the likelihood that a mother will choose non-healthcare professional personnel for childbirth. Some mothers believe that giving birth at healthcare facilities will require significant expenses, such as transportation costs, doctor and facility fees, medical treatment, and other needs. The primary factor preventing the utilization of healthcare facilities is financial issues, with the most significant cost being healthcare service expenses. The increase in healthcare costs has a high likelihood of causing delays in making decisions or choosing to give birth at home with a traditional birth attendant as a childbirth helper.

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#### 5. Conclusion

Maternal mortality in a specific region in Indonesia is not observed among women with economic status. This phenomenon can be attributed to various other variables. While these this variable have not been definitively shown to be the primary factors contributing to maternal mortality, they should nevertheless be taken into account when implementing interventions aimed at preventing maternal mortality. The policies must be tailored to the educational and economic backgrounds of the mother and family, as these factors can indirectly impact their decision-making on the utilization of health care.

## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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