

# A Death Rate in Patients Ngudi Waluyo Blitar District Hospital

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**Abstract.** Record by integration (RME) management efficiency has improved the health care database at the hospital, including mortality data. Mortalitas data an indicator of health service that evaluates the quality of critical care in a hospital, that is essential for decision making strategic and policy evaluation. The research aimed to identify the mortality in patients at Ngudi Waluyo Blitar District Hospital in 2023. This research used the descriptive to describe method mortality in patients at hospital Ngudi Waluyo Blitar District in 2023. The result showed that the total number of patients alive and died in 2023 was 14.485, with the number of 13410 live patients and the patient dies of 1.075. The analysis shows ICCU death as a room with the highest death, especially in time; it is < 25 % or < 2.5 % per year. Factors such as age, associated territories, and some septicemia as a medical condition, chronic kidney disease, stage 5, intracerebral hemorrhage, intraventricular, keys respiratory failure, and pneumonia, unspecified as the cause of death. For that reason, we need to repair constants on information systems and electronic medical records to support better decision making in the management of health services. Evaluation deep to events of death, especially in the ICCU, and focus on management of elderly patients and patients with chronic diseases such as septicemia and chronic kidney disease, be a key to increasing the quality of services.

**Keywords:** information, system, death

## I. BACKGROUND

Every hospital is required to implement a Hospital Information System (HIS). SIRS is a process of collecting, processing and presenting hospital data. SIRS is a hospital reporting system application to the Ministry of Health which includes: hospital identity data, data on personnel working in the hospital, data on recapitulation of service activities, disease/morbidity compilation data for inpatients, and disease/morbidity compilation data for outpatients[1]. Along with technological developments, Electronic Medical Records (RME) are an integral part of SIRS. Based on Permenkes No. 1171 of 2011 Article 1 paragraph 1 states that every hospital is required to implement SIRS [2 The display design of the SIRS application is designed to be user friendly with a fast response time to optimize employee performance in providing health services to the community [3]. SIRS applications will store, retrieve, transform, process and communicate information received using information imaging systems or other system equipment [4].

Based on Permenkes RI No. 24 of 2022, medical records are files containing records and documents containing information on patient identity, examination, treatment, actions, and other services provided to patients [5]. In the digital era, digitization of medical records has been developed to facilitate data entry, recording, recording, processing, management, and interpretation. Electronic Medical Records are Medical Records made using an electronic system intended for the implementation of Medical Records [5]. In improving the quality of service in hospitals, a health care facility can present information in the form of visit data that can be used to determine the number of visits based on a certain period of time. One of the activities carried out by medical record officers is regarding hospital statistics.

Hospital statistics is a collection of numerical data that describes information in the form of a hospital condition that is used for decision making and is sourced from medical records [6]. Statistics and medical records have a close relationship where both provide data and information related to service activities in hospitals. In addition, the data generated from the medical record unit can be used as one of the bases in compiling hospital reports. Hospital statistics can also be used as a basis for conducting evaluations in efforts to improve the quality of hospital services [7].

One of the hospital statistics is mortality statistics [8]. Mortality statistics are data that describe the comparison of the number of patients who died in hospitalization in a hospital in a certain period. Mortality rates are presented in percentage form. The mortality rate in hospitals is referred to as the hospital death rate or gross death rate. The use of hospital mortality

statistics is to evaluate the quality of service of a hospital. In addition, mortality rates can be used by researchers in the health sector such as students of medical records, health financing and others[6].

Mortality statistics are very important to determine the health level of public health This is because mortality statistics can provide fundamental information about health status, disease etiology, trends, and disease patterns in different populations [8]. Mortality is one of the most important components in demography that can affect population change in a region. Other components that can affect population change are births and migration. Mortality data is very important to know both the number and the factors that influence it. In addition, mortality data can also be used as a reference to measure the level of health and welfare of the community, as a reference for the government in making policies, such as planning the development of health services, schools, public facilities, and other facilities needed as an effort to reduce mortality rates [9].

In addition, mortality data can also be used as material for evaluating government population program policies. Mortality data can later be used to assess the success of government policies and to measure the impact of development on population. Better development achievements in a country, such as higher levels of health, education, and economy, tend to have lower mortality rates. Or vice versa, countries with lower mortality rates tend to have better development achievements. Therefore, it is important for mortality data to be known as a study to analyze various issues for a country. A proper understanding of mortality is one of the key factors for policy development and decision-making related to mortality [9].

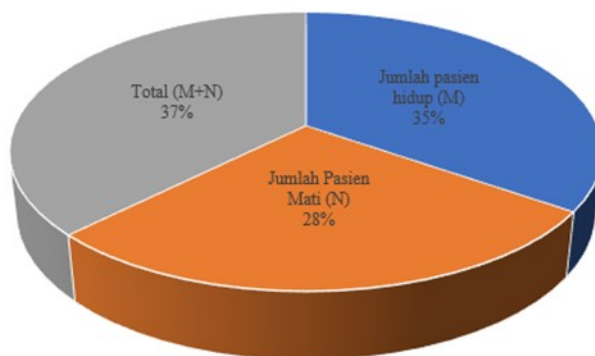
Based on observations of initial data collection at Ngudi Waluyo Hospital, Blitar Regency, researchers noted that the implementation of mortality data management at the hospital had switched to an electronic system using Google Spreadsheet. This implementation provides significant benefits, increases efficiency, and simplifies the duties of reporting officers at Ngudi Waluyo Hospital, Blitar Regency. Based on the above background, the researcher is interested in taking the title “Overview of Inpatient Mortality Rates at Ngudi Waluyo Hospital, Blitar Regency in 2023”.

## II. METHOD

This type of research is descriptive retrospective. This research was conducted at Ngudi Waluyo Blitar Hospital by looking at electronic medical record data from January 1 to December 31, 2023. The subject of this study is data on inpatient visits in 2023. The population used in this study is data on all inpatient visits in 2023 at Ngudi Waluyo Hospital totaling 14,485 patient visits, and the sample used in this study is the total population.

## III.RESULTS AND DISCUSSION

Analysis of Inpatient Mortality Rates at Ngudi Waluyo Hospital, Blitar Regency. Based on the results of the study, it was found that the number of patient visits (alive and dead) was obtained from the recapitulation of the Inpatient Register as follows:

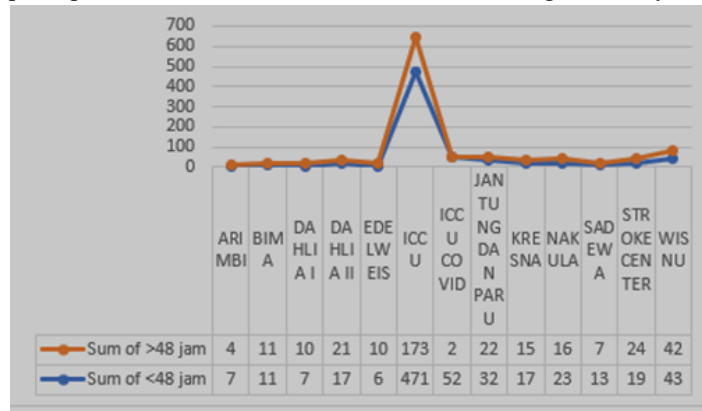


**Figure 1.** Number of live and dead patient visits Based on the data presented, in 2023, RSUD Ngudi Waluyo Blitar District recorded that the number of living patients (M) reached 13,410 people, while the total number of patients who had died (N) was recorded as 1,075 people. Thus, the total number of patients, which includes both living and deceased patients (M + N), reached 14,485 people. Analysis of this information indicates that more patients survived than died during the year, and the overall recorded patient population was 14,485 at Ngudi Waluyo Hospital in Blitar District.

### a) Patients Discharged <48 hours and >48 hours in 2023 at Ngudi Waluyo Hospital

Patient discharge deaths <48 hours and >48 hours refer to the time category of the patient's death after leaving medical care. <48 hour deaths indicate that the patient's death occurred in less than 48 hours after leaving medical care or certain health facilities. Whereas death >48 hours indicates that the patient's death occurred after more than 48 hours of leaving medical care.

The following is a graph of patient deaths <48 hours and >48 hours at Ngudi Waluyo Hospital:



**Figure 2.** Graph of the number of patients discharged dead <48 hours and >48 hours in 2023 at Ngudi Waluyo Hospital.

Based on data on patient deaths at Ngudi Waluyo Hospital in Blitar Regency during a certain period, several important conclusions can be drawn. Total patient deaths during the period reached 718, with 357 of them occurring in less than 48 hours, while 361 occurred after 48 hours. There were variations in mortality patterns in each room, with the ICCU standing out as the room with the highest number of deaths, both in less than 48 hours and more than 48 hours.

This suggests that the focus of death in ICCU rooms tends to occur within the first 48 hours after the patient is discharged from medical care. On the other hand, Stroke Center rooms show a significant number of deaths after 48 hours.

**b) Gross Death Rate (GDR) value at Ngudi Waluyo Hospital in 2023**

GDR (gross death rate) is the gross death rate, for every 1000 patients both alive / dead (Rustianto, 2010). The NHS standard GDR is < 45‰ or < 4.5‰ per year.

This type of research is descriptive retrospective. This research was conducted at Ngudi Waluyo Blitar Hospital by looking at electronic medical record data from January 1 to December 31, 2023. The subject of this study is data on inpatient visits in 2023. The population used in this study is data on all inpatient visits in 2023 at Ngudi Waluyo Hospital totaling 14,485 patient visits, and the sample used in this study is the total population.

$$GDR \text{ Calculation Formula: } GDR = \frac{\text{Jumlah pasien mati seluruhnya}}{\text{Jumlah pasien keluar (Hidup+Mati)}} \times 1.000\text{‰}$$

$$GDR = \frac{1.075}{14.485} \times 1.000\text{‰}$$

$$GDR = 0,07421 \times 1.000\text{‰}$$

$$GDR = 74,21 \Rightarrow (74\text{‰})$$

Based on the Ministry of Health (MOH) standard that the Gross Death Rate (GDR) should be less than 45‰, the calculated GDR of (74‰) in a population indicates that the mortality rate in the population exceeds the standard limit. This reflects a potential health issue of concern, and further investigation is needed to identify factors contributing to the high mortality rate.

**c) Net Death Rate (NDR) value at Ngudi Waluyo Hospital in 2023**

NDR (net death rate) is the death rate > 48 hours after being treated for every 1000 patients who are discharged either alive / dead NDR standards are < 25‰ or < 2.5‰ per year. [10]. standar Depkes NDR adalah < 25‰ atau < 2,5‰ per tahun.

NDR Calculation Formula:

$$NDR = \frac{\text{Jumlah pasien mati} > 48 \text{ jam}}{\text{Jumlah pasien keluar (Hidup + Mati)}} \times 1.000\text{‰}$$

$$NDR = \frac{357}{14.485} \times 1.000\text{‰}$$

$$NDR = 0,0246 \times 1.000\text{‰}$$

$$NDR = 24,64 \Rightarrow (25\text{‰})$$

Based on the standards of the Ministry of Health (MOH) which stipulates that the Net Death Rate (NDR) value is < 25‰ or < 2.5‰ per year. With an NDR calculation of 24.64‰, it can be concluded that the patient mortality rate after more than 48 hours of hospitalization has almost reached the predetermined standard.

1. *Distribution by Age*

Based on a 2023 study at RSUD Ngudi Waluyo Blitar Regency, patient mortality rates have been categorized in detail by age group, resulting in an in-depth understanding of the distribution of deaths across different age ranges. The results of this study revealed significant variations in mortality rates among different age groups. Here are the results of the top 10 highest patient mortality rates by age:

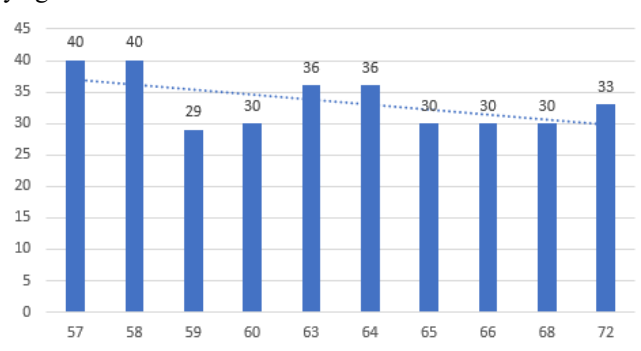


Figure 3. Graph of the Top 10 Deaths by Age at Ngudi Waluyo Hospital

Based on the results of the study, the top 10 highest patient mortality rates at Ngudi Waluyo Hospital in Blitar Regency in 2023, classified by age, found that the 57 and 58 year old age groups had the highest mortality rates, each with 40 patients, followed by the 63 and 64 year old age groups with a total of 36 patients. In the next position, there was an age group of 72 years with 33 patients. This analysis provides an in-depth understanding of the distribution of patient mortality rates in the context of the age classifications provided by the Ministry of Health (MOH), which include infants, toddlers, children, adolescents, adults, and the elderly. By knowing the pattern of mortality rates by age category, it is hoped that a more specific approach can be found in an effort to improve health services and reduce mortality rates in each age group.

2. *Analysis of Cause of Death by Principal Diagnosis*

Based on a 2023 study at Ngudi Waluyo Hospital in Blitar Regency, patient mortality was conducted with a focus on the main diagnoses. The data shows that patient mortality is studied to identify the type of disease or health condition that is the main factor causing death.

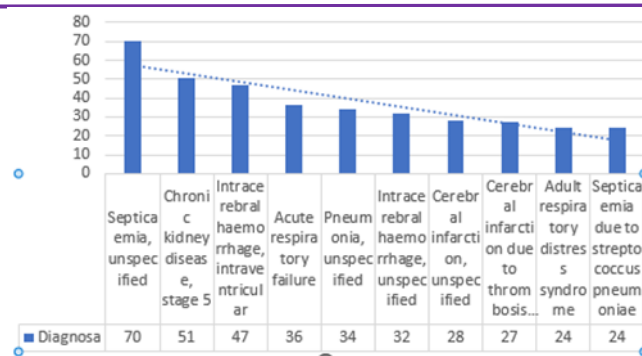


Figure 4. Graph of the Top 10 Deaths by main diagnosis at Ngudi Waluyo Hospital

Based on the analysis of 2023 data at Ngudi Waluyo Hospital, Blitar Regency, 10 main causes of death can be identified from the main diagnoses of patients. The prominent main cause was unspecified Septicaemia, with the number of cases reaching 70. This indicates the need for more effective treatment and prevention of infection. Chronic kidney disease at grade 5 was also a serious concern with 51 cases, requiring more intensive monitoring and management of kidney disease. The high mortality rate of intracerebral haemorrhage, both intraventricular and unspecified, emphasizes the urgency of cerebrovascular disease prevention and management.

Challenges related to respiratory diseases are also reflected in cases of Acute Respiratory Failure and unspecified Pneumonia, indicating the need to focus on the management of respiratory diseases in hospitals. Cerebral Infarction cases, including non-specific ones caused by thrombosis of cerebral arteries, indicate the need for efforts to prevent cerebral vascular diseases. In addition, Adult Respiratory Distress Syndrome (ARDS) is also a significant cause of death, emphasizing the importance of respiratory management and special attention to patients with respiratory distress.

### 3. Significant Differences between Related Regions

Based on a 2023 study at Ngudi Waluyo Hospital in Blitar Regency, there are significant differences in patient mortality rates between related regions. This variability may be influenced by factors such as healthcare accessibility, demographics, and patient management practices. These findings highlight the importance of better understanding these factors to design more effective health strategies in each region, so further studies are needed to identify elements that contribute to the differences and design appropriate interventions.



Figure 5. Graph of the Top 10 Deaths by Region at Ngudi Waluyo Hospital

Based on this data, the number of patient deaths by region at Ngudi Waluyo Hospital in Blitar Regency showed that Gandusari had the highest number of deaths with 146 cases, followed by Wlingi (125) and Talun (115). This significant variation indicates differences in mortality rates between regions. Factors such as accessibility of health services, demographics, and patient management practices could be potential contributors to these differences.

#### IV. CONCLUSIONS AND SUGGESTIONS

The distribution of inpatient mortality rates highlights noteworthy mortality patterns, especially in ICCU rooms within the first 48 hours after a patient is discharged from medical care. Gross Death Rate (GDR) and Net Death Rate (NDR) calculations that exceed NHS standards indicate potential health issues that need further investigation. Analysis by age, primary diagnosis, and region adds to the understanding of the distribution of patient deaths. Certain age groups and major diagnoses such as Septicaemia and Chronic Kidney Disease stand out, while regional differences underscore the need for treatment tailored to the characteristics of each region. Suggestions for hospitals can focus on improving the quality of care especially in dealing with specific patient groups such as septicemia and chronic kidney disease, which can have a positive impact on the overall level of public health.

#### V. ACKNOWLEDGMENT

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