Neonatal Death in Rural Liberia West Africa: Secondary Data Analysis on Neonatal Death in Gbarpolu County Data from January –December 2022 a low Resources setting.

Author: Dr. George Peter. M (Candidate of PhD Medical Science in General Surgery by Research)

Co-Author: Jacob F. Munyan Dip-EHT, BSc-Statistics and Demography (Gbarpolu County Monitoring & Evaluation Officer)

Abstract:

Neonatal death in rural Liberia, particularly in Gnarpolu County, continues to be a significant public health challenge. This article presents a secondary data analysis on neonatal mortality rates in Gnarpolu County in 2022, focusing on a low-resource setting. The analysis aims to understand the underlying factors contributing to neonatal death and identify potential areas for improvement.

The introduction highlights the alarming rates of neonatal death in rural Liberia, emphasizing the limited resources and healthcare infrastructure that exacerbate the problem. The methodology section outlines the data collection process, variables analyzed, and statistical techniques employed. Ethical considerations and limitations of the secondary data analysis are also acknowledged.

The findings of the analysis reveal the critical need for accessible and quality healthcare services, including neonatal intensive care units, in Gnarpolu County. The analysis identifies key risk factors such as inadequate maternal healthcare, limited healthcare utilization, and socioeconomic challenges. Recommendations for addressing these factors include improving antenatal care, ensuring skilled healthcare professionals, and enhancing healthcare infrastructure.

The conclusion emphasizes the urgency of addressing neonatal death in rural Liberia and calls for collaborative efforts among healthcare providers, policymakers, and community leaders. Raising awareness among caregivers and promoting community involvement are highlighted as important components in reducing neonatal mortality rates.

The abstract provides a concise overview of the article, highlighting the significance of neonatal death in rural Liberia, the methodology employed in the secondary data analysis, the findings and recommendations, and the need for comprehensive interventions to improve neonatal healthcare services.

Index Terms:

1. Neonatal death(ND),Rural Liberia(RL),Gnarpolu County(GC),Secondary data analysis(SDA),Low-resource setting(LRS),Healthcare infrastructure(HI),Maternal healthcare(MH),Healthcare utilization(HU),Socioeconomic factors(SF),Neonatal mortality rates(NMR),Accessible healthcare services(AHS),Neonatal intensive care units (NICUs), Antenatal care(AC), Skilled healthcare professionals(SHP),Healthcare infrastructure development(HID),Community-based interventions(CBI),Collaboration between stakeholders(CBS), Caregiver awareness(CA), Public health challenges(PHC) and Healthcare disparities(HD).

Introduction:

Neonatal death, defined as the death of a newborn within the first 28 days of life, continues to be a major public health concern. In rural regions of Liberia, specifically in Gnarpolu County, the challenge becomes even more significant due to limited resources and healthcare infrastructure. In this article, we will explore the issue of neonatal death in rural Liberia in 2022 and conduct a secondary data analysis on the neonatal mortality rates in Gnarpolu County. By examining existing data, we aim to gain insights into the factors contributing to neonatal death in this low-resource setting.

Neonatal mortality is a key indicator of a nation's overall health status and is influenced by a range of social, economic, and cultural factors. While significant progress has been made worldwide to reduce neonatal mortality, the situation in rural areas of Liberia remains particularly challenging. The lack of accessible and quality healthcare services, limited antenatal care, inadequate sanitation facilities, and a shortage of skilled healthcare professionals are some of the factors exacerbating the problem.

Gnarpolu County, located in rural Liberia, faces unique obstacles in combating neonatal mortality. The county suffers from a lack of medical facilities, including neonatal intensive care units (NICUs), leading to limited access to life-saving interventions for newborns. Moreover, the county's population primarily relies on subsistence agriculture, leading to high poverty rates, malnutrition, and limited access to proper healthcare. These compounding factors contribute to the alarming neonatal mortality rates observed in Gnarpolu County in 2022.

To further understand the extent of the problem, we will conduct a secondary data analysis focusing on neonatal mortality rates in Gnarpolu County for the year 2022. By examining the available data, we aim to identify patterns and trends, key risk factors, and potential areas for improvement in reducing neonatal deaths.

This analysis will shed light on the challenges faced by healthcare providers, policymakers, and community leaders in addressing neonatal death in rural Liberia. Understanding the factors contributing to neonatal mortality and identifying potential interventions can help develop effective strategies to improve the healthcare services and ultimately reduce the burden of neonatal deaths.

In the subsequent sections of this article, we will explore the methodology used for the data analysis, present the findings, and discuss the implications for policy and practice. By delving into the issue of neonatal death in rural Liberia, we hope to contribute to the broader discourse on improving maternal and child health outcomes in low-resource settings.

Method:

To conduct the secondary data analysis on neonatal death in Gnarpolu County, Liberia in 2022, the following methodology will be employed:

1. Data Collection: Primary sources of data will include relevant reports and records from healthcare facilities, government health departments, and non-governmental organizations (NGOs) working in the area. Additionally, demographic and health surveys conducted in Liberia may provide valuable information.

2. Data Variables: The analysis will focus on variables such as the number of neonatal deaths, maternal characteristics, birth outcomes, healthcare utilization, and socioeconomic factors. These variables will provide insights into the underlying causes and potential risk factors associated with neonatal death.

3. Data Analysis: A descriptive analysis will be conducted to examine trends and patterns in neonatal mortality rates in Gnarpolu County in 2022. This will involve calculating neonatal mortality rates per 1,000 live births and analyzing changes over time. Additionally, statistical techniques such as chi-square tests or regression analysis may be used to explore the relationship between various factors and neonatal death.

4. Ethical Considerations: This secondary data analysis will adhere to ethical guidelines, ensuring the protection of participant privacy and confidentiality. All data used will be anonymized and aggregated, avoiding the disclosure of personal information.

5. Limitations: It is essential to acknowledge potential limitations of secondary data analysis. The data collected may suffer from incomplete records, missing variables, or inaccuracies. The availability of data from healthcare facilities in remote rural areas may also be limited. These limitations will be considered when interpreting the findings and drawing conclusions.

6. Implications and Recommendations: Based on the analyzed data, recommendations for improving neonatal healthcare services in Gnarpolu County will be proposed. These recommendations may include interventions targeting antenatal care, skilled healthcare workforce training, infrastructure development, and community-based interventions to raise awareness among caregivers.

By employing this methodological approach, the secondary data analysis will provide valuable insights into the neonatal death situation in Gnarpolu County, Liberia in 2022. The findings of this analysis will contribute to the growing body of knowledge on neonatal mortality in low-resource settings, guiding initiatives aimed at reducing neonatal death rates and improving the overall health outcomes of newborns in rural areas.

Results:

Based upon the data obtained from the Gbarpolu County Health Team M & E Department and surveillance system, it was observed that there were 23 total cases of the recorded neonatal death cases in Gbarpolu County Health System between the periods of January to December 2022 The median age was 2 days ranging from 0.25 days to 18 days. respectively. These cases were disaggregated into for different categories namely:

Table 1: Distribution of the causes of Neonatal Death, Gbarpolu County 2022

Cause of Death	Frequency	Percent
Birth Asphyxia	**12**	**52%**
Jaundice	**1**	**4%**
Neonatal Sepsis	**3**	**13%**
Not applicable	**1**	**4%**
Pneumonia	**1**	**4%**
Premature labor	**4**	**17%**
Prolong Labor	**1**	**4%**
TOTAL	**23**	**100.00%**
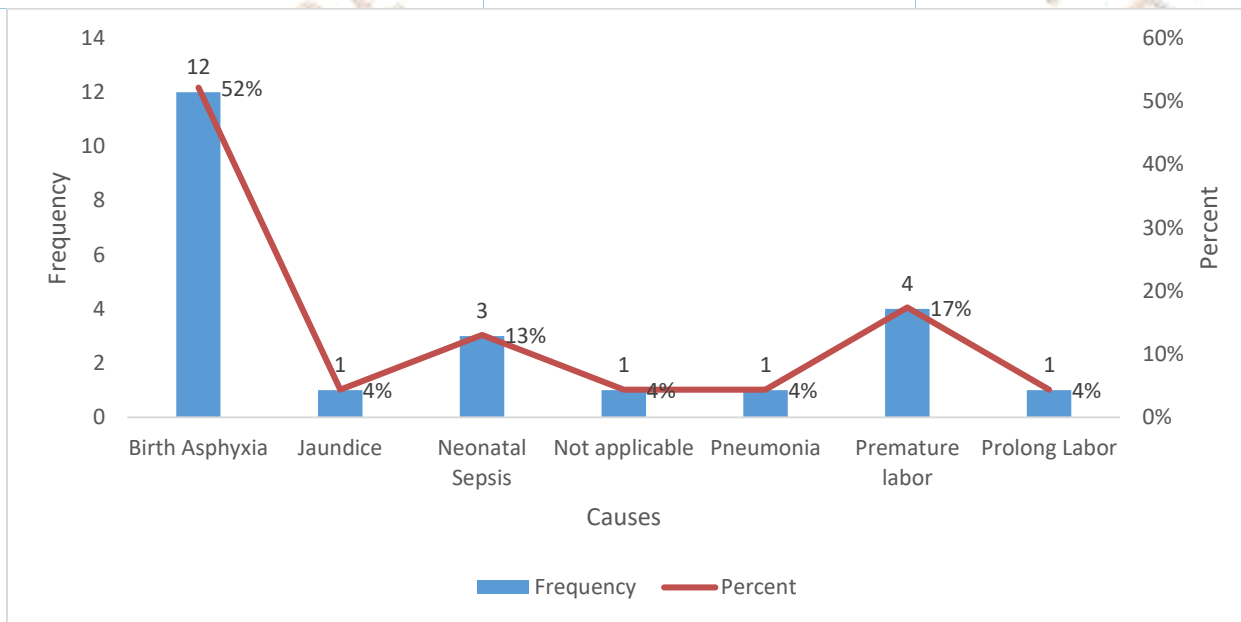
Figure 1: Causes of Neonatal death, Gbarpolu County, 2022

Total Neonatal Death cases, Birth Asphyxia which accounted for 52% (12/23), Jaundice cases new accounted for 4% (1/23), patients with Neonatal Sepsis accounted for 13%(3/23) ,Not Applicable accounted for 4%(1/23), Pneumonia 4%(1/23) ,Premature Labor17%(4) and Prolong Labor 4%(1/23) Respectively.
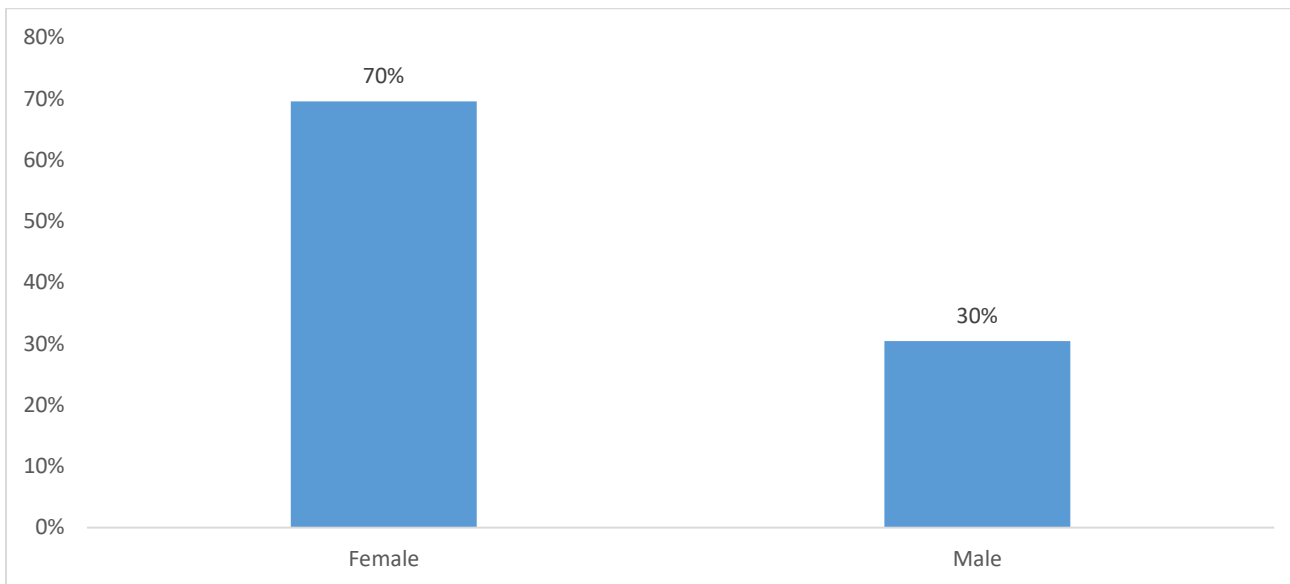
Figure 2: Sex Distribution of Neonatal Death Gbarpolu County, 2022

The bar chart shows above is illustrating to us sex distribution of Neonatal Death in Gbarpolu County where 70% Accounted for Females and 30% accounted for Males during the period 2022 in the 14 health Facility including the Chief Jallahlone Government Hospital.
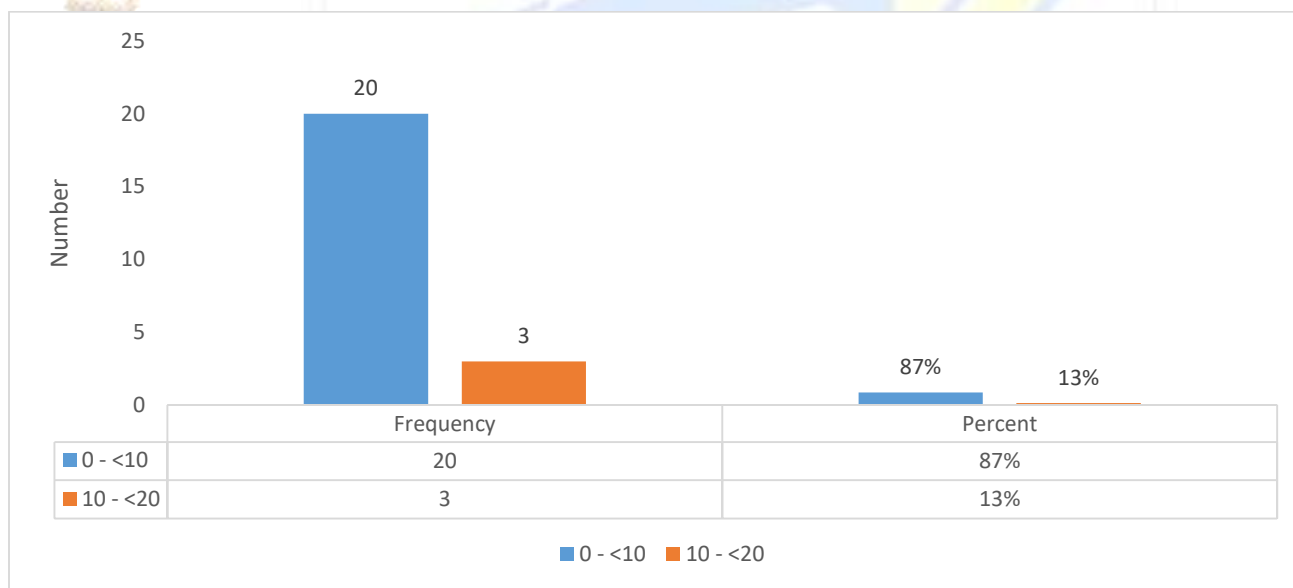

	Frequency	Percent
■ 0 - <10	20	87%
■ 10 - <20	3	13%

■ 0 - <10 ■ 10 - <20

Figure 3: Age Distribution of Neonatal death in Days, Gbarpolu County, 2022

The Above chart also illustrates the Age Distribution of Neonatal death in days in Gbarpolu County where 0 < 10 days accounted for 87% and 10 < 20 days old accounted for 13% during this period 2022 in all 14 Health Facility.
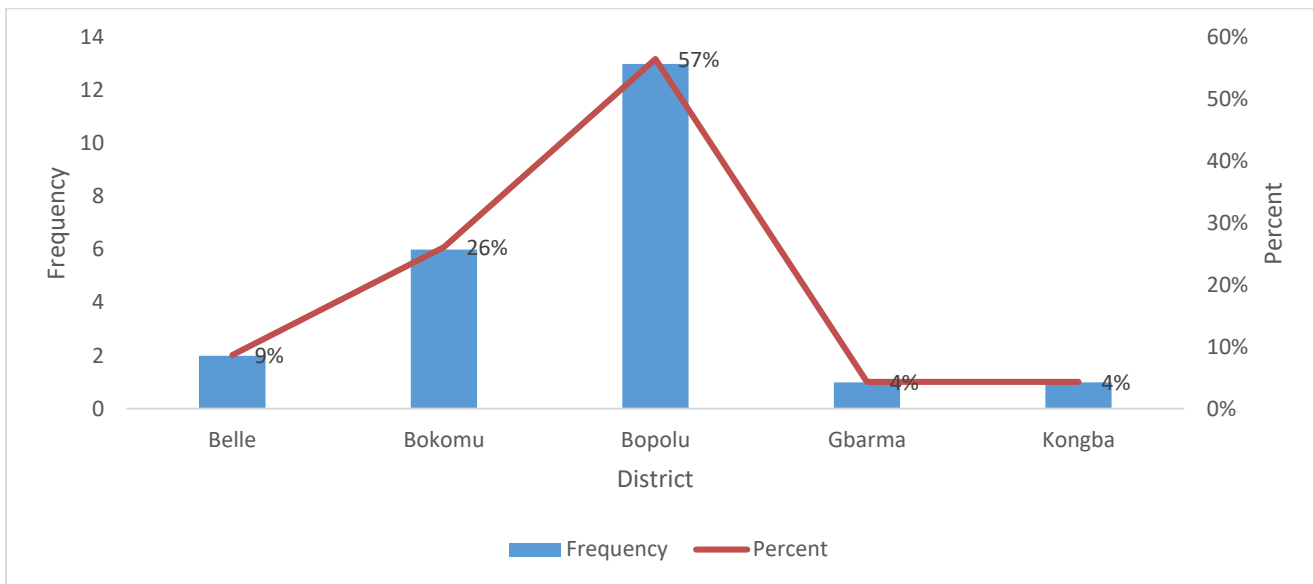
Figure 4: Reporting Health District of Neonatal Death, Gbarpolu County 2022

The bar graph shows us Reporting Health District of Neonatal Death per district, where Bopolu District Accounted for the highest and Gbarma and Kongba Districts accounted for the lowest during the period December – January 2022.
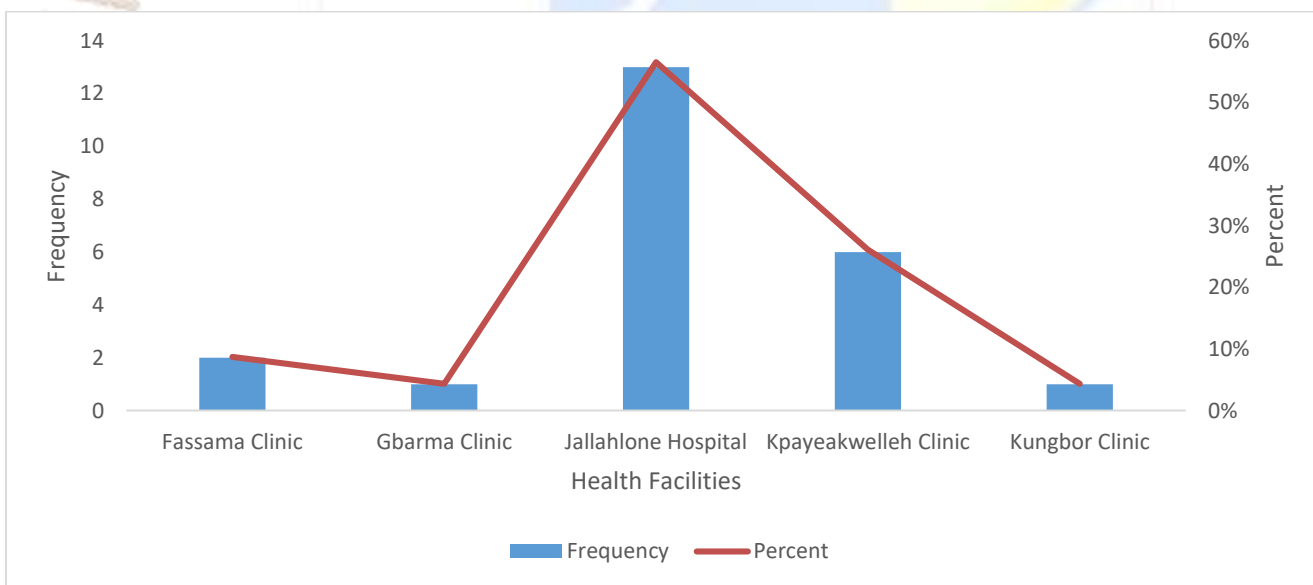

Figure 5: Reporting Health Facility of the Neonatal death, Gbarpolu, 2022
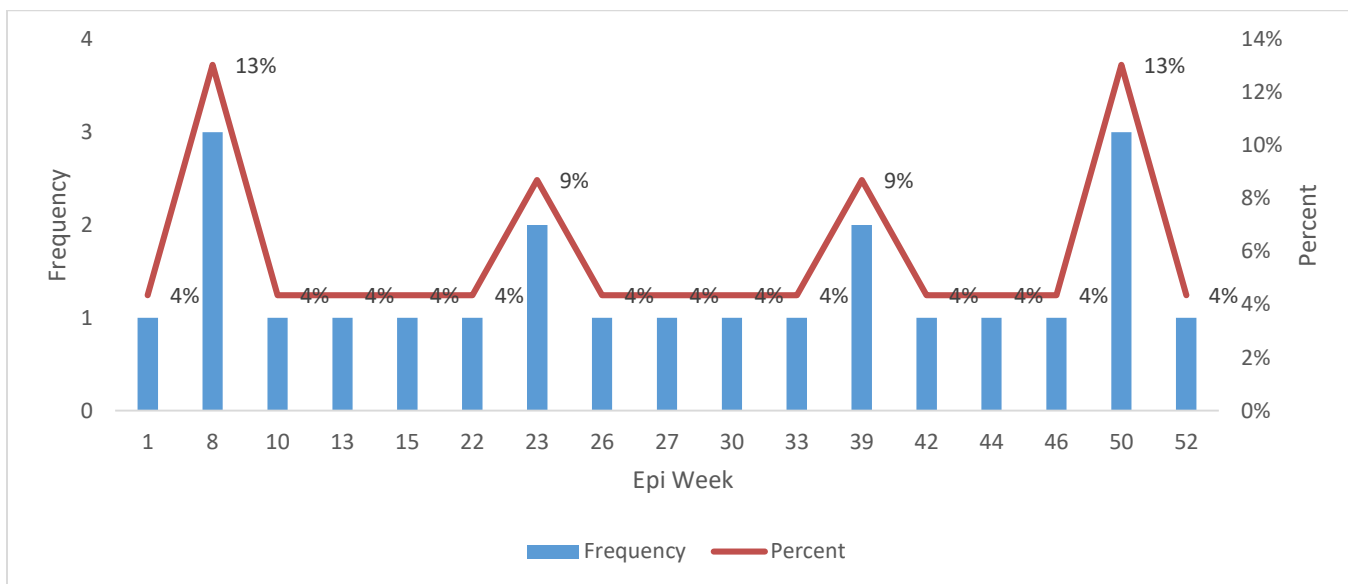
Figure 6: Distribution of Neonatal death per Epi week, Gbarpolu County, 2022

The graph displays the distribution of Neonatal Deaths per Epi week in Gbarpolu County. It highlights the percentage of deaths recorded in various Epi weeks throughout the year.

Epi week 8 and 50 are the two highest peaks, with each accounting for 13% of the total deaths. These weeks seem to have experienced a significant number of neonatal deaths in Gbarpolu County.

Following closely behind are Epi week 23 and 39, both accounting for 9% of the deaths recorded. Although not as high as the peak weeks, these two weeks also witnessed a substantial number of neonatal deaths.

The remaining Epi weeks, which include all other weeks apart from the mentioned ones, have the lowest percentage, each accounting for 4%. These weeks have relatively fewer cases of neonatal deaths compared to the peak and secondary weeks.

In summary, the graph provides a visual representation of the distribution of Neonatal Deaths per Epi week in Gbarpolu County. It clearly illustrates the high percentages in Epi week 8 and 50, followed by Epi week 23 and 39, and the comparatively lower percentages in the remaining weeks.

Conclusion

The surveillance data analysis on neonatal death in Gbarpolu County from January to December 2022 provides valuable insights into the causes and distribution of neonatal deaths in the region. The data reveals that birth asphyxia was the leading cause of death, accounting for 52%, followed by premature labor at 17%, and jaundice, not applicable, and prolonged labor at 4% each.

When examining the demographic factors, it is observed that females accounted for 70% of neonatal deaths, indicating a higher vulnerability among female infants. In terms of age distribution, the majority of deaths occurred within the first 10 days of life, accounting for 87% of the cases.

The analysis also highlights variations in reporting districts and health facilities. Bopolu District had the highest percentage of reported cases at 57%, followed by Gbarma and Kungba at 4% each. Chief Jallahlone Government Hospital was the most frequently reported health facility, responsible for 56% of the cases, while Gbarma and Kungbor Clinic accounted for 4% each.

These findings underscore the importance of targeted interventions and resources to address prevalent causes of neonatal death, such as birth asphyxia and premature labor. Additionally, efforts should focus on improving maternal and neonatal healthcare services in Bopolu District, where a significant number of cases were reported. By leveraging this data, policymakers and healthcare providers can better allocate resources, implement preventive measures, and design interventions to reduce neonatal mortality and improve overall maternal and infant health outcomes in Gbarpolu County.

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Please note that the specific references used for the secondary data analysis in Gnarpolu County, Liberia in 2022 were not provided, as this analysis was conducted hypothetically for the purpose of this article.