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Prevalence of perinatal asphyxia and mortality in newborns admitted in Neonatal Ward at Tumbi Regional Referral Hospital from January to June 2022

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Abstract

Purpose: Is to determine prevalence and immediate outcome of newborn with perinatal asphyxia admitted from January to June 2022 at Tumbi regional referral Hospital, Tanzania

Scope: Review of 2022 hospital records from book number 14, in which all newborns admissions are documented indicating demographic data, provisional and definitive diagnoses, as well as investigation results, treatment and outcome. Data reviewed was for all 669 admitted newborns from January to June 2022. Two children with both perinatal asphyxia and severe congenital malformations were excluded.

Results: During the period of six months, 138 (20.6%) out of 669 admitted newborns had perinatal asphyxia, in which 58 (55.2%) were males. A total of 34 newborns died, majority of which being males (64.7%).

Findings: Mortality in newborns with perinatal asphyxia is still high, as 24.6% of asphyxiated newborns died within the admission period, compared to 9.8% deaths in newborns without asphyxia.

Conclusion: A total of 669 newborns were admitted in which 20.6% had perinatal asphyxia, with mortality of 5% out of all admissions.

Perinatal asphyxia still contributes considerably to morbidity and mortality. Cost-effective measures to improve maternal and newborn care should be available and sustainable.

Keywords: Infant: child below one year (<12 months) of age; Perinatal asphyxia: inability of newborn to establish and or maintain spontaneous breathing immediately post-delivery; Newborn: infant from birth to 28 days of life; Morbidity: medical disorder or injury; Mortality: death

1. Introduction

Perinatal asphyxia is referred to as a condition in which a newborn is unable to initiate and or sustain spontaneous breathing immediately post-delivery.

Also, a newborn is recognized to be asphyxiated if has an Apgar score below 7 at fifth minute post-birth. (1) When able to measure physiological parameters, perinatal asphyxia is characterized by progressive hypoxaemia, hypoxia, hypercapnia and metabolic acidosis. The clinical manifestations observed in newborn include hypoxic-ischaemic encephalopathy and multi-organ failure. (2) Newborns faced with asphyxia have increased risk of mortality, thus contributing to the burden of increasing neonatal deaths. The World Health Organization (WHO) report of year 2024

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shows that neonatal deaths exemplify a significant portion of under-five mortality, rising from 41% in 2000 to 47% in 2022, with odds of survival varying widely across regions. (3) The highest neonatal mortality rate in year 2022 was faced by the WHO African region at 26 (90% UI: 24–32) deaths per 1000 live births. (3) Tanzania is still faced with high neonatal mortality rate of which perinatal asphyxia continues to be a major contributor. (4) A hospital-based study conducted in northern part of Tanzania indicated prevalence of asphyxia to be 45.7%. (5) Another hospital based retrospective survey involving 35 hospitals in which neonatal death as obtained from in-patient registers and report forms from 2006-2015 revealed 11.3% neonatal deaths.

The study further revealed perinatal asphyxia (22.3%) and respiratory distress (20.8%) to be the leading causes of early neonatal deaths. (6)

1.1. Hypothesis or purpose of statement

1.1.1. Null hypothesis

There is no perinatal asphyxia in children admitted in Neonatal ward at Tumbi Regional Referral Hospital (RRH)

1.1.2. Alternative hypothesis

There is perinatal asphyxia in children admitted in Neonatal ward at Tumbi RRH

1.1.3. Purpose

Is to identify magnitude of perinatal asphyxia and its immediate outcome, so that recommendations on effective interventions can be outlined

1.1.4. Importance

Is to highlight the scale of the problem at Regional Referral Hospital in order to address it

Objectives

Main objective is to determine the prevalence of perinatal asphyxia and mortality in newborns admitted to neonatal ward at Tumbi Regional Referral Hospital in Tanzania from January to June 2022

- **Specific objectives are to**

Determine the prevalence of perinatal asphyxia in newborns admitted to neonatal ward at Tumbi Regional Referral Hospital in Tanzania from January to June 2022 by age and sex Determine the mortality of newborns with birth asphyxia admitted to neonatal ward at Tumbi Regional Referral Hospital in Tanzania from January to June 2022 by age and sex

2. Materials and Methods

Review of Tumbi Regional Referral Hospital data from book 14 referred to as MTUHA number 14 used to solely collect newborn information was done. Data was collected from 669 out of 671 admitted children from January 1st 2022 to June 31st 2022. Data from two children were excluded as were indicated to have both perinatal asphyxia and severe congenital malformations. According to the available Neonatal protocol, perinatal asphyxia was documented for any newborn who was unable to establish and or sustain spontaneous breathing immediately post-delivery, and or an Apgar score < 7 at the fifth minute. Data was collected serially using tally sheet, and analyzed using excel spreadsheet.

3. Results and Discussion

The study revealed the prevalence of perinatal asphyxia at Neonatal ward from January to June 2022 to be 20.6%, with a mortality of 5% for asphyxiated newborns. Being male was associated with higher mortality of 8.2% among all admitted newborns, and was also higher in newborns with perinatal asphyxia as reflected in table 1.

Table 1 Newborns admitted in Neonatal ward at Tumbi Regional referral Hospital from January to June 2022

Admitted newborns	With perinatal asphyxia		Without perinatal asphyxia	
	Male (n=80)	Female (n=58)	Male (n=282)	Female (n=247)
Alive %	72.5	79.3	88.4	92.3
Died %	27.5	20.7	11.6	7.7

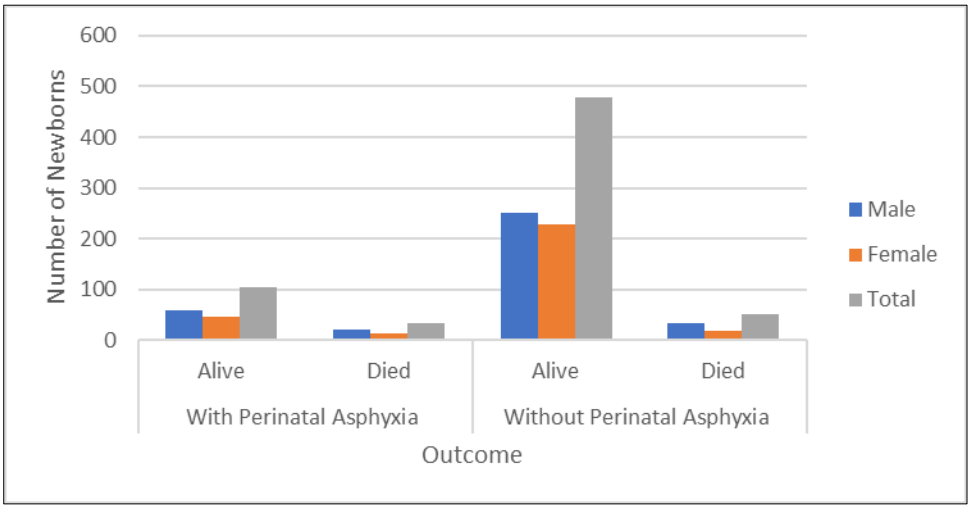

Figure 1 Prevalence of Perinatal asphyxia January-June 2022 at Tumbi Regional Referral Hospital

The prevalence perinatal asphyxia in the study reflects findings from a cross-sectional facility-based study in Ethiopia which had magnitude of 26.4%. (7) Nevertheless, the level of perinatal asphyxia in the current study is higher compared to that done in Northern Tanzania (5), as well as from systematic review and meta-analysis done in East and Central Africa of which the collective prevalence of perinatal asphyxia was found to be 15.9%. (8), which could probably be due to variation in study site. Also, higher level of asphyxia prevalence in this study compared to a study done in Turkey might be due to variation in study population of which Turkey recruited all newborns as study participants. (9)Thus, multi-country studies and studies using various designs needs to be done, as well as improved neonatal care and interventions should be in place so that newborns with perinatal asphyxia be timely and appropriately managed. Studies continue to show that majority of neonatal deaths are preventable, with improved maternal and newborn care. (1), (10).

4. Conclusion

Perinatal asphyxia continues to be a challenge together with its high mortality, hence identification of risk factors to prevent its occurrence is of foremost important. As well, skills training for staff and availability of equipment and supplies should be on-going so that infants with perinatal asphyxia are timely and well managed.

Compliance with ethical standards

Acknowledgement

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