

PREVALENCE OF BIRTH ASPHYXIA AT KIBUYE REFERRAL HOSPITAL

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KeyWords

Asphyxia, prevalence, newborn, Rwanda

ABSTRACT

Background

Neonatal asphyxia occurs among two to ten per one thousand of birth lives. Most of them are born prematurely. As a consequence, the World Health organization (WHO) estimates that each year, 4 million neonatal deaths occur due to birth asphyxia, representing 38% of deaths of children aged 5 years and less. In Rwanda, 33% of neonates born asphyxiated, contributing to 19/1000 live birth neonatal death. The purpose of this study is to determine prevalence of birth asphyxia at Kibuye Referral Hospital.

Methods

A retrospective cross sectional study design with quantitative approach was used. A data collection sheet that includes socio-demographic characteristics of mothers and neonates. The delivery registers were reviewed between January to December 2021. In total 1870 neonates born at Kibuye referral hospital meeting inclusion criteria were used to select a total sample of 401 neonates using Yamane's formula. Statistical analysis was performed using Statistical Package for Social Sciences (SPSS v23). Demographic characteristics of respondents and prevalence of birth asphyxia was presented using frequencies and percentages.

Results

The mean age of our study population was 30.03 (SD= ±7.14). In total, 40.6% (n=163) of mothers were in the age category between 24 to 34 years old. Majority of the mothers were married (70.1%, n=281). Regarding occupation, more than half of the mothers (70.8%, n=281) were farmers. Of 1870 neonates include in the study, 94 of them are born with asphyxia resulting in a prevalence of 5%.

Conclusions

The findings of this study support the existing evidence that birth asphyxia is considerably a public health threat. Kibuye referral hospital needs to ensure proper monitoring of women on labor to improve delivery outcomes.

INTRODUCTION

The first 30 days of life of a newborn is considered to be the most critical period. Thus, 4 million neonates die annually within the first seven days of life and a big number of those deaths (99%) occurs in Low Middle-Income Countries, due to preventable causes such as birth asphyxia, prematurity, and sepsis [1].

The burden of birth asphyxia continues to attract both medical and public health attention, given its rise in developing countries over the last decade ago. Though there is a small decline in incidence among developed countries of less than 0.1%, it has more doubled to 10 times higher in low-income countries with limited access to quality obstetrics care during pregnancy, intrapartum and postpartum period [2]. Yet, the prevalence is alarming in developing countries, ranging from 4.6% to 26%/1000 live births. In Africa where greater than 25% of newborn deaths occur, birth asphyxia represents 24% of neonatal deaths [3].

In Rwanda, over the previous couple of years, many advancements in health systems were made in terms of recruiting new health professionals, rehabilitation of old infrastructure or building new health facilities among others, resulting in a slight reduction of neonatal death from 20 out of 1000 birth lives in 2015 to 19 out of 1000 birth lives in 2020 [4]. Although these improvements in maternal and child health programs, the trends of reduction of newborn mortality experienced slow pace as opposed to under-five mortality and maternal mortality ratio [5]. Consequently, birth asphyxia constitutes the prominent cause of these deaths, representing 33% of all neonatal deaths [4].

However, addressing service delivery or systemic gaps need scientific evidence in terms of understanding birth asphyxia in hospital setting. Thus, as far as we are aware, there is no similar or related study conducted at Kibuye referral hospital, which is estimated to perform more than 300 deliveries monthly and receive many referrals from adjacent health facilities. Therefore, conducting this study, we aimed to assess the prevalence of birth asphyxia at Kibuye Referral Hospital, Western province of Rwanda.

Furthermore, identifying the prevalence of birth asphyxia at Kibuye referral hospital will help decision makers, planners and policy implementers to understand its magnitude, for planning appropriate intervention generally. In addition, the findings of this study will be used by the hospital administration, and neighboring hospitals to improve the quality of maternal and neonatal service delivery.

MATERIALS AND METHODS

Study design and period

A retrospective cross sectional study design with quantitative approaches was conducted at Kibuye referral hospital, between October and November 2022 to assess the prevalence of birth.

Sample size and sampling procedure

A convenient sampling technique was used. All newborn without congenital abnormalities and whose mothers started the labor at the Kibuye referral hospital were included in the study. In total, 2239 newborn were recorded in delivery registers, but 1870 newborn meeting inclusion criteria were included in the study and served as denominator to assess the prevalence of birth asphyxia.

Variables of the study

Birth asphyxia (having or not having birth asphyxia) was dependent variable of this study. Birth asphyxia is a newborn medical condition in which the newborn fail to initiate or sustain spontaneous breathing at birth as a result of oxygen deprivation during pregnancy, labor or even childbirth which may cause brain damage. To determine the level of this medical condition, APGAR score is used that is evaluated in the first and fifth minutes of life. It spans from zero to ten. For the purpose of this study, the research reviewed neonatal files, and those who presented a record of APGAR score of < 7 at the 5th minute was considered as a birth asphyxia

Data collection procedures and quality assurance

A standardized data collection checklist was developed in English, and customized into Kobo Collect Toolbox, a web-based data collection tool. The digital data collection tool was used to ensure consistency and maximizing errors. Data collection was done by the principal investigator herself, to ensure that complete and consistent data was collected and tabulated. Prior data collection, the data collection tool was tested for reliability and validity on 15 samples that were not subjected to be included in the study. The Cronbach's alpha coefficient of 0.82, and a content validity score of 0.7 was reached, which was significant enough to validate the tool.

Inclusion criteria

All newborn alive born at Kibuye Referral Hospital during the period of the stud were included in this study.

Exclusion criteria

All neonates born dead, or those who died within thirty minutes after births were excluded in this study. Furthermore, were excluded in this study, neonates born with known congenital abnormalities that would be known to directly influence hypoxic events or asphyxia.

Data processing and analysis

Collected data were exported in Excel from Kobo collect tool, then imported in Stata v17. Descriptive statistics were computed, and demographic characteristics of respondents and prevalence of birth asphyxia were presented and described using frequencies and percentages for categorical variables.

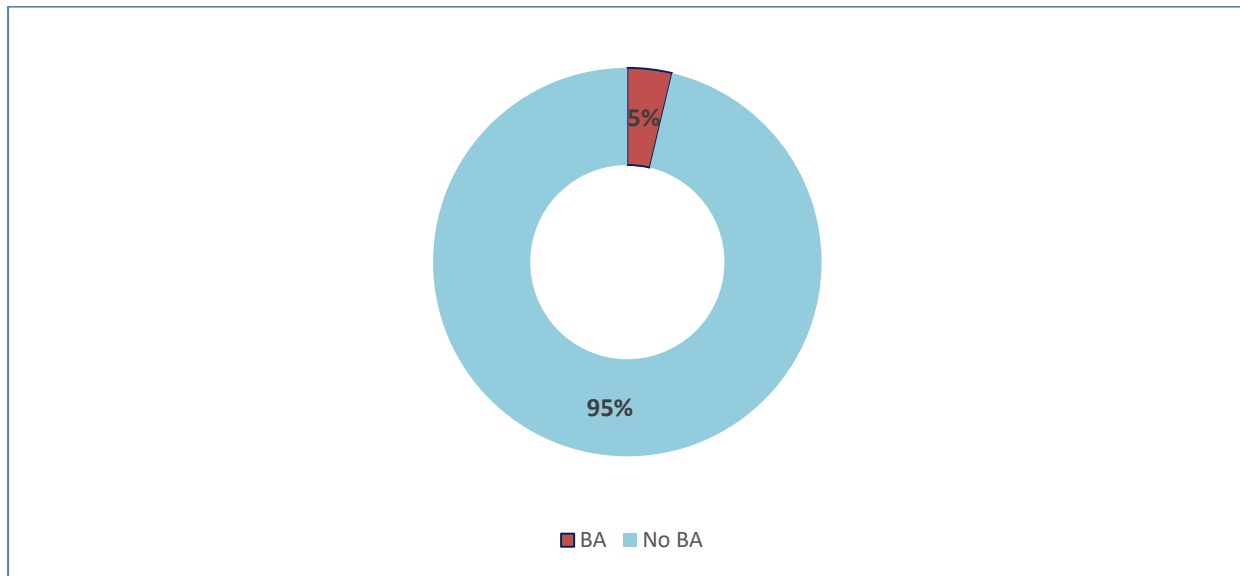
Ethical consideration

Ethical approval of this research was obtained from Mount Kenya University, the Institute of post graduate studies and research. Furthermore, data collection acceptance and authorization were obtained from Kibuye Referral Hospital. The confidentiality and privacy of the information was assured by keeping the information anonymous.

RESULTS

Prevalence of birth asphyxia

Of the total 1870 neonates born at Kibuye Referral hospital and eligible to participate in this study, 94 of them born with asphyxia during the period of 12 months, representing a prevalence rate of 5%.



Discussion

This study reported that the overall prevalence of birth asphyxia at Kibuye referral hospital was 5%. Birth asphyxia continues to lead the causes of neonatal death headings in Rwanda, where it ranks among the top five causes of morbidity and death [6,7].

Similar finding was reported in other study in Rwanda, but our study found the relatively low prevalence compared to the previous prevalence study conducted in hospitals in Kigali city of Rwanda that found birth asphyxia prevalence of 39.7% [6]. The higher prevalence was also reported in previous studies, such as the prevalence between 19.3% to 28.2% in a study conducted in Ethiopia [8], 15.9% in the East and Central African region and 30% in West Africa [3,9] . Despite, the finding of our study found a higher prevalence compared to the prevalence of 2% reported in Vietnam [10].

This variation could be attributed to the difference in study population, setting, and study design. The difference in prevalence rate would also a result of differences in quality of maternal health service delivery and health systems, both impacting newborn health outcomes in different health settings. For local comparison, this could be attributed to the urban factor of hospitals in Kigali that received many deliveries, including many referrals from rural areas.

Conclusion

In conclusion, finding of this study indicated that 5% of all neonates born at Kibuye Referral Hospital experience birth asphyxia. Though the prevalence appears to be relatively low compared to other

studies in Rwanda, birth asphyxia still a public health threat to neonates. However, there is a need to improve the capacity of healthcare providers in terms of proper labor monitoring to improve the overall maternal and newborn delivery outcomes, that reduce birth asphyxia.

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