Neonatal outcomes before and after the establishment and strengthening of a neonatal nursery at Neno District Hospital

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Introduction

- There have been only small improvements in neonatal mortality rates in sub-Saharan Africa in the last decade.
- Malawi had a total decreased neonatal mortality rate of 9 deaths per 1,000 live births in the last 14 years with a current rate of 21 in 2019, which results primarily from prematurity, birth asphyxia, and infection.
- To improve access to neonatal care and decrease mortality, Malawi has worked to establish neonatal nurseries at secondary district hospitals.
- In 2016, a nursery at Neno district hospital was inaugurated, but due to the high demand for adequate space, staff, and equipment, the nursery was shifted in 2019 to a special apartment with a larger space with changes in staffing.

Objective

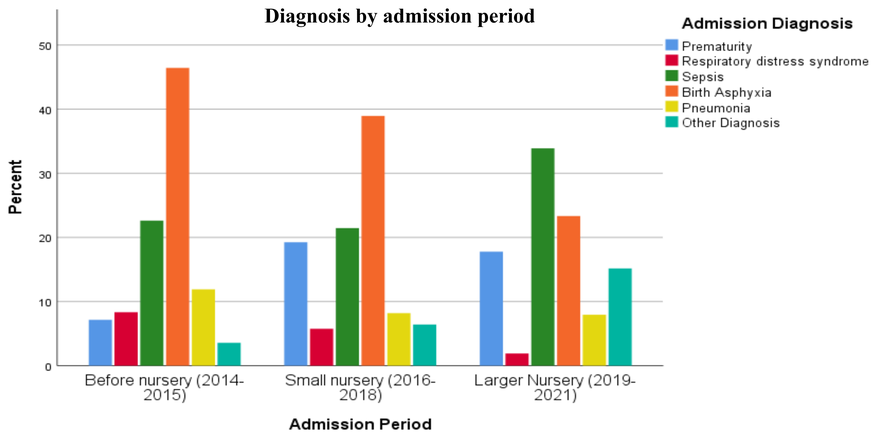
- To assess neonatal outcomes including discharges, deaths, and referrals, by establishing and strengthening a neonatal nursery at Neno District Hospital.

Methods

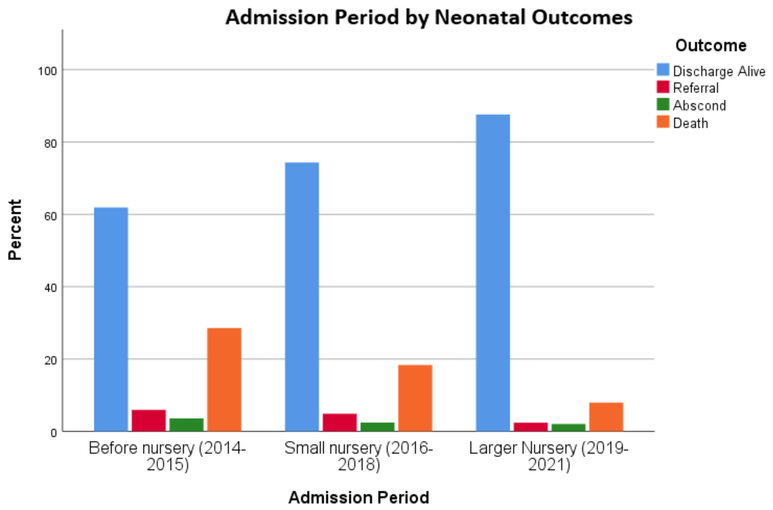
- Applied a quasi-experimental approach, comparing pre-and post-test results in neonatal outcomes with a convenience sampling method
- Analysis of 1380 neonates, who received treatment and care before and after the establishment and strengthening of the neonatal nursery at Neno District Hospital.
- We extracted variables from neonatal registers including gestational age, birth weight, diagnosis, length of stay, and neonatal outcomes.
- We compared outcomes from 2014-2015 before the establishment of the nursery, 2016-2018 with the establishment of the nursery, and 2018-2021 with increased space and dedicated staff.
- Utilized a chi-square test to compare the overall neonatal outcomes and associations of cause-specific death proportions for birth asphyxia, sepsis, and prematurity
- A multinomial logistic regression analyzed the neonatal outcomes to establish the differences in survival rates in the nursery period under review

Results

- Overall neonatal death proportion decreased from 28.6% in 2014 to 7.9% in 2021.
- The neonatal death proportion decreased by 10.21% with the establishment of the nursery from 2016-2018 with a further decrease of 10.41% with the increased space and staff from 2018 to 2021.
- The top three causes of admission were birth asphyxia (BA) (36.2%), sepsis (26.0%), and prematurity (14.7%).



- The results showed significant drops in the death proportion from BA, sepsis, and prematurity by 48.1%, 94.7%, and 54.4%



- Multinomial logistic regression analysis showed neonates admitted during the period of the larger nursery were 5.363 or 536.3% (OR=6.363, 95% CI= 3.418-11.842) more likely to be discharged alive as compared to neonates admitted during the period before nursery.

Discussion

- The results suggest having a dedicated space, staff, equipment and space in a health facility for neonatal care is essential for the provision of treatment, infection and temperature control for small and sick neonates.
- These results are similar to a study in Mangochi, southern Malawi, which indicated that improved infrastructure following the construction of a new maternity wing in Mangochi District Hospital, including better space for the care of neonates, and trained staff and appropriate equipment, may have contributed to improved survival of neonates.

Conclusions

- There was a decrease in the overall death proportion and cause-specific death proportions over a period of 7 years.
- We believe a multi-dimensional approach of 5 Ss – Space (adequate nursery space), Staff (increased), Stuff (equipment and medications), and Systems of care including care protocols and continuous education through mentorship to address the neonatal death rate is required.

Acknowledgments

- Made possible by the support of Wagner Foundation

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