



The Impact of The Neonatology Improving Projects on Neonatal Services In Bisha City During Covid 19 Pandemic

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ABSTRACT

Introduction: It is thought of as a necessary service to provide high-quality care during pregnancy, labour, and the postpartum period. The fields of obstetrics/midwifery and neonatology, which are generally referred to as perinatology, have reduced maternal and newborn mortality and morbidity globally, but the COVID-19 pandemic brought on by the SARS-CoV-2-related COVID-19 virus posed a threat to the security of healthcare.

Materials and Methods: A prospective comparative study was conducted in a tertiary care hospital, Bisha city. I want to compare the outcome for 2 years (July 2020-June 2022) after shifting to the new unit with previous 2 years before shifting (July 2018 -June 2020) in different aspect: The days on the mechanical ventilation, The IVH rate, The Mortality rate. In this study, I want to compare neonatal services outcomes (for preterm babies less than 37 weeks gestational age) after developing the infrastructure, manpower, Supplies and Policies after the shifting to the new department.

Results: This is a prospective comparative study conducted in the department of neonatology, in a tertiary care hospital, Bisha city. Mean gestational age in before shifting to new unit, after shifting were 31, 33.34 respectively. Average weight were 1496, 1565 in before shifting to new unit, after shifting respectively. In our study, Average days on the mechanical ventilation were 14.78 days in before shifting to new unit group. Average days on the mechanical ventilation were 4.33 days in after shifting to new unit group.

Conclusion: The provision of high quality and evidence-based perinatal care must remain a priority, even in the face of a pandemic. Restructuring in health care facility with New advance mechanical ventilators supporting Volume-targeted ventilation, 9 single rooms isolation for septic babies, T-piece resuscitator (in all OR suits, Delivery suits and ER), Total parental nutrition and also the all NICU policies updated especially for Caffeine citrate and fluconazole administration to preterm babies according to the AAP guidelines. Also all the department staff completed the NRP and STABLE provider course as mandatory requirement to work in the NICU department. IVH rate, mortality rate was drastically reduced after shifting to the new unit than before shifting to new unit. Hence hospital restructuring in neonatology plays a crucial role to reduce mortality rate.

Keywords: COVID-19, NICU, perinatology, infrastructure, manpower

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INTRODUCTION

It is thought of as a necessary service to provide high-quality care during pregnancy, labour, and the postpartum period.¹ The fields of obstetrics/midwifery and neonatology, which are generally referred to as perinatology, have reduced maternal and newborn mortality and morbidity globally, but the COVID-19 pandemic brought on by the SARS-CoV-2-related COVID-19 virus posed a threat to the security of healthcare.²

Early forecasts predicted that COVID-19 alone will increase maternal and child mortality in low- and middle-income countries (8.3-38.6% and 9.8-44.7%, respectively). Throughout the pandemic, changes in the way healthcare was delivered limited unnecessary physical contact between pregnant women, newborns, and healthcare professionals and adapted to new information.³ Early in the pandemic, recommendations on the provision of prenatal services were issued by numerous academic institutions and governmental organisations, but they lacked the supporting data to allow individual institutions to develop their own policies.⁴ Because of these restrictions, it was challenging for physicians and policymakers to decide how to change their own perinatal services.⁵

In this study, I want to compare neonatal services outcomes (for preterm babies less than 37 weeks gestational age) after developing the infrastructure, manpower, Supplies and Policies after the shifting to the new department.

MATERIALS AND METHODS

Study design

A prospective comparative study.

Study location

A tertiary care hospital, Bisha city.

Sample Size

781 (431- before shifting to new unit, 350-After shifting to new unit)

Study Duration

4 years study, 2 years (July 2020-June 2022) after shifting to the new unit with previous 2 years before shifting (July 2018 -June 2020).

Upon starting of Covid 19 Pandemic the Neonatology service in Bisha city shifted in concordance of obstetrics and gynecology specialty to maternity and children hospital instead of King Abdullah general hospital. With the opening of the new department, which is 35 beds level 3 NICU which was well established with high recommended standards of intensive care units with new facilities including: New advance mechanical ventilators supporting Volume-targeted ventilation, 9 single rooms isolation for septic babies, T-piece resuscitator (in all OR suits, Delivery suits and ER), Total parental nutrition and also the all NICU policies updated especially for Caffeine citrate and fluconazole administration to preterm babies according to the AAP guidelines. Also all the department staff completed the NRP and STABLE provider course as mandatory requirement to work in the NICU department.

In this study, I want to compare neonatal services outcomes (for preterm babies less than 37 weeks gestational age) after developing the infrastructure, manpower, Supplies and Policies after the shifting to the new department.

I want to compare the outcome for 2 years (July 2020-June 2022) after shifting to the new unit with previous 2 years before shifting (July 2018 -June 2020) in different aspect: The days on the mechanical ventilation, The IVH rate, The Mortality rate.

RESULTS

This is a prospective comparative study conducted in the department of neonatology, in a tertiary care hospital, Bisha city. Mean gestational age in before shifting to new unit, after shifting were 31, 33.34 respectively. Average weight were 1496, 1565 in before shifting to new unit, after shifting respectively.

TABLE 1: Demographic characteristics

S.No	Parameter	before shifting to new unit (July 2018 -June 2020) (N=431)	after shifting to the new unit (July 2020-June 2022) (N=350)
1	Mean gestation age in weeks	31	33.34
2	Average weight in grams	1496	1565
3	Male	250	201
4	Female	181	149

TABLE 2: Mode of delivery

S.No	Mode of delivery	before shifting to new unit (July 2018 -June 2020) (N=431)	after shifting to the new unit (July 2020-June 2022) (N=350)
1	CS	290	197
2	SVD	141	153

TABLE 3: The days on the mechanical ventilation

S.No	Parameter	before shifting to new unit (July 2018 -June 2020) (N=431)	after shifting to the new unit (July 2020-June 2022) (N=350)
1	Average days on the mechanical ventilation	14.78 days	4.33 days

In our study, Average days on the mechanical ventilation were 14.78 days in before shifting to new unit group. Average days on the mechanical ventilation were 4.33 days in after shifting to new unit group.

TABLE 4: The IVH rate

S.No	Parameter	before shifting to new unit (July 2018 -June 2020) (N=431)	after shifting to the new unit (July 2020-June 2022) (N=350)
1	IVH Rate	26	10

TABLE 5: The Mortality rate

S.No	Parameter	before shifting to new unit (July 2018 -June 2020) (N=431)	after shifting to the new unit (July 2020-June 2022) (N=350)
1	Death, Mortality rate	65 cases, 0.41	20 cases, 0.15

After all advancements after shifting to the new unit (July 2020-June 2022) there were less IVH rate and mortality rate when compared with before shifting to new unit (July 2018 -June 2020).

TABLE 6: Discharge

S.No	Parameter	before shifting to new unit (July 2018 -June 2020) (N=431)	after shifting to the new unit (July 2020-June 2022) (N=350)
1	Discharged after recovery	364 (84.45%)	329 (94%)

94% of patients were discharged after recovery after shifting to the new unit. 84.45% of patients were discharged after recovery before shifting to the new unit. Percentage of discharge was increased after shifting to the new unit.

DISCUSSION

Acute respiratory failure, shock, and thromboembolic illness are the most likely life-threatening consequences for pregnant women with COVID-19, and they may necessitate examination by a critical care rapid response team and, in some cases, ICU admission. With the identification of deteriorating oxygen saturation, rising respiratory rate, and a decline in awareness, early warning scores can signal escalation.⁶ Equipment and medications for vaginal or caesarean births as well as for neonatal resuscitation should be available in the ICU.⁷ It is important to locate a prospective area for newborn resuscitation so that airborne safety measures can be taken. Although there are no data to support a change to standard ventilatory techniques, ICU treatment is not different in pregnant patients, however airway management demands a greater level of skill, and prone positioning may be more challenging.⁸ Even overall breathing difficulties may not usually significantly improve after delivery, if more conservative methods have failed, this may increase maternal oxygenation.

Care for infants during the COVID-19 pandemic must carefully balance the risk of COVID-19 exposure with the benefits of infant-parent bonding. In the absence of adequate PPE and

individual rooms for neonates, physical changes to the Neonatal Intensive Care Unit include moving monitors to doorways of high-risk infant rooms or using central monitoring, and using long-tubing intravenous lines. Neonatal follow-up after discharge from hospital should be conducted using virtual platforms wherever possible.⁹

A nurse trained in lactational counselling is available round the clock for helping mothers in breastfeeding and milk expression. The milk expression room utilising electric breast pumps in NICU has been shut down during the pandemic due to issues of overcrowding.¹⁰

CONCLUSION

The provision of high quality and evidence-based perinatal care must remain a priority, even in the face of a pandemic. Restructuring in health care facility with New advance mechanical ventilators supporting Volume-targeted ventilation, 9 single rooms isolation for septic babies, T-piece resuscitator (in all OR suits, Delivery suits and ER), Total parental nutrition and also the all NICU policies updated especially for Caffeine citrate and fluconazole administration to preterm babies according to the AAP guidelines. Also all the department staff completed the NRP and STABLE provider course as mandatory requirement to work in the NICU department. IVH rate, mortality rate was drastically reduced after shifting to the new unit than before shifting to new unit. Hence hospital restructuring in neonatology plays a crucial role to reduce mortality rate.

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