An Ethnographic Survey of Maternal Stress in a Ugandan Neonatal Hospital Unit

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Background

- In Neonatal Intensive Care Units (NICUs) in high-income countries, the disruption of maternal-infant bonding, the hospital environment, and the appearance of their unwell child have all been shown to be stressful for mothers.[1]
- Very few studies of maternal stress using the PSS:NICU survey in low-income countries' NICUs have been preformed.[1]
- Scarcity of healthcare workers, equipment, and/or other clinical resources may impact the degree of maternal stress.[2]
- Understanding the unique factors impacting maternal stress and general causes can help guide future interventions.

Aim

- To evaluate the maternal stress profile and factors that influence maternal stress in the Special Care Nursery (SCN) in Jinja Regional Referral Hospital (JRRH), Uganda.

Methods

- Maternal and infant demographic data of 50 mother-baby dyads was collected through chart review and surveys at the time of enrollment.
- The Parental Stressor Scale: Neonatal Intensive Unit (PSS:NICU) survey was administered to mothers 48-96 hours after admission to determine maternal stress levels (Table 1).
- Hierarchical linear regression models were used to determine maternal and infant factors associated with PSS:NICU scores.

Table 1: Examples of Each PSS:NICU Subcategory[4]

PSS: NICU Survey Category Examples	
Baby Appearance and Behaviour	Ex Item: Jerky and Restless Movements of Baby
Parental Role Alteration	Ex Item: Cannot Touch Baby
Sights and Sounds	Ex Item: Noise of Alarms

Table 2: Characteristics of Mothers and Infants

Number of participants that completed study	50
Maternal age, years, mean (SD)	25.96 (5.53)
First time mothers, n (%)	22 (44%)
Education	
No school, n (%)	1 (2%)
Less than primary, n (%)	1 (2%)
Primary 4-7, n (%)	13 (26%)
Secondary 1-6, n (%)	31 (62%)
Post-secondary, n (%)	4 (8%)
Antenatal visits, n, mean (SD)	5 (2)
Gestational age, weeks, median (IQR)	36 (34 - 40)
Birth weight, grams, median (IQR)	2900 (2525 - 3575)
Reason for admission	
Asphyxia, n (%)	31 (62%)
Infection, n (%)	10 (20%)
Low Birthweight/ Prematurity, n (%)	3 (6%)
Jaundice, n (%)	1 (2%)
Injury/Accident, n (%)	0 (0%)
Other, n (%)	5 (10%)
Length of stay, days, median (IQR)	6 (5-7)
Day of life at admission, days, median (IQR)	1 (1-2)

References

1. Caporali, C., et al. *J Perinatol,* 2020. 40(12)
2. Premji, S., *Matern Child Health J*, 2014. 18(10)
3. Franck, L.S. and K. O'Brien, *Birth Defects Res*, 2019. 111(15)
4. Miles, M. S., et al. *Nurs Res*, 1993. 42(3)

Results:

- Table 2 describes the characteristics of the participants.
- The mean maternal stress level on the PSS:NICU was 3.47±0.84.
- The PSS:NICU subcategory with the highest score was Baby Appearance and Behaviour (3.86±0.51).
- The PSS:NICU subcategory with the lowest score was Sights and Sounds (2.76±0.98).
- No maternal or infant factors were associated with the overall PSS:NICU score.
- Mothers of asphyxiated infants (r=0.23, p=0.043) and older mothers with higher education (r=1.32, p=0.046) had elevated Sights and Sounds scores.
- Female infants at an older gestational age (r=-0.32, p=0.026) were associated with lower Parental Role Alteration scores.

Conclusions

- A mean PSS:NICU score of 3.47 represents moderate to high maternal stress.[1]
- This score is comparable to maternal stress levels in high-income countries.[1]
- Interventions used to lower maternal stress in high-income countries could be adapted to benefit Ugandan mothers.

Future Directions

- Feasible, family centered efforts that integrate parents into nursing care have been shown to reduce maternal stress[3] and should be investigated in a Ugandan context.
- Efforts to reduce maternal stress should begin early given that the median stay is less than one week.
- Interventions should include maternal education about typical baby appearance as the Baby Appearance and Behaviour subcategory was the largest source of stress.

Characteristics	Number	Statistics/Percentage
Number of participants enrolled	53	
Number of participants that completed study*	50	
Maternal age, years, mean (SD)		25.96 (5.53)
Mode of delivery, n (%)		
Vaginal, n (%)	30	60%
Cesarean, n(%)	20	40%
First time mothers, n (%)	22	44%
Second(+) time mothers, n (%)	28	56%
Education, n, (%)		
No school, n (%)	1	2%
Less than primary, n (%)	1	2%
Primary 4-7, n (%)	13	26%
Secondary 1-6, n (%)	31	62%
Post-secondary, n (%)	4	8%
Antenatal visits, n, mean (SD)**		5 (2)
Gestational age, weeks, median (IQR)		36 (34.25 - 40)
Birth weight, g, median (IQR)		2900 (2525 - 3575)
Newborn sex, n (%)		
Female, n (%)	24	48%
Male, n (%)	36	52%
Reason for admission, n (%)		
Low Birthweight/ Prematurity, n (%)	3	6%
Infection, n (%)	10	20%
Asphyxia, n (%)	31	62%
Jaundice, n (%)	0	2%
Injury/Accident, n (%)	1	0%
Other, n (%)***	5	10%
Length of stay, days, median (IQR)		6 (5-7)
Day of life at admission, days, median (IQR)****		1 (1-2)

Table 2: Demographic Statistics for Mothers and Infants Involved in Study.

*Newborns of 2 participants died before taking part in the survey, and 1 participant left against medical advice (AMA), **4 antenatal visits are recommended , ***Diagnoses under 'Other': poor feeding (2 newborns), meconium aspiration (3 newborns), ****First day of life is defined as the day of birth