

Research Paper

Correlates of Parental Role Alteration over their Hospitalized Infants in NICU

E.N. Chiejina^{1,*}, R.C. Ebenebe², C.C. Odira¹ and J.E. Okeke¹

¹ Department of Nursing Science, Faculty of Health Sciences and Technology, Nnamdi Azikiwe University, Nnewi Campus, Nigeria

² Department of Educational Foundations, Faculty of Education, Nnamdi Azikiwe University, Awka, Nigeria

* Corresponding author, e-mail: (nkechichiejina@yahoo.com)

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Abstract: *This study explored the correlates of parental role alteration over their hospitalized infants in neonatal intensive care unit (NICU). 216 parents whose infants were hospitalized in NICU were requested to complete questionnaires on NICU Parental Stress Scale. A parent infant demographic data form was also used to obtain information about the parent and infant characteristics. Mean score, standard deviation and Spearman Rank correlation coefficient (ρ) were used to answer the research questions while Mann-Whitney U and Chi-Square tests were used to test the null hypotheses at 0.01 level of significance. The result indicated significant correlation of the NICU parental role alterations with the infant gestational age and infant birth weight respectively. Significance differences were also observed in parental role alterations with regard to the sex of the parents. However, no significant difference was noted in parental role alterations with regard to the number of children born by the parents.*

Keywords: Parents, Role alteration, Infants, NICU.

Introduction

Medically fragile infants are born into families of all races, religions, nationalities and cultural backgrounds without regard for their social environment (Syder – Greenberg and Dokkin, 2000). As technology increases, smaller and more medically fragile infants are being treated and kept alive in highly technical neonatal intensive care (NICU) environments (Miles et al, 1993).

From birth, the child has an ability to respond to the environment which influences the interaction between mother and child (Wigert et al, 2006). In typical circumstances, the parent-infant bonding process that occurs during the newborn period establishes the foundation for a lifelong relationship. However, this typical process does not necessarily occur when the infant is born at risk, and spends the first several weeks or months in the NICU (Case-Smith, 1993). If this attachment is interrupted, the child's emotional development is negatively influenced (Wigert et al, 2006).

Neonatal Intensive Care Unit (NICU) environment has the potential to exacerbate stress for parents of infants admitted to the unit. NICU stressors, individually or in combination, may interfere with the parent-infant relationship and create extra difficulties for the couple and wider family (Carter et al, 2007).

When parents have an infant in neonatal intensive care, they bring with them their own unique characteristics and set of circumstances. While in the NICU, parents are also influenced by the specific situational conditions of their infants. According to Miles and Carter (1983), these conditions can include the severity of their infant's diagnosis, the infant's appearance and level of functioning, and the duration of their infant's stay in the unit. Environmental factors that can influence parents' unique reaction to having an infant in the NICU might include difficulty in fulfilling their parental role, the medical equipment used for intervention, and the communication patterns and behaviour of the staff (Miles and Carter, 1983; Hunter, 2001). Miles and Carter (1983) explained that as a result of the various factors that can influence the parents, each parent develops his or her own way of cognitively appraising, or making judgments about the NICU experience. For example, some parents, may view their situation as positive since their infant is getting the care he or she needs, others may see it as negative when the infant or staff is unable to correspond to their expectations or needs, some parents may cope by using the environmental resources available to them such as the support of the NICU staff, while others may use personal resources such as family, friends or financial assets. Hence, the response to the stress of having a child in the NICU can therefore be the result of a complicated interaction of various variables that can potentially be adaptive or maladaptive. Increased information about how parents of hospitalized high-risk infants perceive NICU, and also an understanding of the needs of such parents may enable NICU Staff to identify parents at risk and plan interventions to meet those needs and promote family functioning. This is particularly important given evidence that factors such as parental well-being, family cohesion and parent-child relationships make significant contributions to infant longer-term developmental outcomes (Carlson et al, 2003; Elgar et al, 2004; Martins and Gaffan, 2000). This study was therefore intended to determine correlates of parental role alterations over their hospitalized infants in the neonatal intensive care unit.

Research Questions

- * To what extent is the role alteration of parents whose infants are hospitalized in the NICU related to the gestational age of the infant?
- * To what extent does the birth weight of the infants in NICU relate to their parental role alteration?
- * How do the age of parents whose infants are hospitalized in NICU relate to parental role alteration?

Hypotheses

- * There is no significant difference between the male and female parents with regard to parental role alteration over their hospitalized infants in the NICU.
- * Parental role alteration over their hospitalized infants in the NICU do not significantly differ with regard to number of children born by parents.

Materials and Methods

Design and Sampling

The study was a correlational research design. A convenient sample of 216 parents (mothers and fathers) of high-risk infants who were hospitalized in the NICU of two Teaching Hospitals in South-East Zone of Nigeria was used for the study.

Ethical approval was obtained for the study and informed consent was obtained from the parents. Inclusion criteria for the study were parents of the preterm babies and neonates with other illnesses (like asphyxia, birth injuries, congenital malformations, Jaundice, etc) that necessitated their admissions into the unit for special care. Parents who indicated not to participate were excluded from the study, and also their infants were not used. The parents were approached at various points within their infants' hospitalization. To obtain data on stress, the researchers approached the parents at a time when they were visiting but not holding their babies, and when not involved with other NICU personnel. Copies of the Questionnaires were administered at that time as well. For their information to be included in the study, their infants had to remain in the NICU for at least 24 hours. Confidentiality was ensured by not including names of the respondents in data collection. Rather code numbers were used instead of names.

Instrument

Parental Stressor Scale: Neonatal Intensive Unit (PSS-NICU) developed by Miles and Funk (1987) and designed to measure the parents perception of stressors within the NICU was used by the researchers in this study. The scale consists of four sub-scales that measure stress related to sights and sounds (eg presence and noise of monitors and equipment, other sick babies, alarm noises, large number of staff), appearance and behaviour of the infant (eg tubes and equipment on, in or near the infant, infant color, size, cry, movements, labored breathing), the impact on parents' role and their relationship with their baby (eg being separated from their infants, unable to feed and care for the infant, fear of touching or holding the baby, feeling helpless to help the infant), and the parents' relationship and communication with the staff (eg. Staff explaining things too fast, not enough information, staff looking worried about infant or not understanding).

Additional questionnaire items adopted from Abidin's (1995) Parenting Stress Index (PSI) were added to the questionnaire sub-scales of infant behaviour and parental role alteration. For example, items like distractibility/ hyperactivity, nil-adaptability, nil-reinforcement of parents, demandingness, mood and nil-acceptability were added to the questionnaire items of Infant Behaviour subscale, while items like incompetence, isolation and non-attachment were added to the subscale of parental role alteration. The responses to the PSS:NICU were scored on a 5-point Likert scale ranging from 1 point for "not at all stressful", 2 points for "mild stress", 3 points for "fairly moderate stress", 4 points for "very stressful" and 5 points for "extreme/ severe stress". Higher scores indicate more stress.

Another instrument (questionnaire) on Parental Self-report Scale on the coping measures parents adopt, alterations in mood (such as sad always, grief, anxiety, depression), concern about infants' outcome, involvement in decision-making as a measure to reduce stress and spouse presence in stress reduction was used for the study. The responses were rated on a 4-point scale ranging from 1 point for not at all, 2 points for fair, 3 points for much and 4 point for very much. Higher scores for this indicate more coping abilities for the parent.

A parent – Infant Demographic sheet was constructed for the study by the researchers to obtain information on the parent and infant characteristics that might contribute to, or be predictive of the different stress responses among the parents. These data were obtained confidentially from the medical files and included information on the parents' gender, age, marital status, ethnicity, education

and occupation. Data collected on the infants demography included their gestational age, birth weight, diagnosis and length of stay.

Internal consistency reliability coefficients were calculated using cronbach's alpha for the entire scales. 20 parents of hospitalized infants in the NICU of a teaching hospital in another zone in Nigeria were used. The internal consistencies for the entire scales were 0.76 and 0.65 respectively.

Data Analysis

Standard descriptive statistics like means, frequency, standard deviation were used to summarize the independent variables and the PSS: NICU total and four subscales. Mean score, standard deviation and Spearman Rank coefficient were used to answer the research questions. Mann-Whitney U and Chi square statistical tests were used to test the null hypotheses at 0.01 level of significance. SPSS version 21 was used in the data analysis.

Result

Table 1: Demographic Characteristics of the Study Population

Variable	Frequency	Percentage
Parental sex:		
Male	10	4.6
Female	206	95.4
Parental Marital Status (MS):		
Married	210	97.2
Single	6	2.8
Parental Ethnicity:		
Ibo	183	84.7
Hausa	7	3.2
Yoruba	10	4.6
Ijaw	4	1.9
Edo	6	2.8
Tiv	5	2.3
Langthang	1	0.5
Parental Educational Level:		
Illiterate	6	2.8
Primary	30	13.9
Secondary	121	56.0
Tertiary	59	27.3
Parental Occupation:		
Artisan	20	9.3

Business	146	67.6
Civil Servant	26	12.0
Professional	24	11.1
Number of Children:		
None alive	11	5.1
Some alive	44	20.4
All alive	161	74.5
Fertility History of the Parents:		
Infertile Prior to Child birth	23	10.6
Fertile Prior to Child Birth	193	89.4
Infant Sex:		
Male Child	132	61.1
Female Child	84	38.9
Infant Position:		
First Child	67	31.0
Second Child	60	27.8
Third Child	88	40.7
Above third Child	1	0.5
Infant Length of stay in Hospital:		
Few Days	101	46.8
Long Stay	115	53.2

Total Population N = 216

Demographic characteristics of the study population are shown in table 1.4.6% of the respondents were males while 95.4% were females. The single parents constituted 2.8% while the married ones were 97.2% of the population. Majority of the respondents (84.7%) were Ibos, Hausas were 3.2%, Yoruba 4.6%, Ijaw 1.9%, Edo 2.8%, Tiv 2.3% and Langthang 0.5%. Majority of the respondents (56%) had secondary education while 2.8% were illiterates, 27.3% had tertiary education while 13.9% were of primary school level. 67.6% were business men and women, 12.0% were civil servants, 11.1% were professionals and 9.3% were artisans. 74.5% had all their children alive, 20.4% had some of their children alive while 5.1% had none alive. With regard to the respondents' fertility history, 89.4% were fertile prior to childbirth while 10.6% had fertility treatment prior to childbirth. Among the NICU infants of the respondents, 61.1% were males while 38.9% were females; 31% constituted first child, 27.8% second child, 40.7% third child and 0.5% above third child. For the infants' length of stay in the hospital, 46.8% spent few days while 53.2% spent long period. The respondents' total population was 216.

Table 2: Descriptive Statistics of the Measured Variables

Variable	N	Mean	SD
Parental Age	216	29.9352	5.87509
Number of children born by Parents	216	2.6944	0.56170
Infant Gestational Age	216	35.2130	5.73370
Birth Weight of Infant	216	2.6160	0.97483
PSS for sights and sounds in NICU	216	2.5718	0.81058
PSS for NICU Infant behaviour and Appearance	216	2.9213	0.86783
PSS for NICU Staff Behaviour/ Communication	216	2.6139	1.06251
NICU Parental Role Alteration	216	3.0728	1.08000
NICU Parental Self-report coping Measures	216	3.2407	0.51870
Valid N (Listwise)	216		

Table 2 shows the descriptive statistics of the measured variables. Out of the 216 respondents, the mean age was 29.9352 with standard deviation (SD) of 5.87509, mean for number of children born by the respondents (the parents) was 2.6944 with SD of 0.56170, mean value of infant gestational age 35.2130 with SD of 5.73370; mean for the infants' birth weight 2.6160 with SD of 0.97483. Parental stress (PSS) for NICU sights and sounds had mean score of 2.5718 with SD of 0.81058, mean of PSS for NICU infant behaviour and appearance was 2.9213 with SD of 0.86783, mean of PSS for NICU staff behaviour and communication 2.6139 with SD of 1.06251, mean of NICU parental role alteration 3.0728 with SD of 1.08000, while the mean of NICU parental self-report coping measures was 3.2407 with SD of 0.51870.

Table 3: Relationship between Infant gestational age and NICU parental role alteration

Variables	N	\bar{X}	SD	rho	Critical value	Level of significance
Infant Gestational Age	216	35.2130	5.73370	**	0.000	0.01
NICU Parental Role Alteration	216	3.0728	1.08000	0.308		

** Correlation is significant at 0.01 level (1 – tailed).

At 0.01 level of significance, the rho correlational value for the relationship between infant gestational age and NICU parental role alteration was 0.308 (table 3). The critical value was 0.000.

Table 4: Relationship between birth weight of Infant in NICU and Parental role alteration

Variables	N	\bar{X}	SD	rho	Critical value	Level of significance
Infant Birth Weight	216	2.6160	0.97483	**	0.000	0.01
NICU Parental Role Alteration	216	3.0728	1.08000	0.395		

**Correlation is significant at 0.01 level (1-tailed).

Table 4 shows that at 0.01 level of significance, the rho correlational value for the relationship between infant birth weight and NICU parental role alteration was 0.395.

Table 5: Relationship between age of parents of infants in NICU and parental role alteration

Variables	N	\bar{X}	SD	rho	Critical value	Level of significance	Remark
Parental age	216	29.9352	5.87509	0.076	0.134	0.01	No correlation
NICU Parental Role alteration	216	3.0728	1.08000				

In table 5 the rho correlational value for the relationship between parental age and NICU parental role alteration was 0.076 while the critical value was 0.134. There was absence of correlation.

Table 6: Mann-Whitney U test comparison of NICU parental role alteration among the male and female parents

Variable	Ranking Order	N	Mean Rank	Sum of Ranks	Z- Cal	Z-Crit	Probability
Parental Sex - NICU Parental Role Alteration	Male	10	54.35	543.50	2.809	0.005	P<0.01
	Female	206	111.13	22892.50			
	Total	216					

NB: Z – cal = standard score

In table 6 the calculated Z-score of 2.809 was more than the Z-crit of 0.005 at 0.01 level of significance. There is significant difference between the male and female parents with regard to NICU parental role alteration. The null hypothesis is rejected.

Table 7: Chi-Square test comparison the number of children born by parents and NICU parental Role alteration

No of Children	N	Mean Rank	df	X ² -Cal	X ² -Crit	Probability
None Alive	11	102.86	2	0.479	0.787	P>0.01
Some Alive	44	113.98				
All Alive	161	107.39				
Total	216					

At 0.01 level of significance X²-cal of 0.479 was less than the X²-crit of 0.787 (table 7). The null hypothesis is accepted. Parental role alteration over their hospitalized infants in the NICU does not significantly differ with regard to the number of children born by parents.

Discussion

The significant correlation ($\rho=0.308$) between infant gestational age and parental role alteration (table 3) is in line with previous studies. Holditch – Davis et al (2003) reported that mothers of preterm infants demonstrate significant stress reactions six months after the infants' expected due date; in another study, Holditch – Davis et al (2009) noted that mothers of preterm babies not only experience distress during hospitalization but continued to experience distress and evidenced alterations in parenting 24 months after the infants' due dates.

Findings from the study indicate significant correlation ($\rho=0.395$) between NICU infant birth weight and parental role alteration (table 4). Trombini et al (2008) found that parents were worried about the health status of their infants in NICU, while Heidari, Hasanpour and Fooladi (2013) noted that in the hospital, parents feel anxious, agitated and worry about their own role as parents, and have fear of consequences such as their infant's appearance, mental condition and death. Researchers also observed that despite the NICU care that is beyond the parent's abilities, mothers still remain stressed by keeping awake, unable to sleep and experienced fatigue all day (Lee and Kimble 2009).

The absence of correlation between parental age and NICU parental role alteration (table 5) in the study is remarkable. It shows that parental age does not compromise the desire of parents to care for their newborns. However, a study that specially examined the effect of age on stress indicated that older mothers reported higher levels of stress than younger mothers with regard to their infants in NICU (Shields – Poe and Pinelli, 1997).

The significant difference between male and female parents with regard to NICU parental role alteration (table 6) is similar to the findings of some researchers. Trombini et al (2008) report that NICU atmosphere could increase parent's stress level and leave emotional scars on mothers trying to adopt to the situation. Shin and Traut (2007) believe the maternal thoughts and feelings stem from separation and fear of not having a chance to reunite or interact with the infant; Colville et al (2009) found that mothers are more afraid than fathers for their infant's death. However Carter et al (2007) noted that fathers with history of alcohol/ drug abuse or dependence had high parental role stress.

Findings from the study indicate absence of significant difference in parental role alteration for the infants in NICU with regard to the number of children born by parents (table 7). Busse et al (2013) reported that having other children in the family correlate with anxiety. Parents with previous life births are expected to be very much familiar with their responsibilities to their newborns, and interruption of this responsibility in an environment that will separate them from their infants will cause them stress. On the other hand, first-time mothers may also be stressed because their expectations to fulfill their parental responsibilities to their newborns for the first time failed to come by.

Conclusion

This study indicates that altered parental role forms a major source of stress with regard to infant gestational age, infant birth weight, and that NICU parental role alteration persists irrespective of the number of children born by parents.

References

- [1] R.R. Abidin, Parenting Street Index (3rd ed.), Odessa, FL: Psychological Assessment Resources Inc., 1995.
- [2] M. Busse, K. Stromgren, L. Thorngate and K. Thomas, Parents' responses to stress in the neonatal intensive care unit, *Critical Care Nurse*, 33(4) (2013), 52-59.

- [3] E.A. Carlson, M.C. Sampson and L.A. Sroufe, Implications of attachment theory and research for developmental – Behavioural pediatrics, *Journal of Developmental and Behavioural Pediatrics*, 24/5(2003), 364.
- [4] J.D. Carter, R.T. Mulder and B.A. Darlow, Parental stress in the NICU: The influence of personality, psychological, pregnancy and family factors, *Personality and Mental Health*, 1(2007), 40-50.
- [5] J. Case-Smith, Family – centered care in the neonatal intensive care unit, In E. Vergara (Ed.), *Foundations for practice in the neonatal intensive care unit and early intervention: A self-guided practice manual*, Rockville, MD: *American Occupational Therapy Association*, 2(1993), 241-246.
- [6] G. Colville, J. Darkins, J. Hesketh, V. Bennett, J. Alcock and J. Noyes, The impact on parents of a child's admission to intensive care: Integration of qualitative findings from a cross-sectional study, *Intensive Critical Care Nursing*, 25(2009), 72-79.
- [7] F.J. Elgar, P.J. McGrath, D.A. Waschbusch, S. Stewart and L.J. Curtis, Mutual influences on maternal depression and child adjustment problems, *Clinical Psychology Review*, 24(2004), 441-459.
- [8] H. Heidari, M. Hasanpour and M. Fooladi, The experiences of parents with infants in Neonatal Intensive Care Unit, *Iranian Journal of Nursing and Midwifery Research*, 18(3) (2013), 208-213.
- [9] D. Holditch–Davis, T.R. Bartlett, A.L. Blickman and M.S. Miles, Post-traumatic stress symptoms in mothers of premature infants, *Journal of Obstetric Gynaecology and Neonatal Nursing*, 32(2) (2003), 161-171.
- [10] D. Holditch–Davis, M.S. Miles, W.A. Weaver, B. Black, L. Beeber, S. Thoyre and S. Engelke, Patterns of distress in African-American mothers of preterm infants, *Journal of Developmental Behaviour in Pediatrics*, 30(3) (2009), 193-205.
- [11] J.C. Hunter, Neonatal Intensive Care Unit, In J. Case – Smith (Ed.), *Occupational Therapy for Children* (4th ed.), St. Louis, MO: Mosby, (2001), 636-689.
- [12] S.Y. Lee and L.P. Kimble, Impaired sleep and well being in mothers with low birth weight infants, *Journal of Obstetric Gynecology and Neonatal Nursing*, 38(2009), 676-685.
- [13] C. Martins and E.A. Gaffan, Effects of early maternal depression on patterns of infant-mother attachment: A meta-analytic investigation, *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 4/6(2000), 737-746.
- [14] M.S. Miles and M.C. Carter, Assessing parental stress in intensive care units, *American Journal of Maternal Child Nursing*, 8(1983), 354-359.
- [15] M.S. Miles and S. Funk, *Parental Stressor Scale: Neonatal Intensive Care Unit*, Chapel Hill, NC: University of North Carolina, 1987.
- [16] M.S. Miles, S.G. Funk and J. Carlson, Parental stressor scale: Neonatal Intensive Care Unit, *Nursing Research*, 42(3) (1993), 148-152.
- [17] D. Shields–Poe and J. Pinelli, Variables associated with parental stress in neonatal intensive care unit, *Neonatal Network*, 16(1) (1997), 29-37.
- [18] H. Shin and W.R. Traut, The conceptual structure of transition to motherhood in the neonatal intensive care unit, *Journal of Advanced Nursing*, 58(2007), 90-98.
- [19] N. Syder-Greenberg and D. Dokkin, Coping and caring in different ways: Understanding meaningful involvement, *Pediatric Nursing*, 26(2) (2000), 185-190.
- [20] E. Trombini, P. Surcinelli, A. Piccioni, R. Alessandroni and G. Faldella, Environmental factors associated with the stress in mothers of preterm newborns, *Acta Paediatrica*, 97(2008), 894-898.
- [21] H. Wigert, R. Johansson, M. Berg and A.L. Hellstrom, Mothers' experiences of having their newborn child in a neonatal intensive care unit, *Scandinavian Journal of Caring Sciences*, 20(1) (2006), 35-41.