
Maternal Involvement in Pain Management in a Neonatal Unit at a Referral Hospital in Kenya

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Abstract

Introduction: Hospitalized neonates undergo many diagnostic and care-related painful procedures each day without adequate treatment. The sub-optimal treatment of pain occurs despite the empirical evidence that repeated and untreated pain has severe immediate and long-term consequences. The objectives of the study were to determine the level of maternal involvement in neonatal pain treatment and factors that influence maternal involvement during procedures.

Methods: This was a descriptive cross sectional study based in Nakuru Referral Hospital's Newborn unit among Mothers of hospitalized neonates. Data was collected using questionnaires among a sample of One hundred and two mothers.

Results: The mean age of respondents was 24.4 years (SD=6.0, range: 15-27). Two thirds of mothers had never been present during procedures while 85(87%) wished to be involved during painful procedures. Support from health care providers (HCPs) (OR=11.41, 95% CI [1.11-117.72], $p = .041$) and adequate space in the unit (OR=6.44, 95% CI [1.41-29.56], $p = .02$) influenced maternal involvement during painful procedures.

Conclusion: Mothers' level of involvement during painful procedures was low. Support by HCPs and adequacy of space in the unit significantly influenced maternal involvement during procedures. There is need for HCPs to consider mothers' views and to involve them in comforting neonates during painful procedures.

Key words: Neonate, pain treatment, involvement.

Introduction

The hospitalization experience for neonates is characterized by multiple and repeated painful procedures (Carbajal et al., 2008; Chen et al., 2012; Kyololo, Stevens, Gastaldo, & Gisore, 2014). The procedures cause pain at a time when the neonate is physiologically immature and developmentally vulnerable (Guedj et al., 2014). Epidemiological studies in high income countries in Europe (Simons et al., 2003), North America (Johnston, Barrington, Taddio, Carbajal, & Filion, 2011) and

Australia (Foster et al., 2013) show that neonates undergo 5-14 painful procedures each day. Neonates in low- and middle-income countries (LMICs) in Asian (Chen et al., 2012; Jeong, Park, Lee, Choi, & Lee, 2014), and sub-Saharan Africa (Linhares et al., 2012) undergo equally high number of painful procedures daily.

Despite the exponential increase in knowledge on neonatal pain and treatment strategies, procedural pain treatment remains inadequate globally (Carbajal et al., 2008; Kyololo, Stevens, Gastaldo, & Gisore, 2014;

Linhares et al., 2012; Johnston, Barrington, Taddio, Carbajal, & Filion, 2011). In European and North American settings less than 50% of painful procedures are performed with some form of pharmacological or non-pharmacological pain relief (Carbajal et al., 2008; Johnston, Barrington, Taddio, Carbajal, & Filion, 2011). Procedural pain is severely undertreated in neonatal units in LMICs in Asia (Chen et al., 2012) and in sub-Saharan countries like Kenya where painful procedures are performed without any form of pain relief (Kyololo, Stevens, Gastaldo, & Gisore, 2014).

The poor pain treatment practices continue despite the empirical evidence that repeated and untreated pain in neonates has deleterious immediate and long-term complications (Abdulkader, Freer, Garry, Fleetwood-Walker, & McIntosh, 2008; Brummelteet al., 2012). On the short-term, repeated and untreated pain lead to tachycardia, sleep disturbance, poor weight gain, increased consumption of oxygen, irritability, delayed healing (Cignacco et al., 2007; Bellieni et al., 2009). On the long-term untreated pain may result in poor brain development, exaggerated response to subsequent painful experience, and impaired behavioral and emotional disorders in childhood and early adolescent period (Abdulkader, Freer, Garry, Fleetwood-Walker, & McIntosh, 2008; Brummelteet al., 2012; Grunau, Holsti, & Peters, 2006; Zwicker, 2014; Ranger et al., 2015).

Mothers have been known to play a key role in the assessment and treatment of pain (e.g. through breastfeeding) but they are often overlooked and excluded by HCPs during painful procedures. Maternal involvement is very crucial during diagnostic and care related activities as mothers assist to identify pain cues and provide non – pharmacological pain interventions used in the neonatal unit, HCPs need to actively involve them during

the care of the neonates throughout the hospitalisation period. Therefore the study attempts to determine the level of maternal involvement in pain treatment and the factors that influence their involvement in pain care.

Methods

A descriptive cross-sectional survey was conducted among mothers of hospitalised neonates in Nakuru Referral Hospital in Western Kenya. Mothers were included in the study if they had completed at least 72 hours post-delivery and if their neonates were not terminally ill.

A researcher-administered questionnaire previously used to evaluate parental involvement in neonatal pain management was adopted for data collection. The tool was modified to reflect the local nomenclature of terms (e.g., umbilical catheterisation was replaced with intra-venous cannulation) before being reviewed by a team of content (neonatal pain) experts who found the questions appropriate for the study. The final version of the questionnaire consisted of a 10-item three-point Likert scale and open-ended questions. The questionnaire was pilot-tested in regional hospital and found to have a Cronbach's alpha value of 0.7.

The researcher approached mothers individually on discharge from the NBU and obtained consent before proceeding to administer the questionnaire. Data were scrutinized for completeness and accuracy of information at the end of every field day. Questionnaires were then coded and entered into Epidata 3.1 database and later exported to Statistical Package for Social Sciences (SPSS) version 20.0 for analysis. Chi-square test was used to check for significant relationship between categorical variables and parental involvement while independent samples t-test was used to compare means for continuous variables (e.g., age of mother, years of training). Logistic regression was

used to identify significant predictors of parental involvement in neonatal pain treatment. For all statistical tests, a p -value < 0.05 was considered to be statistically significant.

Results

One hundred and two mothers completed the questionnaire. The mean age of respondents was 24.4 years (SD=6.0) with mean duration of hospitalization of 8 days (SD= 5.0). More than half of the mothers (59%) had secondary education, 22.5% had primary education while the rest (18 %) had tertiary education. None of the respondents had prior hospitalization experience.

Maternal Involvement in Pain management

Majority of the mothers (87 %, n =85) preferred to be involved during painful procedures while only two thirds were

present during procedures. Although a majority of the mothers (70.6%, n = 72/102) had never been asked to be present during procedures, most (76.5%, n = 78/102) preferred to stay and assist in providing comfort to the neonate during procedures. Additionally, majority of the mothers (93.1%, n = 95 /102) reported to have been shown strategies of comforting their neonates during procedures including, positioning (38.4%, n =93/242) breastfeeding (38.8%, n = 94/242) and swaddling (13.6 %, n =33/242) (*respondents gave multiple responses*).

Table 1: Factors influencing maternal involvement

Factor	Involved		Statistic	P-value
	Yes	No		
HCP support	1.65± 0.8	1.47± 0.5	T= 0.92	.36
Adequacy of the new born unit				
	Yes 53 (89.8%)	6 (10.2%)	$\chi^2= 6.61$.01
	No 30 (69.8%)	13 (30.2%)		
Verbal info received				
	A lot 5(100%)	0(0%)	$\chi^2= 8.88$.01*
	Some 45(91.8%)	4(8.2%)		
	None 33(68.8%)	15 (31.2%)		
Parental presence				
	Never 26(74.3%)	9(25.7%)	$\chi^2=2.63$.25
	Sometimes 49(83.1%)	10(16.9%)		
	Always 8(100%)	0(0%)		
Asked to be present				
	Never 59(81.9%)	13(18.1%)	$\chi^2=3.97$.14
	Sometimes 21(87.5%)	3(12.5%)		
	Always 3(50%)	3(50%)		
Stage of involvement				
	When baby was very sick 1(3.3%)	29(96.7%)	$\chi^2=6.56$.01
	Other times 18(25%)	54(75%)		

* = Fisher's exact tests

Factors Influencing Maternal Involvement:

Receipt of verbal information about pain relief in infants and adequacy of the unit was significantly associated with maternal involvement during procedures. On the other hand, parental presence during procedures was not associated with involvement (Table 1).

Multiple logistic regression analysis was done to control for the influence of each independent variable (staff attitude, severity of a child illness, Adequacy of space in the unit and availability of information) on the dependent variable (maternal involvement in

neonatal pain treatment). Adequacy of the unit was a significant predictor of maternal involvement; mothers who reported that the unit was adequate were 6 times more likely to be involved in neonatal pain treatment compared to those who reported otherwise (OR = 6.44, 95% CI [1.41, 29.5], $p = .02$). Those who reported that they were “sometimes” (OR = 11.41, 95% CI [1.11, 117.72], $p = .04$) or “always” (OR = 14.12, 95% CI [1.13, 176.11], $p = .04$) asked to be present during procedures were more likely to be involved in pain treatment as shown in Table 2.

Table 2: Multiple logistic regression

Factor	Regression coefficient (β)	S.E	p-value	AOR	95% CI for OR
Asked to be present					
(ref = Never)					
Sometimes	2.44	1.19	0.04	11.41	1.11-117.72
Always	2.65	1.29	0.04	14.12	1.13-176.11
Age	0.03	0.09	0.70	1.03	0.87-1.22
HCP support	0.58	0.53	0.28	1.78	0.63-5.08
Number of Years in Training	0.01	0.11	0.93	1.01	0.82-1.24
Parental Presence during Procedures	-0.93	0.75	0.22	0.40	0.09-1.71
Stage of involvement					
Baby Very Sick	0.89	1.22	0.47	2.44	0.22-26.82
Adequacy of the Unit	1.86	0.78	0.02	6.45	1.41-29.56
Provision of Verbal information (Yes)	1.23	0.78	0.11	3.41	0.75-15.60
Preference (Stay at bedside)	-0.07	0.77	0.93	0.93	0.21-4.22

AOR=Adjusted Odds Ratio

Discussion

One third of mothers had never been present during painful procedures which differ significantly with the findings of a UK study (Franck et al., 2004) where only one tenth of parents were never present during procedures. Additionally, we showed that three quarter of the mothers preferred to remain at the bedside and to be involved during procedures which is consistent with the finding in UK (Franck et al., 2004) where

more than half of the parents preferred to remain at the bedside and to be actively involved to comfort neonates during procedures.

Furthermore, we found that 70% of the mothers had never been asked to be present during painful procedures which are inconsistent with findings of studies in high-income countries (Franck et al., 2004, Duran et al., 2007). In UK for instance, more than half of the mothers reported that they had

never been asked to be present during procedures (Franck, et al., 2004). Studies have shown that health care providers prefer doing procedures in the absence of parents because of the concern that parents may question their care practices (Kaberich et al., 2010) which may explain why mothers in both low and high-income countries are rarely requested to be present during procedures.

Adequacy of the unit significantly predicted maternal involvement ($p=.02$); mothers who reported that the unit was adequate were 6 times more likely to be involved in neonatal pain treatment compared to those who reported otherwise. This was similar to a study in Europe (Wigert, Hellström, & Berg, 2008) where the presence of complex medical equipment resulted in unfriendly environment which was a barrier to parental involvement.

Staff attitude was found to be a significant predictor to maternal involvement in pain treatment, mothers who were “sometimes” or “always” asked to be present during procedures were more likely to be involved

in pain treatment as compared to those who were never asked to be present during procedures. This finding however differs with a study in USA (Abdulkabi et al., 2011) among 100 nurses which indicated HCPs’ negative attitude towards maternal involvement during therapeutic procedures. They further reported lack of time to direct and observe mothers during procedures.

Conclusion and Recommendations

Majority of mothers desired to be actively involved during painful procedures. Support accorded by the HCPs and adequacy of space in the NBU influence maternal involvement in procedural pain care. Efforts to create awareness among HCPs on the importance of involving parents during painful procedures are merited. Since the study involved mothers only, there is need to carry out similar studies involving fathers to understand their views regarding procedural pain in hospitalized neonates. Furthermore, similar single and multisite studies should be replicated in other settings to explore the study question further.

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