Separating Newborns from Mothers and Maternal Consent for Newborn Care and the Association with Health Care Satisfaction, Use and Breastfeeding: Findings from a longitudinal survey in Kenya

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Abstract

Objectives Disrespectful and poor treatment of newborns such as unnecessary separation from parents or failure to obtain parental consent for medical procedures occurs at health facilities across contexts, but little research has investigated the prevalence, risk factors, or associated outcomes. This study aimed to examine these practices and associations with health care satisfaction, use, and breastfeeding.

Design Prospective cohort study

Setting Health facilities in Nairobi and Kiambu counties in Kenya

Participants Data were collected from women who delivered in health facilities between September 2019 and January 2020. The sample included 1,014 women surveyed at baseline and at least one follow-up at 2-4 or 10 weeks postpartum.

Primary and secondary outcome measures 1) Outcomes related to satisfaction with care and care utilization, 2) Continuation of post-discharge newborn care practices such as breastfeeding.

Results 17.6% of women reported being separated from their newborns at the facility after delivery, of whom 71.9% were separated over 10 minutes. 44.9% felt separation was unnecessary and 8.4% reported not knowing the reason for separation. 59.9% reported consent was not obtained for procedures on their newborn. Women separated from their newborn (>10 minutes) were 44% less likely to be exclusively breastfeeding at 2-4 weeks (aOR=0.56, 95%CI: 0.40, 0.76). Obtaining consent for newborn procedures corresponded with 2.7 times greater likelihood of satisfaction with care (aOR=2.71, 95%CI: 1.67, 4.41), 27% greater likelihood of postpartum visit attendance for self or newborn (aOR=1.27, 95%CI: 1.05, 4.41), and 33% greater likelihood of exclusive breastfeeding at 10 weeks (aOR=1.33, 95%CI: 1.10, 1.62).

Conclusions Newborns, mothers, and families have a right to high quality, respectful care, including the ability to stay together, be informed and have proper consent for care. The implications of these practices on health outcomes a month or more after discharge illustrate the importance of a positive experience of postnatal care.

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Article Summary
Strengths and Limitations of the Study
- This is one of the first studies to include survey questions surrounding details of separation of newborns from mothers and maternal consent for care, including risk factors and reasons for separation.
- This study used longitudinal data collected over 10 weeks following delivery to assess associations with outcomes, including postpartum visit attendance and breastfeeding.
- Differences in participants who responded to the 2-4week and 10 week follow-up interviews may have introduced bias due to differences in composition, thus comparisons of associations with outcomes between these two points should be interpreted conservatively.
- Findings may have limited generalizability to other contexts, as the study sample included women who gave birth at facilities in Nairobi and Kiambu counties.

INTRODUCTION

The first month of life constitutes the most vulnerable time for a child's survival. Globally, 2.5 million children die within the first 28 days of life at a rate of 18 deaths per 1,000 live births.[1] Kenya has made notable progress in reducing neonatal mortality in recent years, [2] but with its current neonatal mortality ratio of 19.6 deaths per 1,000 live births, Kenya is unlikely to reach the 2030 Sustainable Development Goal target of 12 deaths per 1,000 live births.[3] Yet, substantial progress can still be made: over 80% of newborn deaths are considered preventable, highlighting the critical need to improve the quality of maternal and newborn care.[4]

Efforts to enhance the quality of maternity care have drawn attention to women's experience of care, including respect and dignity. The WHO Vision on Quality of Care for maternal and newborn health outlines two essential, interlinked dimensions of Quality of Care: provision of care and experience of care.[5] Integrally, quality care, in addition to being safe, effective,

timely, and efficient, must also be equitable and people-centered. Experience of care includes

effective communication, respectful and dignified treatment, and access to emotional support.

Evidence indicates that across contexts, many women experience mistreatment and abuse,[6–11]

and lack access to the support person(s) of their choice during labor and delivery.[12–14]

Negative experiences of care not only contribute to dissatisfaction with care,[15–17] but may

deter women from seeking future health services.[18–22] However, the corresponding elements

of quality newborn care and the health impact of these experiences have been under-researched.

WHO recommendations for newborn care include skin-to-skin care, early and exclusive

breastfeeding, thermal and umbilical care, delayed bathing, and maintaining the newborn with

family as much as possible.[23] These practices are especially important for preterm and low

birth weight infants, who are more vulnerable to mortality and morbidity. It is also recommended

that families receive breastfeeding support, counseling on danger signs, and exams of the infant

and cord before discharge. Communication, consent, and respect for autonomy are important

components of a positive experience of care. But, efforts to improve the quality of newborn care

have often focused on provision of care with low or no priority on experience of care.[24]

Research on experiences of newborn care (consent for procedures or exams, mistreatment and

neglect, and separating infants from mothers or caregivers when not medically necessary)

represents a notable gap in literature.

Evidence indicates that despite newborns' inability to exercise autonomy or verbally express

needs, positive experiences of care center around their relationship and connection with their

mothers and caregivers. A strong mother-infant relationship forms the foundation for infant

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health and development, and the period after birth is especially important.[25] Immediately

following birth, infants display highly specialized attachment and bonding behaviour towards

their mothers,[26,27] and sensory connections with mothers form a strong basis for the

regulation of their physiological systems.[28] For example, research on skin-to-skin contact

(SSC) after birth has shown that early sensory connections improve many physical,

psychological, and care outcomes, such as maintenance of newborn temperature,[30] stable

respiratory and cardiac function,[31] organization of sleep cycles,[32] development of

neurophysiological systems,[33,34] and reducing newborn stress.[30,35] In contrast, separation

of mothers and infants hinders attachment, induces stress and behaviors that alter physiological

processes resulting in an altered developmental trajectory.[28,29]

This highlights newborns' needs to effectively bond with family, receive attentive care, and be

kept warm and treated gently. Sensory cues from infants–suckling, sight, smell, sounds–also

stimulate maternal neurobiological processes which subsequently affect maternal mental health

and caregiving. [37–39] Evidence also suggests that the benefits of early bonding likely extends

to other caregivers as well, such as fathers, with implications for future involvement in care.[40]

Fostering the mother-infant bond after birth also has profound implications for early and long-

term breastfeeding. Mother-infant interactions stimulate maternal milk production and prepare

infants to breastfeed by downregulating the neuroendocrine stress response and activating blood

glucose regulation.[41,42] The evidence of a link between close maternal-infant contact and

breastfeeding is compelling: mother-infant pairs who engaged in SSC after birth were more

likely to successfully breastfeed during their first feed, continue breastfeeding after 1-4 months

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post-birth, score higher on breastfeeding effectiveness, and breastfeed exclusively and for longer durations when compared to those without SSC.[30,43] This underscores the need to foster mother-infant interactions and minimize unnecessary interventions in maternity care.

Lack of information and informed consent have been cited as factors contributing to traumatic experiences and dissatisfaction in maternity care.[44–46] Lack of consent for women's care is regarded as an essential component of respectful care, but consent for procedures performed on newborns has rarely been studied. Because infants are completely dependent upon their caregivers, caregivers are essential advocates to ensure safe and gentle medical care. Parents (or designated legal guardians) should be the decision-makers regarding their infants' care, and it is likely that women and families value the ability to make informed decisions and advocate for their newborns' care.

There are indications that poor treatment of newborns in facility-based maternity care occurs, including preliminary documentation of prevalence of certain types of occurrences. Recent literature has brought attention to the prevalence of practices such as unnecessary separation of newborns from mothers, neglect (absence of care), and non-consent for procedures.[7,10,47] However, these practices have seldom been examined as primary indicators and available information has emerged from secondary data from other studies. A multi-country African study on treatment of women included observations of newborns in the first two hours after birth and found that over half of newborns were separated from their mothers within the first two hours, with higher prevalence among single and less educated women.[48] However, while some studies have documented high prevalence of these practices and inequities in care, it remains

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unclear how they are associated with other measures of quality care or outcomes (e.g. positive experiences of care, health behaviors, or health outcomes). Moreover, evidence suggests that person-centered maternity care is consequential for newborn health. One recent study in Kenya found that women's poor experiences of care were associated with increased report of newborn complications and lower likelihood of attending future medical visits.[52] To our knowledge, no previous studies have linked disrespectful neonatal care practices, namely separation of newborns from mothers and lack of parental consent for newborn procedures, to health outcomes. This study aims to address these gaps.

Further research is needed to explore how newborn care practices, and the implementation of institutional policies and provider practices, impact maternal and neonatal outcomes.[41,53] The aim of this study was to investigate the prevalence, risk factors, and outcomes associated with newborn care practices, namely separating newborns from mothers and parental consent for newborn care, in several facilities in Kenya. In this study, we examined these practices using data from the Strengthening Person-Centered, Accessibility, Respectful Care, and Quality Study (SPARQ) in Kenya. In addition to investigating the extent to which these practices occur, we sought to understand underlying risk factors and whether certain groups were at greater risk (i.e. 'discriminatory' practices). We also examined details surrounding newborn separation, including the duration and reasons for separation, and other newborn care practices such as SSC and breastfeeding support. Finally, we sought to understand the consequences of these practices on maternal and newborn health outcomes: satisfaction with care, postpartum care attendance, and breastfeeding.

METHODS

Setting

This longitudinal study was conducted between September 2019 and January 2020 across six health facilities within Nairobi and Kiambu Counties, Kenya. The facilities varied in type (four public and two private) and size (medium to large referral hospitals ranging from 100 to 900 reported deliveries per month). The facilities were conveniently selected based on their location within the two counties, reported deliveries of at least 100 per month, and the facility administration's willingness to participate in the study.

Data collection and recruitment

A team of twenty-four enumerators were involved in data collection, who had previous quantitative and research ethics training. The baseline survey was pre-tested with women who had recently delivered in four facilities (two of which were study facilities) to identify any issues with question flow or understanding via interviewing. The follow-up phone surveys were also pre-tested with this sample.

All surveys were administered in a private space within the facility to ensure confidentiality and privacy. Follow-up surveys were conducted by phone, ensuring privacy to maintain confidentiality.

Women were enrolled in the study postpartum when recovering in the maternity ward or at discharge before exiting the facility, all within 48 hours after birth. Women provided written

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informed consent. Participants were also administered follow-up phone surveys between 2-4 weeks and/or 10 weeks postpartum. Participants were given airtime credit of approximately $2.00 for the baseline and $0.50 for each follow-up as a token of appreciation.

Analysis

The analytic sample included 1,014 women who completed baseline and at least one follow-up interview (Supplement 1). Data for exclusive breastfeeding were missing from 3 women in the 2-4 week follow-up and 4 women in the 10 week follow-up resulting in an analytic sample for exclusive breastfeeding of 829 and 839 participants in the 2-4 week and 10 week follow-up, respectively.

Variables examined are presented in Table 1. Our outcomes of interest included *Satisfaction with newborn care* measured at baseline, and *Attendance of post-partum check-up,* and *Exclusive breastfeeding* measured at follow-up. Primary independent variables were *Newborn separation, Newborn separation >10 minutes,* and *Consent for newborn procedures*. We examined descriptive characteristics of all women in the sample. We explored sociodemographic characteristics of the participants including age, parity, marital status, education, employment, woman's birthplace, insurance status, and facility type. We examined maternal health indicators of self-rated health status, maternal complications at delivery, and report of maternal complications since discharge. Newborn health characteristics were also explored, including birthweight, gestational age, and report of newborn complications at baseline and after discharge. Lastly, we examined other measures of care received using a *Clinical quality index* and a *Breastfeeding care index* based on WHO standards of care.[23]

Table 1. Definition of variables

Indicator	Question/Measure	Values
Outcome Indicators		
Satisfaction with newborn care	In general, how satisfied were you with the services and care your newborn received after delivery?	"Satisfied or very satisfied" vs. "Dissatisfied or very dissatisfied"
Attendance of post-partum check-up	Have you attended any postpartum visits since being discharged? [1]	"Yes" vs. "No"
Exclusive breastfeeding	How were you feeding your baby? [1]	Fed infant with breastmilk only vs. fed with any other substances
Newborn separation and consent indicators		
Newborn separation	Was your baby ever separated from you by doctors, nurses, or other health providers for any reason?	"Yes" vs. "No"
Newborn separation >10 minutes	Was your baby ever separated from you for more than 10 minutes?	"Yes" vs. "No"
Consent sought for newborn procedures	Did the doctors, nurses, or other providers ask you for your permission before doing procedures or examinations on your baby?	"Yes" vs. "No"
Other variables		
Clinical quality index	Summative score comprising 7 newborn care questions indicating whether specific procedures were performed (skin-to-skin contact after birth; infant exam after delivery; infant dried after birth; delayed bathing; cord examination; temperature assessment; and mother/family counseled on newborn danger signs)	Range 0-7
Breastfeeding care index	Summative score of 3 indicators of breastfeeding support at the facility. (i.e. provider checked breastfeeding within two hours of delivery; mother/family counseled about breastfeeding; brestfeeding observed or shown.	Range 0-3

[1]Postpartum visit could have been for either maternal or newborn health.

Bivariate analyses investigated relationships between newborn care indicators and outcomes using chi-square and t-tests. We conducted multivariate logistic regression analyses assessing associations between newborn separation and consent indicators and described outcomes. Analyses adjusted for factors that may theoretically confound associations including age, parity, marital status, education, employment, birthplace, health facility type, insurance status, self-rated health, and clinical care index score. Analyses for *Satisfaction with newborn care* also adjusted

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for maternal and newborn complications at baseline and analyses for outcomes measured at follow-up interview were adjusted for maternal and newborn complications since discharge. Models for breastfeeding outcomes also adjusted for breastfeeding care index score. Cluster robust standard errors were used to account for clustering by facility. Model specification was tested using link tests and model fit was tested by Hosmer-Lemeshow goodness-of-fit tests. Sensitivity analyses examined potential effects of preterm birth and low birthweight, but no evidence of confounding was found. Analyses were performed using STATA/SE 15.1.

Ethics Approval

All study procedures were approved by the Institutional Review Boards at the University of California, San Francisco (protocol number 19-27783) and the Kenya Medical Research Institute (Protocol KEMRI Non-SSC 666). Informed consent was obtained from all participants prior to participation.

Patient and public involvement

Patients and the general community were not involved in the design, recruitment, or conduct of this study. During the consent process, participants were informed that they would not directly benefit from their participation or be involved in the dissemination of the study results. Study results will be shared with facilities in order to improve their service delivery.

RESULTS

Descriptive characteristics of the sample of 1,014 women, stratified by reports of *newborn*

separation, newborn separation >10 minutes, and consent sought for newborn procedures, are

presented in Table 2.

Women who were separated from their newborn more than 10 minutes tended to be slightly

older (p=0.036) and not born in Nairobi or Kiambu counties (p=0.043) compared to women

reporting separation for less than 10 minutes or no separation. A greater proportion of women at

government hospitals were separated from their newborns compared to women at government

health clinics or private facilities (p<0.001). Delivery complications were also positively

associated with newborn separation (p=0.004) and separation for more than 10 minutes

(p=0.025).

Women who were asked permission for newborn procedures and examinations were older

(p=0.026) and more likely to be covered under a health scheme or health insurance (p=0.028)

than those who were not asked for permission.

Table 2. Descriptive characteristics of women included in the sample by reports of newborn separation, newborn separation for more than 10 minutes, and consent sought for newborn procedures (n=1,014)

| Characteristics | Total | Newborn separated | | | Newborn separated >10min | | | Consent for newborn procedures[1] | | |
		Not separated	Separated	p-value	Not separated/ separated ≤10min	Separated >10min	p-value	Did not ask for permission	Asked for permission	p-value
Total number in group	1014	836	178		886	128		607	406	
Age (mean)	25.7	25.58	26.11	0.202	25.55	26.54	0.036	25.38	26.1	0.026
SD	(5.01)	(4.97)	(5.19)		(4.95)	(5.32)		(4.96)	(5.05)	
Parity (mean)	2.0	2.00	2.16	0.050	2.01	2.22	0.021	2.02	2.04	0.714
SD	(0.98)	(0.97)	(1.02)		(0.97)	(1.03)		(0.98)	(0.98)	
Multiparous										
No	35.7%	36.7%	30.9%	0.141	36.7%	28.9%	0.086	36.1%	35.2%	0.780

| Characteristics | Total | Newborn separated | | | Newborn separated >10min | | | Consent for newborn procedures[1] | | |
		Not separated	Separated	p-value	Not separated/ separated ≤10min	Separated >10min	p-value	Did not ask for permission	Asked for permission	p-value
Yes	64.3%	63.3%	69.1%		63.3%	71.1%		63.9%	64.8%	
Currently married or partnered										
No	81.8%	18.7%	16.3%	0.458	18.2%	18.8%	0.874	19.1%	17.0%	0.393
Yes	18.2%	81.3%	83.7%		81.8%	81.2%		80.9%	83.0%	
Educational attainment										
Primary or less	43.7%	43.8%	43.3%	0.894	44.0%	41.4%	0.855	44.8%	41.9%	0.267
Vocational/	39.6%	39.4%	41.0%		39.4%	41.4%		40.0%	39.2%	
College/University	16.7%	16.9%	15.7%		16.6%	17.2%		15.2%	19.0%	
Currently employed										
No	59.5%	59.0%	61.8%	0.486	59.7%	57.8%	0.683	61.6%	56.4%	0.098
Yes	40.5%	41.0%	38.2%		40.3%	42.2%		38.4%	43.6%	
Born in Nairobi or Kiambu Counties										
No	78.0%	76.8%	83.7%	0.043	77.3%	82.8%	0.160	77.6%	78.6%	0.713
Yes	22.0%	23.2%	16.3%		22.7%	17.2%		22.4%	21.4%	
Self-rated health status										
Excellent or very good	34.7%	33.5%	40.4%	0.043	34.1%	39.1%	0.144	33.3%	36.9%	0.502
Good	40.4%	42.5%	30.9%		41.6%	32.0%		40.4%	40.4%	
Fair	15.7%	15.2%	18.0%		15.0%	20.3%		16.8%	14.0%	
Poor or very poor	9.2%	8.9%	10.7%		9.3%	8.6%		9.6%	8.6%	
Maternal Complications during delivery										
No	93.6%	94.6%	88.8%	0.004	94.2%	89.1%	0.025	92.9%	94.6%	0.289
Yes	6.4%	5.4%	11.2%		5.8%	10.9%		7.1%	5.4%	
Reported maternal complications at follow-up										
No	86.1%	86.4%	84.8%	0.592	86.0%	86.7%	0.827	85.3%	87.2%	0.403
Yes	13.9%	13.6%	15.2%		14.0%	13.3%		14.7%	12.8%	
Covered under health scheme or health insurance										
No	14.0%	13.9%	14.6%	0.799	13.9%	14.8%	0.77	16.0%	11.1%	0.028
Yes	86.0%	86.1%	85.4%		86.1%	85.2%		84.0%	88.9%	
Facility type										
Gov't hospital	73.9%	70.8%	88.2%	<0.001	71.7%	89.1%	<0.001	74.3%	73.2%	0.881
Gov't Health Centre/Dispensary	12.0%	13.9%	3.4%		13.4%	2.3%		12.0%	12.1%	
Private facility	14.1%	15.3%	8.4%		14.9%	8.6%		13.7%	14.8%	

[1] N=1,013 (1 refused to answer)

Table 3 displays newborn characteristics and other clinical and breastfeeding care indicators by reported experience of newborn separation and consent sought for newborn care. 17.6% of women reported being separated from their newborns while at the health facility. Among those women (n=178), the majority reported separation longer than 10 minutes (71.9%) and nearly half felt separation was unnecessary (44.9%). Most of those separated reported that their newborn

was separated for procedures or examination (82.6%), but 8.4% reported that they did not know

or were not told.[1] During separation, only one-in-five (19.6%) were able to have another parent,

family member, or caregiver remain present with the newborn. Almost two-thirds of women

(59.9%) reported that health providers did not ask permission before performing procedures or

examinations on their newborn.

More newborn complications were reported among those separated than those who were not

(p<0.001). Mothers who were separated from their newborns were more likely to have their

infant examined after delivery than not (p=0.049) but were less likely to have a provider: ask

consent before newborn procedures or exams (p=0.023), check if breastfeeding was going well

(p=0.048), or observe or demonstrate how to breastfeed (p=0.013). Almost all indicators of better

clinical and breastfeeding care, such as skin-to-skin contact, newborn exam after delivery,

newborn wiped, cord examination, temperature assessment, counseling on danger signs for

newborns, and breastfeeding checks, counseling, and observation, were positively associated

with consent sought for newborn procedures (Supplement 2). Among the full sample, the mean

clinical quality index score was 4.14 (SD 1.37) out of 7. Those who were asked permission for

newborn procedures had a mean clinical quality of care index of 4.64 (SD 1.17) compared to

3.81(SD 1.38) among those who were not asked permission (p<0.001). The mean breastfeeding

care index score among those who were asked permission was 2.3 (SD 0.94) out of 3 compared

to 1.79 (SD 1.10) for those who were not asked permission (p<0.001).

Table 3. Distributions of newborn characteristics and newborn care indicators by reports of newborn separation and newborn consent indicators (n=1,014)

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[1] Of those who reported "Don't know," 80.0% reported being satisfied with newborn care. In comparison, 94.1% of the total sample reported being satisfied with newborn care.

| Variable | Total | Newborn separation | | | Newborn separation >10min | | | Consent sought for newborn procedures[1] | | |
		Not separated	Separated	p-value	Not separated or separated ≤10min	Separated >10min	p-value	Did not ask for permission	Asked for permission	p-value
Total number in group	1014	836	178		886	128		607	406	
Health indicators										
Birth weight										
Low BW (<2.5kg)	2.3%	2.2%	2.8%	0.002	2.3%	2.3%	<0.001	2.8%	1.5%	0.588
Normal BW (2.5-4.0kg)	89.3%	90.8%	82.6%		90.6%	80.5%		88.8%	90.2%	
Macrosomia (>4.0kg)	2.2%	2.2%	2.3%		2.1%	2.3%		1.7%	3.0%	
Missing	6.2%	4.9%	12.4%		5.0%	14.8%		6.8%	5.4%	
Preterm										
Not preterm (GA 38 weeks or more)	77.4%	77.2%	78.7%	0.418	77.3%	78.1%	0.266	77.9%	76.9%	<0.001
Yes, preterm (GA 37 weeks or less)	22.4%	22.7%	20.8%		22.6%	21.1%		21.9%	23.2%	
Missing	0.2%	0.1%	0.6%		0.1%	0.8%		0.2%	0.0%	
Newborn complications reported at baseline										
Healthy, no issues	96.3%	97.5%	90.5%	<0.001	97.5%	87.5%	<0.001	96.4%	96.1%	0.929
Complications	3.6%	2.4%	9.6%		2.4%	12.5%		3.5%	3.9%	
Missing[2]	0.1%	0.1%	0.0%		0.1%	0.0%		0.2%	0.0%	
Newborn complications reported since discharge										
No complications	67.8%	68.2%	65.7%	0.525	68.1%	65.6%	0.582	68.0%	67.2%	0.790
Complications	32.3%	31.8%	34.3%		31.9%	34.4%		32.0%	32.8%	
Newborn care indicators										
Newborn separation										
No	82.4%	---	---		---	---		80.9%	85.%	0.093
Yes	17.6%	---	---		---	---		19.1%	15.%	
Consent sought for newborn procedures										
No	59.9%	58.7%	65.2%	0.023	58.9%	66.4%	0.007	---	---	
Yes	40.0%	41.3%	34.3%		41.1%	32.8%		---	---	
Refused to answer	0.1%	0.0%	0.6%		0.0%	0.8%		---	---	
Of those who were separated from newborns (n=178)										
Newborn separation > 10 min										
No	4.9%	---	28.1%		---	---		26.7%	31.1%	0.534
Yes	12.6%	---	71.9%		---	---		73.3%	68.9%	
Was your baby separated from you by doctors, nurses, or other health providers to perform procedures and examinations?										
No	1.6%	---	9.0%		14.0%	7.0%	0.344	8.6%	9.8%	0.868
Yes	14.5%		82.6%		78.0%	84.4%		82.8%	83.6%	
Don't know	1.5%		8.4%		8.0%	8.6%		8.6%	6.6%	
Did you ever feel that it was not necessary for your baby to be separated from you?										
No	9.7%	---	55.1%		60.0%	53.1%	0.407	53.4%	59.0%	0.479
Yes	7.9%	---	44.9%		40.0%	46.9%		46.6%	41.0%	
If you were ever unable to be with your newborn, was another parent, family members, or caregiver able to be with your baby?										
No	14.2%	---	80.9%		78.0%	82.%	0.539	87.1%	68.9%	0.003
Yes	12.6%	---	19.1%		22.0%	18.%		12.9%	31.1%	
Other care indicators										
Clinical quality index										
Mean	4.14	4.14	4.15	0.965	4.13	4.20	0.637	3.81	4.64	<0.001

| Variable | Total | Newborn separation | | | Newborn separation >10min | | | Consent sought for newborn procedures[1] | | |
		Not separated	Separated	p-value	Not separated or separated ≤10min	Separated >10min	p-value	Did not ask for permission	Asked for permission	p-value
SD	(1.37)	(1.35)	(1.45)		(1.36)	(1.40)		(1.38)	(1.17)	
Breastfeeding care index										
Mean	2.00	2.04	1.80	0.006	2.01	1.88	0.173	1.79	2.30	<0.001
SD	(1.07)	(1.05)	(1.13)		(1.06)	(1.10)		(1.10)	(0.94)	

[1] Sample size, N=1,013 (1 refused to answer)

[2] For analyses, one missing response for newborn complications was recoded as "healthy, no issues."

The distributions of outcomes by reports of newborn separation, separation for more than 10 minutes, and consent sought for newborn procedures are presented in Table 4. Women who were asked permission for newborn procedures were more likely to be satisfied with care (p<0.001) and attend a postpartum visit after discharge (p<0.001) than those who were not asked permission.

Table 4. Distributions of outcomes by reports of newborn separation, separation for more than 10 minutes, and consent sought for newborn procedures (n=1,014)

| Outcomes | Total | Newborn separated | | | Newborn separated >10min | | | Consent sought for newborn procedures[1] | | |
		Not separated	Separated	p-value	Not separated or separated ≤ 10min	Separated >10min	p-value	Did not ask for permission	Asked for permission	p-value
Total number in group	1014	836	178		886	128		607	406	
Satisfaction with newborn care										
Dissatisfied	5.9%	6.1%	5.1%	0.592	6.1%	4.7%	0.528	8.4%	2.0%	<0.001
Satisfied	94.1%	93.9%	94.9%		93.9%	95.3%		91.6%	98.0%	
Attended postpartum visit after discharge, within 10 weeks										
No, did not attend	53.1%	53.5%	51.1%	0.569	53.4%	50.8%	0.581	57.7%	46.1%	<0.001
Yes, attended	46.9%	46.5%	48.9%		46.6%	49.2%		42.3%	53.9%	
Exclusively breastfeeding at 2-4 week follow-up [2]										
No	9.0%	8.5%	11.9%	0.193	8.5%	13.%	0.128	9.8%	8.0%	0.373
Yes	91.0%	91.5%	88.1%		91.5%	87.%		90.2%	92.0%	
Exclusively breastfeeding at 10 week follow-up [3]										

No	18.0%	17.7%	19.6%	0.577	17.6%	21.0%	0.399	20.1%	15.0%	0.058
Yes	82.0%	82.3%	80.4%		82.4%	79.0%		79.9%	85.0%	

[1] Sample size, N=1,013 (1 refused to answer)

[2] Sample size, N=829 (women who completed 2-4 week follow-up and reported on exclusive breastfeeding)

[3] Sample size, N=839 (women who completed 10 week follow-up and reported on exclusive breastfeeding)

Results of multivariate analyses examining associations between reports of newborn separation, consent sought for newborn procedures, and health outcomes are presented in Table 5. Among women reporting any newborn separation during care, there was a negative to no association with exclusive breastfeeding at 2-4 weeks (aOR=0.67, 95%CI: 0.41, 1.09). However, women who reported separation from their newborn longer than 10 minutes were 44% less likely to be exclusively breastfeeding at 2-4 weeks compared to those reporting less than 10 minutes or no separation (aOR=0.56, 95%CI: 0.40, 0.76). No associations were found with satisfaction with newborn care, postpartum visit attendance, or exclusive breastfeeding at 10 weeks.

Consent sought for newborn procedures was positively associated with satisfaction with newborn care at baseline, attending a postpartum visit by 10 weeks, and exclusive breastfeeding at 10 weeks. Women whose providers asked for permission before performing newborns' procedures or examinations were 2.7 times more likely to be satisfied with care (aOR=2.71, 95%CI: 1.67, 4.41) and were also 27% more likely to attend a postpartum visit by either 2-4 weeks or 10 weeks (aOR=1.27, 95%CI: 1.05, 4.41) after controlling for covariates. Consent for newborn procedures displayed no association with exclusive breastfeeding at 2-4 weeks (aOR=1.06, 95%CI: 0.78, 1.44), but was associated with a 33% increased likelihood of exclusive breastfeeding at 10 weeks (aOR=1.33, 95%CI: 1.10, 1.62) even after controlling for breastfeeding care index, and other previously described covariates.

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Table 5. Results of multivariate logistic regression analyses examining the associations between separation, consent for newborn care, and maternal and newborn outcomes (n=1,014)

Outcome	Newborn separated from mother	Newborn separated for more than 10 minutes	Consent sought for newborn procedures [1]
	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)
Satisfaction with newborn care at baseline *(ref. not satisfied)*	1.34 (0.75, 2.41)	1.36 (0.57, 3.28)	2.71 (1.67, 4.41)***
Attended a post-partum visit, within 10 weeks *(ref. no visit)*	1.14 (0.96, 1.35)	1.11 (0.86, 1.43)	1.27 (1.05, 1.55)*
Exclusively breastfeeding at 2-4 weeks [2] *(ref. not exclusively breastfed)*	0.67 (0.41, 1.09)	0.56 (0.40, 0.76)**	1.06 (0.78, 1.44) [3]
Exclusively breastfeeding at 10 weeks [4] *(ref. not exclusively breastfed)*	0.76 (0.49, 1.18)	0.66 (0.39, 1.10)	1.33 (1.10, 1.62)**

Note: All estimates of odds ratios (and 95% confidence intervals) were adjusted for age, multiparity, marital status, education, employment, women's birthplace, facility type, insurance status, health status, and clinical quality of care index. Satisfaction with newborn care models also adjusted for maternal complications and newborn complications at baseline. Breastfeeding outcome models also adjusted for breastfeeding care index, newborn complications at baseline, and both newborn and maternal complications after discharge. Post-partum visit models also adjusted for maternal and newborn complications after discharge. Cluster robust standard errors were used to account for clustering by facility.
[1] Sample size, N=1,013 (women who reported consent sought for newborn procedures, excluded 1 missing response)
[2] Sample size, N=829 (women who completed 2-4 week follow up survey and reported exclusive breastfeeding status)
[3] Sample size, N=828 (women who completed 2-4 week follow up survey and reported exclusive breastfeeding status, excluded 1 missing response for consent sought for newborn procedures)
[4] Sample size, N=839 (women who completed 10 week follow up survey and reported exclusive breastfeeding status)
*p<0.05, **p<0.01, ***p<0.001

DISCUSSION

The immediate postpartum period is a critical clinical period with high mortality risk, and an

important social period for maternal-newborn bonding. Whether positive or negative, most

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families will hold strong memories of experiences in this time, and it may impact their opinions about and willingness to seek care in the future, health practices in the home, and long-term health outcomes. We sought to examine two newborn care practices related to the experience of care, to understand the context of these practices, and to assess associations with relevant outcomes: care satisfaction, use and breastfeeding. This study provides evidence that treatment of newborns is an important component of quality and is likely to influence newborn health and postpartum practices.

Importantly, this study found significant inequities related to treatment of women and their newborns. For example, being consented for newborn care was correlated with insurance coverage, indicating that poorer women and their newborns may not be treated equally by the health system with regard to their clinical care. Women with higher parity, born outside of Nairobi or Kiambu counties, and experienced delivery complications were more likely to experience separation from their newborns. Mothers and newborns were most likely to be separated at government hospitals, where the most women in Kenya deliver. Although less common, separation did occur in smaller health centres and dispensaries as well as private facilities. Other studies have found that while larger hospitals provide better clinical quality care than smaller hospitals, women are also more likely to experience poor patient-centered care.[54] Further research is needed to understand how much of separation is driven by facility policies rather than individual provider behaviour. Infrastructural issues like lack of space and insufficient infection control procedures may influence policies at health facilities to limit family member entry or separate newborns.[55] In underfunded facilities, fatigue and stress of health workers likely influences their ability to provide high-quality care.[56,57] On the other hand,

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providers may have been trained to promote practices that are no longer evidenced-based, such as misconceptions around separation for infection control.[58] Although drivers of poor quality and disrespectful care are not fully understood,[47] these findings suggest that they are likely multi-faceted and interactive. More research is needed in a wider range of settings and countries, to explore the potential contextual factors that might influence policies, behaviours, and solutions.

In this study, 17.6% of women reported being separated from their newborns, which is less than has been reported in other studies.[48] Even so, many of these occurrences were thought by women to be unnecessary, and almost 10% were not given a reason for separation. Most separations were over 10 minutes and in only one-fifth was another family member able to accompany the newborn. In many contexts, and Kenya, specifically, fathers have limited access to maternity and postnatal wards and neonatal intensive care units.[8] Notably, other studies have found that women in Nairobi were less likely to want a companion during labor and delivery compared to women in rural Kenya, Ghana, and India; and were also less likely to report being allowed a companion all the time.[8,12] However, there is a potentially important role for fathers, family members, or doulas, in staying with the newborn when mothers require rest, surgery, or critical care.[27] Further research is needed to examine facility-level policies in allowing a companion of choice and facilitating family support when it is desired.

Alarmingly, over 60% of women reported not being consented for newborn procedures. Being asked to provide consent was correlated with higher scores on the clinical quality of care and breastfeeding indices. This may reflect that providers or facilities that are more consistent in the

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provision of high quality care are also more likely to seek permission for procedures. This is

consistent with another study in Kenya that found high levels of failure to provide informed

consent and notable patient-provider discordance in reports of informed consent. Even in

instances where providers reported obtaining consent from women for medical procedures,

women were not provided full information or comprehend the information given to them.[14]

We found that for both satisfaction and postpartum care utilization, being asked for permission

for newborn care procedures was positively associated, further illustrating the importance of

consent as an aspect of respectful care.

This study provides evidence that newborn treatment during childbirth is associated with

newborn health and postpartum practices. Separation of newborns from their mothers for over 10

minutes was associated with decreased breastfeeding at a later time point. While this association

could be confounded by newborns with more severe complications–which require additional

procedures, and also affect breastfeeding–the association remained after adjustment in the model.

It is also plausible that the lack of early initiation of breastfeeding and lower satisfaction with

immediate postnatal care contributed to poorer breastfeeding practices after discharge because of

lower motivation or encouragement. In addition to improved satisfaction and likelihood to utilize

postnatal care, consent for newborn procedures was associated with a greater likelihood of

exclusive breastfeeding at follow-up, indicating a potential causal link. This finding is important

given the overwhelming evidence of the benefits of breastmilk for newborn survival,

development and health of infants.[59,60] This adds to the evidence found by other studies

which showed that lack of respectful and supportive care during intrapartum care is associated

with more reports of newborn complications.[52]

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Strengths and limitations

This study is one of the first studies to include questions with the primary aim of understanding details around newborn separation, and to correlate newborn care practices with subsequent health outcomes. While previous studies have reported on prevalence of newborn separation, [7,10,47] this study is the first to differentiate separation by maternal perception of reason and need, highlighting both the probability that much of the separation is not medically necessary, and that many parents do not fully understand the reasons for separation most likely due to poor communication. This study also goes beyond measuring maternal consent for care of self to consent of procedures for the newborn. Lastly, this study used longitudinal data and was able to measure treatment of newborns from pre-discharge care in facilities to postpartum practices.

This study was limited to 10 weeks of follow up, and it is unknown how care practices or experience of care for newborns may influence later pediatric care. Additionally, the samples for the 2-4 and 10 week follow-ups differed slightly (though not significantly across socio-demographics or care), so our comparisons of exclusive breastfeeding between these time periods may be interpreted conservatively due to smaller sample size and potential biases due to composition. Further, this study focused on women's reports of their care and did not triangulate with hospital records or other sources of information; thus, participants may have had recall bias, may have defined "separation" differently than the researchers, and may have different interpretations than health care providers about certain practices, such as necessity of separation. While it was explained to participants that this study was confidential and was being conducted

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independently of the facility or health system, there may have been desirability bias if

respondents were concerned about their subsequent care at facilities. Lastly, our results may have

limited generalizability, as our study sample included facilities from Nairobi and Kiambu

Counties, Kenya. Future research may explore whether associations with these care practices are

also present in other social and institutional contexts.

Conclusions

Newborns, their mothers, and their families have a right to high quality, respectful care,

regardless of their characteristics or where they are delivered. High quality newborn care

includes the ability to stay together and for the parents to be informed and consent for care. The

implications of various practices on health outcomes a month or more after discharge illustrate

the importance of a positive experience of postnatal care. More research and action are needed to

provide newborns with the standard of care that they deserve.

Contributors

MS and ES conceptualized and designed the study. MN analyzed the data. MN, ES, JO, and MS

contributed to the writing and revision of the manuscript.

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Data Sharing

Data are available upon reasonable request. Please contact the corresponding author with requests for de-identified participant data.

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Competing interests

None declared.

References

1. UN IGME. Levels & Trends in Child Mortality: Report 2019, Estimates developed by the UN Inter-agency Group for Child Mortality Estimation. New York; 2019.

2. HNN. Kenya Data [Internet]. Healthy Newborn Network. 2020 [cited 2020 Aug 6]. Available from: https://www.healthynewbornnetwork.org/country/kenya/

3. UN IGME. Kenya Neonatal Mortality Estimates [Internet]. UN IGME. 2018 [cited 2020 Aug 6]. Available from: https://childmortality.org/data/Kenya

4. WHO, UNICEF. Every Newborn: an action plan to end preventable deaths [Internet]. Geneva; 2014.

5. Tunçalp, Were WM, Maclennan C, Oladapo OT, Gülmezoglu AM, Bahl R, et al. Quality of care for pregnant women and newborns - The WHO vision. BJOG An Int J Obstet Gynaecol. 2015 Jul 1;122(8):1045–9.

6. Rosen HE, Lynam PF, Carr C, Reis V, Ricca J, Bazant ES, et al. Direct observation of respectful maternity care in five countries: a cross-sectional study of health facilities in East and Southern Africa. BMC Pregnancy Childbirth [Internet]. 2015 Dec 23;15(1):306.

7. Reis V, Deller B, Carr C, Smith J. Respectful maternity care. Country experience [Internet]. Alliance francophone pour l'accouchement respecté (AFAR); 2016.

8. Afulani PA, Phillips B, Aborigo RA, Moyer CA. Person-centred maternity care in low-income and middle-income countries: analysis of data from Kenya, Ghana, and India. Lancet Glob Heal. 2019 Jan 1;7(1):e96–109.

9. McMahon SA, George AS, Chebet JJ, Mosha IH, Mpembeni RN, Winch PJ. Experiences of and responses to disrespectful maternity care and abuse during childbirth; a qualitative study with women and men in Morogoro Region, Tanzania. BMC Pregnancy Childbirth [Internet]. 2014 Dec 12;14(1):268.

10. Bohren MA, Mehrtash H, Fawole B, Maung TM, Balde MD, Maya E, et al. How women are treated during facility-based childbirth in four countries: a cross-sectional study with labour observations and community-based surveys. Lancet. 2019 Nov 9;394(10210):1750–63.

11. Bohren MA, Hunter EC, Munthe-Kaas HM, Souza JP, Vogel JP, Gülmezoglu AM. Facilitators and barriers to facility-based delivery in low- and middle-income countries: A qualitative evidence synthesis. Vol. 11, Reproductive Health. BioMed Central Ltd.; 2014.

12. Afulani P, Kusi C, Kirumbi L, Walker D. Companionship during facility-based childbirth: results from a mixed-methods study with recently delivered women and providers in Kenya. BMC Pregnancy Childbirth [Internet]. 2018 Dec 10;18(1):150.

13. Kabakian-Khasholian T, Portela A. Companion of choice at birth: Factors affecting implementation. BMC Pregnancy Childbirth [Internet]. 2017 Aug 31;17(1):265.

14. Sudhinaraset M, Giessler K, Golub G, Afulani P. Providers and women's perspectives on person-centered maternity care: A mixed methods study in Kenya [Internet]. Vol. 18, International Journal for Equity in Health. BioMed Central Ltd.; 2019. p. 83.

15. Afulani PA, Kirumbi L, Lyndon A. What makes or mars the facility-based childbirth experience: Thematic analysis of women's childbirth experiences in western Kenya. Reprod Health [Internet]. 2017 Dec 29;14(1):180.

16. Downe S, Finlayson K, Oladapo O, Bonet M, Gülmezoglu AM. What matters to women during childbirth: A systematic qualitative review [Internet]. Vol. 13, PLoS ONE. Public Library of Science; 2018. p. e0194906.

17. Brüggemann OM, Osis MJD, Parpinelli MA. Support during childbirth: Perception of

health care providers and companions chosen by women. Rev Saude Publica. 2007;41(1):1–9.

18. Owiti A, Oyugi J, Essink D. Utilization of Kenya's free maternal health services among women living in Kibera slums: A cross-sectional study. Pan Afr Med J. 2018;30.

19. Escamilla V, Calhoun L, Winston J, Speizer IS. The Role of Distance and Quality on Facility Selection for Maternal and Child Health Services in Urban Kenya. J Urban Heal. 2018 Feb 1;95(1).

20. Keats EC, Ngugi A, Macharia W, Akseer N, Khaemba EN, Bhatti Z, et al. Progress and priorities for reproductive, maternal, newborn, and child health in Kenya: a Countdown to 2015 country case study. Lancet Glob Heal. 2017 Aug 1;5(8):e782–95.

21. Sharma J, Leslie HH, Kundu F, Kruk ME. Poor quality for poor women? Inequities in the quality of antenatal and delivery care in Kenya. PLoS One. 2017 Jan 1;12(1).

22. Kruk ME, Pate M. The Lancet Global Health Commission on High Quality Health Systems 1 year on: progress on a global imperative [Internet]. Vol. 8, The Lancet Global Health. Elsevier Ltd; 2020. p. e30–2.

23. WHO. WHO standards of care to improve maternal and newborn quality of care in facilities [Internet]. Geneva; 2016.

24. Sacks E, Kinney M V. Respectful maternal and newborn care: Building a common agenda [Internet]. Vol. 12, Reproductive Health. BioMed Central Ltd.; 2015.

25. Klaus MH. Commentary: An Early, Short, and Useful Sensitive Period in the Human Infant. Birth [Internet]. 2009 Jun 1;36(2):110–2.

26. Sullivan R, Perry R, Sloan A, Kleinhaus K, Burtchen N. Infant Bonding and Attachment to the Caregiver: Insights from Basic and Clinical Science [Internet]. Vol. 38, Clinics in Perinatology. NIH Public Access; 2011. p. 643–55.

27. Widström A, Brimdyr K, Svensson K, Cadwell K, Nissen E. Skin□to□skin contact the first hour after birth, underlying implications and clinical practice. Acta Paediatr [Internet]. 2019 Jul 13;108(7):1192–204.

28. Bergman N. Birth practices: Maternal-neonate separation as a source of toxic stress [Internet]. Vol. 111, Birth Defects Research. John Wiley and Sons Inc.; 2019. p. 1087–109.

29. Hofer MA. Psychobiological Roots of Early Attachment. Curr Dir Psychol Sci [Internet]. 2006 Apr 22;15(2):84–8.

30. Stevens J, Schmied V, Burns E, Dahlen H. Immediate or early skin-to-skin contact after a Caesarean section: A review of the literature [Internet]. Vol. 10, Maternal and Child Nutrition. Blackwell Publishing Ltd; 2014. p. 456–73.

31. Ludington-Hoe SM, Swinth JY. Developmental aspects of kangaroo care. J Obstet Gynecol Neonatal Nurs [Internet]. 1996;25(8):691–703.

32. Feldman R, Eidelman AI. Skin-to-skin contact (Kangaroo Care) accelerates autonomic and neurobehavioural maturation in preterm infants. Dev Med Child Neurol. 2003 Apr 1;45(4):274–81.

33. Loman MM, Bruce J, Dallman M, Dozier M, Fisher P, Fox N, et al. Early Experience and the Development of Stress Reactivity and Regulation in Children Gunnar [on behalf of the Early Experience, Stress, and Neurobehavioral Development Center. Neurosci Biobehav Rev. 2010;34(6):867–76.

34. Champagne F, Meaney MJ. Like mother, like daughter: Evidence for non-genomic transmission of parental behavior and stress responsivity. In: Progress in Brain Research.

Elsevier; 2001. p. 287–302.

35. Shonkoff JP, Garner AS, Siegel BS, Dobbins MI, Earls MF, McGuinn L, et al. The lifelong effects of early childhood adversity and toxic stress. Pediatrics [Internet]. 2012 Jan;129(1).

36. Bystrova K, Ivanova V, Edhborg M, Matthiesen AS, Ransjö-Arvidson AB, Mukhamedrakhimov R, et al. Early contact versus separation: Effects on mother-infant interaction one year later. Birth [Internet]. 2009 Jun;36(2):97–109.

37. Swain JE, Lorberbaum JP, Kose S, Strathearn L. Brain basis of early parent-infant interactions: Psychology, physiology, and in vivo functional neuroimaging studies. J Child Psychol Psychiatry Allied Discip [Internet]. 2007 Mar;48(3–4):262–87.

38. Bigelow A, Power M, Maclellan-Peters J, Alex M, Mcdonald C. Effect of Mother/Infant Skin-to-Skin Contact on Postpartum Depressive Symptoms and Maternal Physiological Stress. JOGNN - J Obstet Gynecol Neonatal Nurs [Internet]. 2012;41(3):369–82.

39. Strathearn L, Mamun AA, Najman JM, O'Callaghan MJ. Does breastfeeding protect against substantiated child abuse and neglect? A 15-year cohort study. Pediatrics [Internet]. 2009 Feb;123(2):483–93.

40. Scism AR, Cobb RL. Integrative Review of Factors and Interventions That Influence Early Father–Infant Bonding. Vol. 46, JOGNN - Journal of Obstetric, Gynecologic, and Neonatal Nursing. Elsevier B.V.; 2017. p. 163–70.

41. Hallowell SG, Froh EB, Spatz DL. Human milk and breastfeeding: An intervention to mitigate toxic stress. Nurs Outlook [Internet]. 2017 Jan 1;65(1):58–67.

42. Uvnäs-Moberg K. Neuroendocrinology of the mother-child interaction [Internet]. Vol. 7, Trends in Endocrinology and Metabolism. Elsevier Inc.; 1996. p. 126–31.

43. Moore ER, Bergman N, Anderson GC, Medley N. Early skin-to-skin contact for mothers and their healthy newborn infants [Internet]. Vol. 2016, Cochrane Database of Systematic Reviews. John Wiley and Sons Ltd; 2016.

44. Koster D, Romijn C, Sakko E, Stam C, Steenhuis N, de Vries D, et al. Traumatic childbirth experiences: practice-based implications for maternity care professionals from the woman's perspective. Scand J Caring Sci [Internet]. 2019;

45. Jolly Y, Aminu M, Mgawadere F, Van Den Broek N. "We are the ones who should make the decision" - Knowledge and understanding of the rights-based approach to maternity care among women and healthcare providers. BMC Pregnancy Childbirth [Internet]. 2019 Feb 15;19(1).

46. Shakibazadeh E, Namadian M, Bohren MA, Vogel JP, Rashidian A, Nogueira Pileggi V, et al. Respectful care during childbirth in health facilities globally: a qualitative evidence synthesis [Internet]. Vol. 125, BJOG: An International Journal of Obstetrics and Gynaecology. Blackwell Publishing Ltd; 2018. p. 932–42.

47. Sacks E. Defining disrespect and abuse of newborns: A review of the evidence and an expanded typology of respectful maternity care [Internet]. Vol. 14, Reproductive Health. BioMed Central Ltd.; 2017. p. 66.

48. Sacks E, Mehrtash H, Bohren MA, Balde MD, Vogel JP, Adu-Bonsaffoh K, et al. The first two hours after birth: prevalence and factors associated with newborn care practices from a multi-country, facility-based observational study. Lancet Glob Heal. 2020;in press.

49. Waiswa P, Nyanzi S, Namusoko-Kalungi S, Peterson S, Tomson G, Pariyo GW. 'I never thought that this baby would survive; I thought that it would die any time': perceptions and care for preterm babies in eastern Uganda. Trop Med Int Heal [Internet]. 2010 Oct

1;15(10):1140–7.

50. Tolhurst R, Theobald S, Kayira E, Ntonya C, Kafulafula G, Nielson J, et al. "I don't want all my babies to go to the grave": perceptions of preterm birth in Southern Malawi. Midwifery. 2008 Mar 1;24(1):83–98.

51. Crossley MA. Of diagnoses and discrimination: discriminatory nontreatment of infants with HIV infection. Columbia Law Rev. 1993;93(7):1581–667.

52. Sudhinaraset M, Landrian A, Afulani PA, Diamond☐Smith N, Golub G. Association between person☐centered maternity care and newborn complications in Kenya. Int J Gynecol Obstet [Internet]. 2020 Jan 9;148(1):27–34.

53. Strathearn L. Maternal neglect: Oxytocin, dopamine and the neurobiology of attachment [Internet]. Vol. 23, Journal of Neuroendocrinology. J Neuroendocrinol; 2011. p. 1054–65.

54. Phillips B, Kajal F, Montagu D, Kumar A, Kumar V. Is bigger better? Assessment of self-reported and researcher-collected data on maternal health care quality among high-case-load facilities in Uttar Pradesh: a mixed-methods study. Lancet Glob Heal [Internet]. 2018 Mar 1;6:S46.

55. Sacks E, Sripad P, Ndwiga C, Waiswa P, Warren CE. Protecting newborn infants during the COVID-19 pandemic should be based on evidence and equity. Acta Paediatr [Internet]. 2020;

56. Mgawadere F, Smith H, Asfaw A, Lambert J, Broek N van den. "There is no time for knowing each other": Quality of care during childbirth in a low resource setting. Midwifery [Internet]. 2019 Aug 1;75:33–40.

57. O'Donnell E, Utz B, Khonje D, van den Broek N. "At the right time, in the right way, with the right resources": Perceptions of the quality of care provided during childbirth in Malawi. BMC Pregnancy Childbirth [Internet]. 2014 Jul 28;14(1):248.

58. Maimbolwa MC, Sikazwe N, Yamba B, Diwan V, Ransjö-Arvidson AB. Views on involving a social support person during labor in Zambian maternities. J Midwifery Womens Health [Internet]. 2001;46(4):226–34.

59. Lyons KE, Ryan CA, Dempsey EM, Ross RP, Stanton C. Breast Milk, a Source of Beneficial Microbes and Associated Benefits for Infant Health. Nutrients [Internet]. 2020 Apr 9;12(4):1039.

60. Paduraru D. The evidence for the benefits from breast milk in the neurodevelopment of premature babies – a review of the recent literature. J Mind Med Sci [Internet]. 2018 Oct 3;5(2):151–7.