May Sudhinaraset

Extended Abstract

How Does Person-centered Care Impact Maternal and Newborn Outcomes? A Longitudinal Study in Kenya of Childbirth Experiences, Post-natal Care and the Post-Partum Period

Background

Despite major gains in global maternal and child health in the past decade, maternal and newborn deaths remain unacceptably high. Every year, approximately 303,000 women die of pregnancy and childbirth related complications, while 2.6 million newborns die in the first month of life[1]. Poor quality of care is a major factor in maternal and newborn health, with both short-term effects on health as well as long-term effects on women and families [2,3]. Recent evidence of poor treatment of women during childbirth and maternity care has increased attention in aspects of quality beyond clinical or essential services. This has led to a paradigm-shift, with calls for a focus on person-centered reproductive health care, or care that is respectful of and responsive to women's and families' preferences, needs, and values. Despite the recognized importance of person-centered care, very little exists on how person-centered maternity care (PCMC) impacts newborn health including neonatal complications and exclusive breastfeeding.

The issue of quality of care is particularly relevant in Kenya, given recent findings that 90% of the 484 maternal deaths at major referral hospitals in 2017 resulted from substandard care [6]. One out of five women report feeling humiliated during labor and delivery [8], 8.5% report non-confidential care, 18% report non-dignified care, 14.3% report neglect or abandonment, 4.3% report non-consensual care, 4.2% report physical abuse, and 8.1% report detainment for non-payment of fees. It is important to examine the potential health consequences of mistreatment in the health facility given the high levels of poor experiences during maternity care.

The aim of this research is to explore the association between person-centered quality of care and maternal health outcomes in Kenya. This study is unique in that it uses a recently validated scale of person-centered maternity care (PCMC), and examines the effect of PCMC on newborn health, including reported newborn complications and exclusive breastfeeding in the postpartum period.

Methods

Study Participants and Recruitment

Six governmental facilities were selected within Nairobi and Kiambu to participate in the study based on: being a public entity; county nomination; provision of both family planning and delivery services; adequate delivery patient volumes (at least 60 deliveries per month); and having never participated in a person-centered care quality improvement program. Baseline and mobile follow-ups for delivery care conducted between August 2016 and February 2017. In collaboration with facility staff, delivery patients were purposively sampled during their recovery in the post-partum ward. If the patient was identified as interested and eligible (aged 15-49 years; having just delivered (not by scheduled Cesarean section) within the last 7 days, possessing a functional phone on one of Kenya's most common network providers that is able to receive and send text messages, feeling well enough to participate), the respondent could decide whether

they were comfortable with continuing the survey at the facility or at home within the next few days. The enumerator obtained written informed consent in the respondent's preferred language to conducting any study procedures.

A total of 531 respondents were interviewed for delivery at baseline. Respondents were sent airtime credit in the amount of approximately $1.50 to appreciate their participation in the study. Short (approximately 10 question) follow-up surveys were conducted for all respondents using mSurvey, in which questions were sent via phone and respondents answered through free texts. Respondents were introduced to this system at time of baseline so that it was familiar when not in the presence of the enumerators. Respondents received the follow-ups at 2 weeks, 4 weeks, 6 weeks, 8 weeks, and 10 weeks post-baseline. A total of between 60-67% completed surveys for each delivery follow-up. Upon completion of each mobile survey, respondents were sent an appreciation of approximately $0.20.

Survey Measures

Independent variables: The measures in the study included demographic information, PCMC, post-partum scales and outcomes of maternal and newborn health. Demographic characteristics included current age, gestational age and total birth; marital status and religion; highest grade that they completed at school; main occupation; whether they can read and write; whether they were married; whether they were multiparous; and mother's current health status. A validated 30-item PCMC scale was used[5]. Example questions included "How did you feel about the amount of time you waited?" "Did the doctors, nurses, or other staff at the facility treat you with respect?" "Do you think there was enough health staff in the facility to care for you?" For each item, responses were on a scale of 0 to 3, including "no, never", "yes, a few times", "yes, most of the time" and "yes, all the time" (Cronbach $\alpha = 0.84$). For all participants, the average score of 30 items in PCMC scale (summative score over 30) had a mean of 2.02 and range of 0.80 - 2.97 (higher scores indicate better quality) with standard deviation 0.42.

The full index of post-partum care indicators included 12 items, with responses yes and no for a scale ranging from 0 - 1. The sample mean was 8.30 (higher scores indicate better quality) with a range of 2 - 12 (Cronbach $\alpha = 0.66$). The full index was divided into three sub-indices: facility-level characteristics, check ups and counseling. Facility-level characteristics was measured with 5 items with a mean of 4.04 and range of 2 - 5 (standard deviation = 0.92), concerning with the availability of separate bed, food, water supply, curtain and assistance from staffs (Cronbach $\alpha = 0.37$). Check ups included 3 items with a mean of 2.25 and range of 0 - 3 (standard deviation = 0.84), asking about whether any health care provider checked on their health, perineum and put the baby on their abdomen or chest (Cronbach $\alpha = 0.24$). Counseling was measured with 4 items with a mean of 2.01 and range of 0 - 4 (standard deviation = 1.70), asking about whether the staff advised about exclusive breastfeeding, bathing the baby, umbilical cord care and danger signs for baby (Cronbach $\alpha = 0.88$).

Dependent variables: The outcomes of interest were "newborn complication" and "exclusive breastfeeding". These outcomes were measured during the follow-up visits. Newborn complications were asked of women at two-weeks follow-up, and asked women to identify whether newborns had any health complications, including jaundice, fever, difficulty breathing, or other problems. Exclusive breastfeeding was asked at ten weeks post partum. Those who indicated that they were currently breastfeeding and have not given their child any food other than breast milk were classified as exclusive breastfeeders.

Analyses

All analyses were completed using Stata 15MP. We conducted bivariate logistic regression to explore the relationship between each of 2 outcomes and PCMC, post-partum full scale, facilities, check up and counsel as independent variables respectively. Multivariate logistic regressions for binary outcomes were further conducted controlling for demographic variables including age, total birth, marital status, read, write, highest grade completed, main occupation, and religion. We used multivariate linear regression to assess the association between PCMC as independent variable and post-partum full scale, facilities, check up and counsel as dependent variables respectively, controlling for demographics.

Results

The mean age of all participants was 25.4 years (Table not shown). Over 50% of participants were Protestant, married and multiparous, with a mean of total births 1.9 for all participants. Most women either had vocational schooling or secondary school. Over 95% of participants can read and write without any difficulty. Most women were unemployed.

Most participants were exclusively breastfeeding their children at 10 weeks (89.9%). Approximately one out of three women reported a newborn complication at two weeks post-partum (32.1%) (Table 1). For post-natal factors in the health facility, 71.8% reported a separate bed, 85.2% were provided food at the facility, 85.2% were provided water supply in the bathroom, 68.4% reported curtains in the ward, and 91.9% reported available assistance from staffs. A majority of participants were also checked on their health and perineum by health care providers. Though the staff advised about exclusive breastfeeding mostly, only a few more than half of participants were advised about bathing baby and umbilical cord care, while less than half of participants got the advice of danger signs for baby (data not shown).

Controlling for demographics, women reporting higher levels of PCMC reported significantly lower newborn complications (OR=0.34) and higher exclusive breastfeeding (OR = 5.52) (Table 2). Controlling for demographic variables, the addition of post-partum indices to the multivariate regression of each outcome on PCMC separately did not change the significant association at all. Among all post-partum indices, only facility-level characteristics was significantly associated with exclusive breastfeeding at 10 weeks.

Discussion

This is the known first study to assess the impact of person-centered maternity care on newborn outcomes. We find that PCMC leads to a decrease in reported newborn complications. While this study specifically examines the impact of person-centered care, they are in line with other studies that have linked these outcomes to broader quality of maternity care. Effective intrapartum care in facilities related to neonatal health and survival include antibiotics for preterm premature rupture of membranes, corticosteroids for preterm labour, detection and management of breech, earlier diagnosis of complications and clean delivery practices[6]. Less explored in the literature is how women's experiences of care, including treatment in the health facility, leads to improved maternal and neonatal health.

Perhaps the most intriguing finding in this study was that person-centered care led to a decrease in reported newborn complications. Global initiatives have conceptually linked respectful maternity care to newborn health [7], but quantitative data is limited in establishing this link and the specific mechanisms. This paper thus extends the empirical evidence for a link

between PCMC and neonatal outcomes. One potential reason is that good PCMC empowers women to care for their babies. It may also help them identify danger signs early before they become major complications. Evidence linking PCMC to health outcomes will help facilitate advocacy to improve PCMC in facilities.

Table 1. Prevalence of outcomes and post-partum indicators

Variables	No. (Col %)
Newborn complication at 2 weeks	
None	129 (67.9)
Any complication	61 (32.1)
Exclusive breastfeeding at 10 weeks	
No	20 (10.1)
Yes	179 (89.9)

Table 2. Multivariate results for PCMC and Outcomes adding Postnatal indices (Full index, Facilities, Check ups, Counseling) separately

		Postnatal Index			
		Full index	Facilities	Check ups	Counseling
Baby have complication at 2 weeks (Odds ratios)					
PCMC	0.341**	0.363**	0.329**	0.344**	0.350**
	(0.159)	(0.172)	(0.159)	(0.161)	(0.164)
Postnatal index		0.938	1.061	0.902	0.907
		(0.0781)	(0.215)	(0.190)	(0.0983)
Exclusive breastfeeding at 10 weeks (Odds ratio)					
PCMC	5.516**	4.873**	4.355**	5.525**	5.133**
	(4.131)	(3.718)	(3.228)	(4.134)	(3.927)
Postnatal index		1.180	1.957**	0.827	1.160
		(0.144)	(0.604)	(0.301)	(0.200)

seEform in parentheses

*** p<0.01, ** p<0.05, * p<0.1

All multivariate regressions are controlled for demographic variables. The first category is the reference level for each categorical variable.

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