

Research Article

Utilization of Kangaroo Mother Care (KMC) and Influencing Factors Among Mothers and Care Takers of Preterm/Low Birth Weight Babies in Yirgalem Town, Southern, Ethiopia

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ABSTRACT

Background: Kangaroo mother care (KMC) is a universally available method of care particularly, for premature babies for maintaining their body temperature. However, its prevalence is very low in Ethiopia. Thus, this study was intended to assess utilization of kangaroo mother care (KMC) and factors influencing among mothers and care takers of preterm /low birth weight babies in Yirgalem town, southern, Ethiopia

Materials and Method: A community based cross sectional study was conducted from February to March, 2017 among 215 mothers of preterm/low birth weight (LBW) infants in Yirgalem town. Mothers of preterm/LBW infant of age less than 36 months were included in study. Data was collected by using interviewer administered questionnaire that is adapted from relevant literatures and standardized accordingly. Data analyses were accomplished using SPSS version 20. Logistic regression analyses were used to identify the association of different variables.

Results: A total of 215 mothers with their preterm infants ranged 1-36 months of age voluntarily participated, with response rate of 100%. A hundred ninety (88.4%) of the mothers had normal vaginal delivery, and 11.6% had cesarean

section. Among all study subjects 90(41.9%) practice KMC. Of these, 31(14.4%) started KMC immediately after birth as the infant had been stabilized, and 59(27.4%) practice it after 24 hours. However, only sixty of the infants showed improvement after they used continuous KMC at home compared to those infants that did not use KMC. It was found that some variables were statistically associated with the utilization of KMC. Respondents who gave birth spontaneously were 4.3 times more likely to practice KMC than those had caesarean section delivery [(AOR 4.341) 95%CI(1.435, 13.130)] and mothers who delivered at governmental hospital were 20.4 times more likely to practice KMC than those who gave birth at home [(AOR (20.458) 95%CI(2.644, 158.299))].

Conclusion: In this study only very low mothers initiated KMC immediately after birth and were practiced continuously KMC at home. Thus, it is recommended to promote KMC at home and develop studies on acceptability and applicability of the KMC and affecting factors that prevent the use of KMC at home method in Ethiopian context.

Keywords: Kangaroo mother care; Preterm baby; Low birth weight; Yirgalem

Abbreviations

EDHS: Ethiopian Demographic and Health Survey, KMC: Kangaroo mother care, LBW: Low birth weight, SNNPR: South Nation and Nationality People of Region, SPSS: Statistical Package of Social Sciences, SSC: Skin-to skin contact, STS: Skin-to-skin, WHO: World Health Organization

Introduction

Preterm birth (birth before 37 weeks of gestation), is the direct leading cause for three million neonatal deaths each year globally and the second leading cause of all deaths in children under the age of five, because, they stop feeding and are more susceptible to infection [1,2]. Ninety nine percent preterm deaths occur in low-income countries [3]. This is primarily due to a majority of women do not give birth in health facilities in developing countries and LBW death commonly occurs in places where there is little access to specialized neonatal medical care [4].

Ethiopia is one of the ten countries with the highest number of neonatal deaths, in which 320,000 babies are born preterm each year and 24,400 children under five die due to direct preterm [5,6]. While, close to 90% of deliveries in Ethiopia take place at home [7].

KMC is one of the interventions proven to be a safe alternative to conventional neonatal care in resource-limited settings [8]. Because, it can substantially contribute to decrease the risk of death in neonates weighing less than 2000gm by improvement of body temperature [9,10]. Particularly, community-based KMC could prove to be the best means of stabilizing neonates and reducing neonatal mortality. KMC can be started after birth as soon as the baby is clinically stable, and can be continued at home until the baby gets stronger and begins to wriggle out if they had been full term [11].

Despite the apparent feasibility of KMC, mothers who practice KMC exhibit less maternal stress and fewer symptoms

of depression, and have a better sense of the parenting role and more confidence in meeting their babies' needs than those who do not [12]. Because, KMC is an adjunct to standard care for stable LBW and premature infants. The core feature is early positioning of the infant, clad only in a nappy, prone and upright on the mother or father's chest to maximize skin-to-skin proximity [13].

On other sides, KMC is a solution to improve the survival and health of vulnerable preterm and LBW babies (World Health Organization 2014). It was proposed as an alternative conventional neonatal care for LBW infants. It is an anniversary available and biologically sound method of care for all premature babies and is cost effective, and has abundant advantages for mother, and infant [5,14]. But currently, only a few preterm babies in low-income countries have access to this intervention. The effectiveness and safety of KMC in the community and home setting, and its effects on growth, is still incomplete [12].

Therefore, it is important to have well-functioning facility-based services available before introducing KMC in the community, as community KMC must link with facility-based services for successful implementation [15]. However, a few studies have examined the reasons for the poor uptake of KMC. Our objective in this study is to assess utilization of KMC and factors influencing among mothers of preterm/LBW babies in Yirgalem town, southern, Ethiopia

Materials and Method

Study period and area

Community based cross sectional study was conducted in Yirgalem town, southern, Ethiopia from February to March, 2017. Yirgalem town is the capital city of Dalle woreda which is found 47kms from Hawassa, (the capital city of the SNNPR and Sidama zone) and 329 km from Addis Ababa, capital of Ethiopia. According to regional population projection in 2007 E.C(2014/2015) the town has total population of 44,570 of whom 23,322 are men and 21,248 are women and the average population density is 3,803 people per Square km. Currently the town population is expected to be 45,600 and the population growth is 2.9% per year [16].

Populations

All reproductive aged women who gave birth for at least one child were considered as source population and all mothers and caretakers of preterm or LBW babies in Yirgalem during study period were taken to be study population.

Sample size determination

The actual sample size for the study was determined using the formula for single population proportion by using the formula $n = (Z\alpha/2)^2 P(1-P)/d^2$ and assuming 5% marginal error and 95% confidence interval ($\alpha=0.05$) and p-value: 0.333, We used a correction formula $nf = ni / (1 + ni/N)$ for finite population ($N < 10,000$) and added 5% of non-respondent rate and obtained a total of 215 study subjects [17].

Sampling technique

We obtained information from health extension workers about sample frame of each Kebele and used sampling with probability proportional to size. The study subjects was selected using Systematic random sampling technique with "k"=3 was used to identify 215 study subjects among study population within six Kebeles after sampling fraction have been allocated based on probability proportional to the number of individuals in each Kebele, and random number is drawn between one and "3" to identify the first individual, who is used as a starting point in the process of data collection.

Data collection and analysis

After the questionnaire was developed in English by reviewing different literature and has been translated in to Amharic and back to English to make sure the validity of questionnaire. An interviewer administration Amharic version questionnaire was used to collect data. As the data was collected, the questionnaire was checked for completeness, and analyzed by Statistical Package for Social Science (SPSS) version 20 statistical software. Descriptive analysis was conducted and presented using Tables 1-4 and Figure 1. Bivariable and multivariable logistic regression analyses were applied to identify significance of association between dependent and independent variables. The variables with $p < 0.05$ in multiple logistic regression model was considered as significance of association between dependent and independent variables presentation of findings.

Data quality

The consistency of questionnaire was assured by translation into Amharic and pre-tested on 5% of the sample size before the actual data collection period to make sure clarity of the questionnaire as well as considering of the data collectors. Based on the result of the pre-test, some amendments were made accordingly. The collected data completeness and consistency of each of the questionnaires were checked and corrected on a daily basis

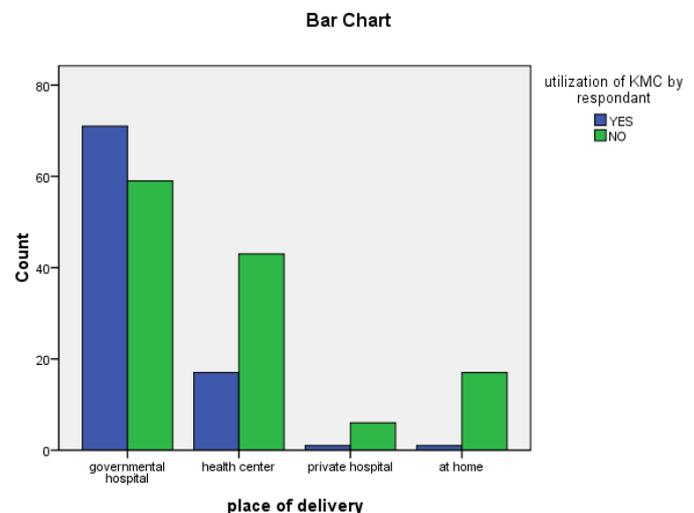


Figure 1: Place of delivery of respondent represented by bar chart.

Ethical consideration

Before data collection, the tool was approved by the institutional review board of Hawassa university collage of medical and Health sciences and a formal letter was written from community based education office and submitted to Yirgalem health department. Permission letter was obtained from the Yirgalem town health department for kebeles and informed consent was obtained from the study participants after the purpose of the study was clearly explained to all study participants. All accessed data was kept confidential. To assure complete confidentiality other identify in information including name was not recorded on questionnaires.

Result

Socio-demographic characteristics

A total of 215 mothers with their preterm infants ranged 1-36 months of age voluntarily responded, making the response rate 100%. The mean age (SD) of the mothers was 26 year (+5.47). Of all respondents 62(28.8%) were between the ages 25-29, 202(94%) of the women were married, 19(8.8%) had college level education and above. In addition, 103(47.9%) were a house wife. The household monthly income of the study participants ranges between 0- 5,000 birr. Of this 67(31.2%) of the respondents had average monthly income more than 1000 birr that is at medium level. Regarding ethnicity, 118(54.9%) respondents were Sidama by ethnicity, in religion aspects, 100(46.2%) of the mothers were protestant (Table 1).

Utilization of obstetric related services

Hundred ninety (88.4%) of the mothers had normal vaginal delivery, and 25(11.6%) were cesarean section. The length of labor ranged from 6-12 hrs. For 127(59.1%) of the participants. Most of the women 130(60.5%) delivered in a government hospital and 60(27.9%) at a health center. Of all 26(12.1%) were primi-gravida and 92(42.8%) were pregnant for the second time. The number of deliveries conducted 1-2 times was 119(55.3%) and 44(20.5%) had previous infant death. More than half of the infants 117(54.4%) were female (Table 2).

Use of kangaroo mother care

Among all study subjects 90(41.9%) practice KMC. Of these, 31(14.4%) started KMC immediately after birth as the infant had been stabilized, and 59(65.6%) practice it after 24 hr. Among those who practiced KMC 71(78.9%) continued at home but others did not practiced it. However, only 28(31.1%) used KMC continuously and the rest used it intermittently. Thirty eight (53.5%) used KMC for 1-7 days but 3(4.2%) continued KMC at home for more than 15 days (Table 3).

Association of socio-demographic factors and other variables on utilization of KMC

In bivariate and multivariate logistics analyses, some of variables were found to statistically associated with utilization of KMC. As observed that the respondents who vaginally delivered were 7.774 times more likely to practice KMC than

Table 1: Socio-demographic characteristics of mothers and caretakers of preterm babies /low birth weight who practiced KMC (n=215), Yirgalem town, SNNPR, Ethiopia, 2017.

Variables		Numbers	Percent (%)
Marital status	Married	202	94
	Single	3	1.4
	Divorced	3	1.4
	Widowed	7	3.3
	Student	22	10.3
Maternal occupation	Government employer	35	16.3
	Merchant	40	18.6
	House wife	103	47.9
	Other	15	7.0
	Less than 500birr	72	33.5
Monthly income	500birr-1000birr	76	35.3
	1000-3000birr	35	16.3
	>3000birr	32	14.9
Religion	Orthodox	78	36.3
	Protestant	100	46.5
	Catholic	5	2.4
	Muslim	32	14.9
	Sidama	118	54.9
Ethnicity	Wolayita	22	10.2
	Gurage	24	11.2
	Amhara	18	8.4
	Oromo	16	7.4
	other	17	7.9
Educational level	Can't read and write	84	39.1
	Read and write	60	27.9
	Grade(1-6)	28	13.0
	Grade (7-12)	24	11.2
	Collage and Complete	19	8.8
Maternal age	15-19year	54	24.2
	20-24 year	55	25.6
	25-29 year	62	28.8
	30-34 year	27	12.6
	>35 year	19	8.8
live with	Husband	189	87.9
	with mother and father	14	6.5
	with mother in low with my children	7	3.3
		5	2.3

those who had caesarean section [(AOR 4.341) 95%CI(1.435, 13.130)]. Regarding to the place of delivery the mother who delivered at a government hospital was 25.136 times more likely to practice KMC than those who gave birth at home [(AOR(20.458) 95%CI(2.644, 158.299))].

Discussion

The purpose of this study was to assess utilization of KMC and influencing factors among mothers of preterm /LBW babies during the time of hospital discharge as well as at home. In this study, totally 90(41.9%) of study subjects used KMC for their

Table 2: Obstetric related services characteristics, Yirgalem town, SNNPR, Ethiopia, 2017.

Variables	Number	Percent %
Number of pregnancy	once only	12.1
	twice	42.8
	three times	21.9
	more than three	23.3
Number of delivery	1-2	55.3
	3-4delivery	31.6
	>4 delivery	13.0
Number of live birth	1-2	74.0
	3-4	23.7
	>5	2.3
infant death	Yes	20.5
	No	79.5
Number of infant death	1-2	13.5
	3-4	6.0
	>4	0.9
Duration of labour	2-6 hours	33.0
	6-12hours	59.1
	>12 hours	7.9
Mode of delivery	Vaginal	88.4
	Operation	11.6
Place of delivery	governmental hospital	60.5
	health center	27.9
	private hospital	3.3
Sex	at home	8.4
	Male	45.6
Gestational age during delivery	Female	54.4
	9 month	23.3
	8 month	58.6
Age of the newborn	7 month	18.1
	1-6month	37.7
	7-12month	44.2
Weight of the newborn at birth	12-36 month	18.1
	<1000g	0.5
	1000-1499g	25.1
	1500-1999g	36.7
	2000g-2500g	37.7

babies. 31(34.4%) of the mothers initiated KMC immediately after birth and 59(65.6%) started KMC after 24 hr.

A similar study done in Kumasi, Ghana reported 84.6% of the mothers initiated KMC immediately after birth and 7.9% were initiated KMC after 24 hr [17]. In relation to the study done in Kumasi, the immediate utilization of this was very low. This may be due to the women may not be comfortable immediately after birth, feel pain and not ready psychologically [17]. Regarding use of KMC at home, 13% of infants practiced KMC continuously throughout a day and 28.9% those that practiced KMC intermittently at home.

The study done in Gondar in Northern part of Ethiopia stated that 84% of infants in their study continued KMC at home than those who used intermittently and those that continued

Table 3: Distribution KMC practices among preterm infants in Yirgalem town, SNNPR, Ethiopia.

Variables	Number	Percent (%)
Start KMC		
Yes	90	41.9
No	125	58.1
Start time KMC (90)		
Immediately	31	34.4
After 24 hours	59	65.6
KMC practiced at home (90)		
Yes	71	78.9
No	19	21.1
Pattern of KMC (90)		
Continuously	28	31.1
Intermittently	62	68.9
Duration of KMC practiced at home (71)		
1-7 days	38	53.5
8-15 days	30	42.2
16-20 days	3	4.2

KMC were more likely to survive. In this study nearly 78% of women who practiced KMC continued the care however, the frequency varies accordingly. The difference may be due to lack of continuous information to the parents of infants at neonatal intensive care unit (NICU) and positive encouragement to continue KMC throughout the day for the sake of their infants. The other reason may be due to socio-economic factors and most of the women work their house hold activities by their own so that, KMC may not be comfortable for them [18].

There is lack of adequate research to compare the present study findings and determine KMC affects infants when it is done at home. Regarding the present study, concerning factors affected KMC to continue after discharge in their home, showed that maternal health problem (8.8%), preterm baby illness (6.5%), pressure from the mother-in-law (5.1%), need to work (16.7%), had no adequate information to continue KMC at home (21.9%).

In other studies, in Kumasi, Ashanti region, the mothers who practiced KMC continuously at home were 63.7% than those who practiced intermittent. The difference may be the women had a good information and awareness towards using KMC at home continuously rather than intermittently.

Another study reported that a lack of information about KMC, how to use it in practice and other maternal problems also presented an obstacle to KMC [19].

In another study, it was reported that Breast milk expression and other breastfeeding-related issues, discomfort related to temperature and mothers' medical issues also pose a major barrier to practice. These medical issues included pain from episiotomy repair, recovery from caesarean section, postpartum depression, and general maternal illness. These barriers suggest that practicing continuous KMC is likely very challenging for

Table 4: Association of the selected variables on utilization of KMC among preterm and low birth weight infant at Yirgalem town, Sidama zone, SNNPR, Ethiopia, 2017.

Variable	KMC		X ²	df	OR(CI)	P-value	
	Yes Number	No Number					
Marital status	married	85	117	2.925	1	1.032(0.225, 4.733)	0.967
	Single	2	1	4.010	1	0.375(0.022, 6.348)	0.497
Maternal age	15-19	21	31	6.108	1	0.394(0.115, 1.312)	0.139
	20-24	23	32	6.374	1	0.371(.109, 1.264)	0.113
	25-29	32	30	6.054	1	0.250 (0.75, 0.839)**	0.025
	30-34	17	27		1	0.453(0.117, 1.75)	0.251
Maternal occupation	Student	8	14	1.784	1	0.857(0.222, 3.305)	0.823
	Governmental employ	12	23	1.800	1	0.783(0.225, 2.723)	0.700
	Merchant	19	21	1.785	1	1.357(0.407, 4.529)	0.619
	House wife	45	58		1	1.164(0.386, 3.520)	0.788
Educational Status	Can't read and write	40	44	4.426	1	0.393(0.130, 1.189)	0.98
	Read and write	27	33	4.544	1	0.437(0.139, 1.366)	0.154
	Grade 1-6	10	18	4.301	1	0.643(0.179, 2.314)	0.499
	Grade 6-12	8	16		1	0.714(0.189, 2.695)	0.619
	College and complete	5	14		1	2.800	0.048
Ethnicity	Sidama	51	67	8.665	1	0.533(0.190, 1.496)	0.232
	Wolayita	5	17	8.980	1	0.206(0.51,0.825)**	0.026
	Guragea	10	14	8.573	1	0.500(0.142, 1.765)	0.282
	Amhara	10	8		1	0.875(0.229, 3.344)	0.845
	Oromo	4	12		1	0.233(0.053, 1.033)	0.055
	Other	10	7		1	1.429	0.469
Number of pregnancy	Once	9	17	3.074	1	1.028(0.379, 2.787)	0.957
	Twice	41	51	3.100	1	1.561(0.763, 3.190)	0.223
	Three time	23	24	3.035	1	1.860(0.821, 4.216)	0.137
	Greater than three	17	33		1	0.515**	0.026
Number of delivery	1-2	50	69	0.026	1	0.966(.420, 2.221)	0.935
	3-4	28	40	0.026	1	0.933(.383,2.275)	0.879
	>4	12	16	0.056	1	0.750	0.451
Duration of labour	2-6hrs	30	41	0.328	1	1.341(0.446, 4.032)	0.601
	7-12hrs	54	73	0.334	1	1.356(.472, 3.895)	0.571
	>12hrs	6	11	0.319	1	0.545	2.32
Mode of delivery	vaginal	86	104	7.774	1	4.341(1.435, 13.130)**	0.009
	operation	4	21		1	0.190**	0.002
Place of delivery	Governmental hospital	71	59	25.136	1	20.458(2.644, 158.299)**	0.004
	Health center	17	43	28.227	1	6.721(0.828, 54.528)*	0.074
	Private hospital	1	6	26.184	1	2.833(0.152, 52.738)	0.485
	At home	1	17		1	0.059*	0.006
Gestational age during delivery	9 month	24	26	1.059	1	1.477(0.631, 3.458)	0.369
	8 month	51	75	1.052	1	1.088(0.521, 2.273)	0.822
	7 month	15	24	1.065	1	0.ref	0.153
Weight of the newborn	<1000g	0	1	21.849	1	0.00	1.000
	1000-1499g	37	17	22.216	1	4.875(2.319,10.249)**	0.000
	1500-1999g	28	51	21.501	1	1.230(0.636, 2.378)	0.539
	2000-2500g	25	56		1	0.446**	0.000

Foot note: ** Significance at P<0.05

mothers, especially those who have low motivation and medical issues [20].

Conclusion and Recommendation

KMC is very necessary to reducing infant mortality rate because it is main intervention for survival of preterm and LBW after discharge to home. Even though it is very low practice in the Ethiopia. In this study only 14.4% mothers initiated KMC immediately after birth and 27.4% were practiced continuously KMC at home. Thus, it is recommended to develop studies on acceptability and applicability of the KMC and affecting factors that prevent the use of KMC at home method in Ethiopian context. The mothers should be fully informed about continuous use of KMC that helps the baby to improve hypothermia and weight of the baby.

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