

Result

Study participants

From May 23,2018- November 19, 2018, a total of 342 live birth newborns were screened from 9 clusters. From which 40 neonates were excluded because they didn't meet the inclusion criteria(n=13), they were not visited within three days after birth (n=8) and because substances other than the provided cord care regimen before the cord was separated (n=19). Finally 302 (BM group 106, CHX group 107, and DC group 89) were enrolled and analysed (fig. 1).

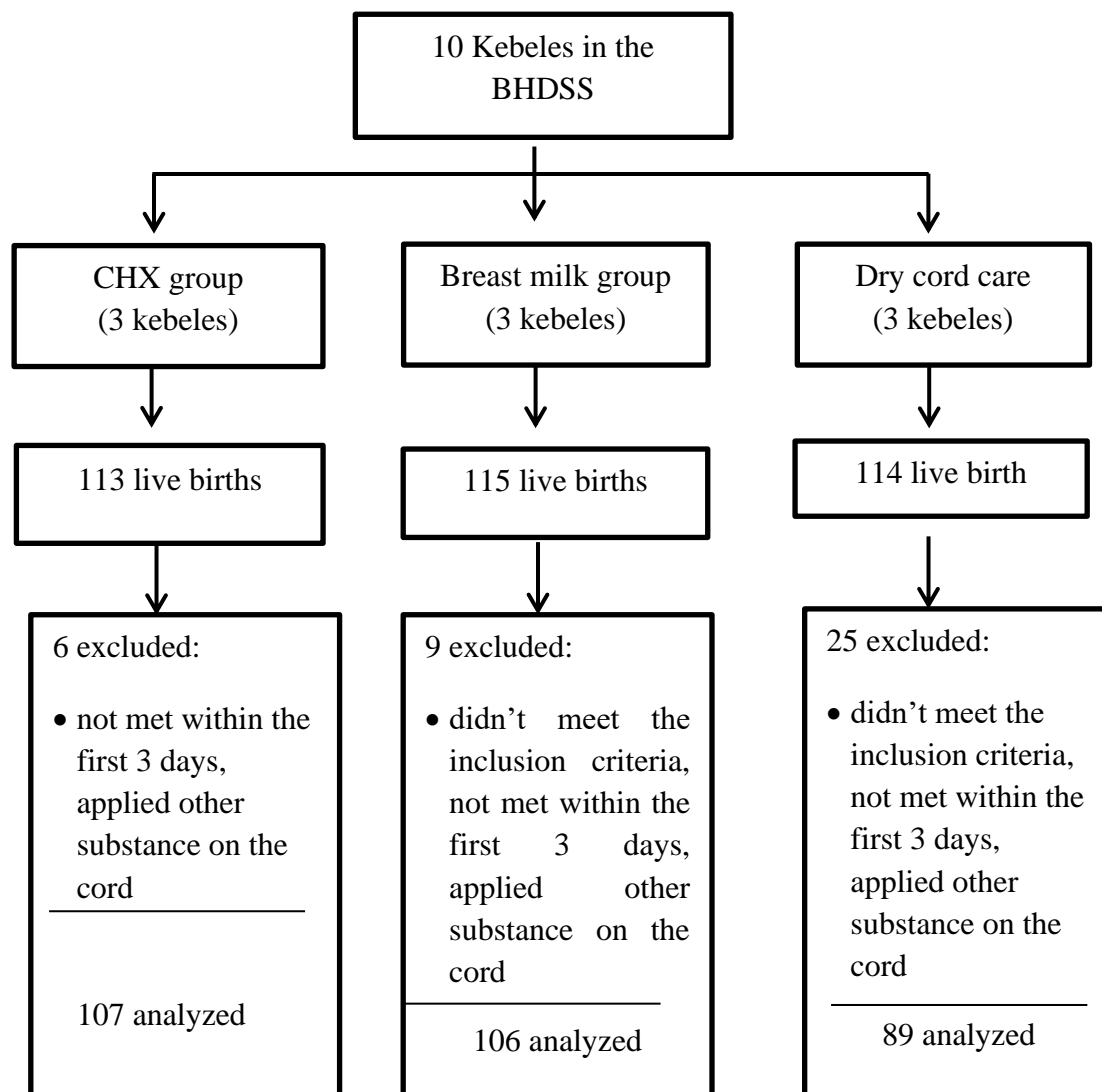


Figure 2: Study participant's flow chart for the study Neonatal Umbilical Cord Separation Time and Rate of Cord Infection in Butajira, Ethiopia 2017/2018

6.2 Baseline Comparison

Demographic, maternal, and newborn characteristics are shown in Table 2. These characteristics were comparable among the HBM, CHX, and DCC group, except for membrane rupture time ($P=0.03$), place of delivery ($P<0.001$).

Table 2: Demographic, maternal, and newborn characteristics among the comparison groups for the study neonatal umbilical cord separation time and rate of cord infection in Butajira, Ethiopia 2017/2018

<i>General characteristics</i>	<i>Breast milk group (n=106) n(%)</i>	<i>CHX group (n=107) n(%)</i>	<i>Dry cord care group (n=89) n(%)</i>	<i>P value</i>
<i>Age</i>				
18-27	57 (53.8)	22 (20.6)	38 (42.7)	P=0.09
28-37	49 (46.2)	63 (58.8)	43 (48.3)	
≥ 38	0 (0)	22 (20.6)	8 (9.0)	
Mean \pm SD	27 \pm 5	33 \pm 5	29 \pm 5	
<i>Religion</i>				
Orthodox	11 (10.3)	6 (5.6)	12 (13.4)	P=0.23
Muslim	79 (74.5)	91 (85.1)	77 (86.5)	
Protestant	0 (0)	10 (9.3)	0 (0)	
Catholic	16 (15.0)	0 (0)	0 (0)	
<i>Formal education</i>				
No education	38 (35.9)	73 (68.2)	35 (39.3)	P=0.12
Primary	62 (58.5)	33 (30.8)	43 (48.3)	
Secondary	5 (4.7)	1 (0.9)	10 (11.2)	
other	1 (0.9)	0 (0)	1 (1.1)	
<i>ANC follow-up</i>				
No follow up	3 (2.8)	10 (9.4)	6 (6.7)	P=0.14
At health post	8 (7.5)	46 (43.0)	41 (46.1)	
At health center	91 (85.9)	50 (46.7)	35 (39.3)	
At gov't hospital	2 (1.9)	1 (0.9)	7 (9)	
At Private hospital	2 (1.9)	0 (0)	0 (0)	

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<i>Membrane rupture time(hrs)</i>				
<12hr before birth	96 (90.6)	82 (76.6)	80 (89.9)	P=0.03
12-24hr before birth	8 (7.5)	22 (20.6)	7 (7.9)	
> 24 hrs of before birth	2 (1.9)	3 (2.8)	2 (2.2)	
<i>Duration of labor</i>				
12hr	83 (78.3)	83 (77.6)	75 (84.3)	P=0.50
12-24hr	18 (17.0)	17 (15.0)	8 (9.0)	
>24hr	5 (4.7)	8 (7.5)	6 (6.7)	
<i>Place of delivery</i>				
Home	10 (9.4)	41 (38.3)	22 (24.7)	P=0.00
Health institution	96 (90.6)	66 (61.7)	67 (75.3)	
<i>Sex of the newborn</i>				
Male	52 (49.1)	51 (47.7)	49 (55.1)	P=0.56
Female	54 (50.9)	56 (52.3)	40 (44.9)	

Cord separation time

The mean cord separation time was 5.7 days among the three groups with 5.6 days, 5.9 days and 5.7 days of cord separation time was observed in the BM, CHX and DC group respectively (**table 3**). Though this difference was not statistically significant among the study groups (p value=0.40), the maximum cord separation time was recorded in the CHX group (15 days) whereas the minimum cord separation time was recorded both in BM and DC group (3 days).

Table 4: mean cord separation time in days for the study neonatal umbilical cord separation time and rate of cord infection in Butajira, Ethiopia 2017/2018

Study groups	Breast milk (106)	CHX (107)	Dry cord (89)	p-value
<i>Mean(days)</i>	5.6	5.9	5.7	P=0.40
<i>Standard deviation</i>	1.3	1.7	1.5	
<i>Minimum CST</i>	3	4	3	
<i>Maximum CST</i>	10	15	13	

6.5 Omphalitis

Signs of cord infection (redness on the base of the cord stump and that extended beyond the base of the cord stump, pus, and warm skin around the cord stump) were used to determine omphalitis. There were statistically significant difference among the groups regarding the redness on the base of the cord stump at all visit ($P<0.001$) and this was highly observed in the dry care group on 38, 37, and 32 neonates on the first , second and third visits respectively. Redness beyond the base of the cord stump was highly observed on the DCC group on 11, 11 and 9 neonates on the first , second and third visits respectively, but this difference was significant among the groups only at the second visit ($P<0.001$). Pus on the cord stump was the highest in the HBM on the first visit and it was observed on 7 neonates; on second visit it was the same among the neonates in HBM and DCC 5 neonates each; on the third visit it was highest in the DCC in which it was observed on 5 neonates but all of this differences were not statistically significant among the groups. Warm skin around the cord was highly observed among the CHX group, in which it was observed on 7, 7 and 3 neonates on the first , second and third visits respectively, but this difference was significant among the groups only at the second visit ($P<0.03$) (table 5).

Table 5: Signs of umbilical cord infection for the study neonatal umbilical cord separation time and rate of cord infection in Butajira, Ethiopia 2017/2018

<i>Sign of cord infection</i>	<i>BM group(106)</i>	<i>CHX group(107)</i>	<i>DC group(89)</i>	<i>P-value</i>
<i>Redness on the base of the cord stump</i>				
1 st visit	17 (16.0)	11(10.3)	38 (42.7)	$P<0.001$
2 nd visit	12 (11.3)	7 (6.5)	37 (41.6)	$P<0.001$
3 rd visit	9 (8.5)	4 (3.7)	32 (35.9)	$P<0.001$
<i>Redness beyond the base of the cord stump</i>				
1 st visit	10 (9.4)	7 (6.5)	11 (12.4)	$P= 0.37$
2 nd visit	6 (5.6)	2 (1.8)	11 (12.4)	$P<0.001$
3 rd visit	5 (4.7)	4 (3.7)	9 (10.1)	$P= 0.14$

Pus on the cord

stump

1 st visit	7 (6.6)	5 (4.7)	5 (5.6)	P= 0.83
2 nd visit	5 (4.7)	3 (2.8)	5 (5.6)	P= 0.61
3 rd visit	4 (3.7)	1 (0.9)	5 (5.6)	P= 0.18

Warm skin around
the cord

1 st visit	3 (2.8)	7 (6.5)	1 (1.1)	P= 0.11
2 nd visit	1 (0.9)	7 (6.5)	1 (1.1)	P= 0.03
3 rd visit	1 (0.9)	3 (2.8)	2 (2.3)	P= 0.91
