Original Article

Neonatal Near Miss and Its Associated Factors at Injibara General Hospital, Awi Zone, Northwest Ethiopia, 2019

Habtamu Gebrehana Belay[1*], Simachew Kassa Limenih[2], Toyiba Hiyaru Wassie[2] and Minale Bezie Ambie[1]

[1]*Department of Midwifery, College of Health Science, Debre Tabor University, Debre Tabor, Ethiopia;*
[2]*Department of Midwifery, College of Medicine and Health Science, Bahir Dar University, Bahir Dar, Ethiopia*

Abstract

Background and objectives: There are many newborns who suffer a life-threatening complication in many low-resource countries. Neonatal near miss has been proposed as a tool to evaluate and improve the quality of neonatal care. However, there has been limited evidence on magnitude of neonatal near miss and determinant factors in Ethiopia. The aim of this study was to assess proportion and associated factors of neonatal near miss among neonates delivered at Injibara General Hospital, Awi Zone, Northwest Ethiopia, 2019.

Methods: This institutional-based cross-sectional study was conducted from February 1, 2019 to April 30, 2019, among 404 neonates. A structured and pretested questionnaire was used for mothers and a standard checklist was used for their neonates. Bivariate and multivariate logistic regression modelings were fitted to identify factors associated with neonatal near miss. An adjusted odds ratio (AOR) with 95% confidence interval (CI) was computed to determine the level of significance.

Results: The proportion of neonatal near miss was found to be 23.3% with 95% CI of 19.1–27.7%. Primiparous (AOR: 2.01, 95% CI: 1.03–3.95), referral linkage (AOR: 3.23, 95% CI: 1.89–5.513), maternal perception of reduced fetal movement (AOR: 5.95, 95% CI: 2.47–14.33), premature rupture of membrane (AOR: 3.10, 95% CI: 1.27–5.59), prolonged labor (AOR: 3.00, 95% CI: 1.28–7.06), obstructed labor/cephalo-pelvic disproportion (AOR: 4.05, 95% CI: 1.55–10.57), and non-reassuring fetal heart rate pattern (AOR: 3.75, 95% CI: 1.69–8.33) were significantly associated with neonatal near miss.

Conclusions: The proportion of neonatal near miss in the study area was found to be higher than that found by the World Health Organization's neonatal near miss systemic review. Strengthened referral linkage and efforts is needed to avoid preventable causes of neonatal morbidity and mortality.

Introduction

Neonatal near miss (NNM) is defined as a newborn who presented a severe complication in the first 28 days of life, almost dying, but who survived during the neonatal period.[1,2] The near miss concept and indicators provide useful information to evaluate the quality of care and identify preventable and treatable health system factors for improving neonatal care.[1,3]

Identification of NNM cases is based on two groups of criteria (pragmatic and management criteria). The pragmatic criteria are birth weight <1,750 g, appearance, pulse, grimace, activity and respiration (APGAR) score <7 at 5 minutes, and gestational age at birth <33 complete weeks. The management criteria are parenteral antibiotic therapy up to 7 days and before 28 days of life, mechanical ventilation, nasal continuous positive airway pressure, intubation up to 7 days and before 28 days of life, phototherapy within 24 hours of life, cardiopulmonary resuscitation, use of vasoactive drugs, use of anticonvulsant drugs, use of blood products, use of steroids for the treatment of refractory hypoglycemia, surgery, use

Keywords: Neonatal Near Miss; Proportion; Awi Zone; Ethiopia.

Abbreviations: AOR, adjusted odds ratio; APGAR, appearance, pulse, grimace, activity and respiration; CI, confidence interval; EDHS, Ethiopia Demographic and Health Survey; NNM, neonatal near miss; WHO, World Health Organization.

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[*]**Correspondence to:** Habtamu Gebrehana Belay, Department of Midwifery, College of Health Science, Debre Tabor University, P.O. Box: 272, Debre Tabor, Ethiopia. Tel: +251-58142272/+2515-81416290, Fax: +251-581410533/+251-584412260, E-mail: hgebrehana@yahoo.com

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of antenatal steroid, use of parenteral nutrition and identification of congenital malformation.[2,4,5]

The near miss concept is a potentially useful approach to assess quality of newborn care but due to the enormous variability of socio-demographic and technological advances in newborn care and registration of health information, there is no consensus on establishment of criteria of NNM.[6,7] Globally, 2.5 million newborns died in the first month of life in 2017. The majority of all neonatal deaths (75%) occur during the first week of life and about 1 million newborns die within the first 24 hours.[8] The NNM rates in different studies have included 220/1,000 live births in Northeastern Brazil, 39.2/1,000 live births in the 'Birth in Brazil' survey, and 72.5/1,000 live births in the World Health Organization's (WHO's) multicountry survey.[7,9,10]

Despite a decrease in the neonatal mortality rate, particularly in low and middle-income countries, the neonatal morbidity rate remains elevated. It is estimated that the number of survivors from a NNM event is three- to six-times higher than the number of neonatal deaths.[3,11,12] Even though the causes of neonatal morbidity and mortality are preventable and treatable, and the fact that low-cost and effective interventions exist, there has been no significant decline in neonatal morbidity and mortality.[13]

According to the Ethiopia Demographic and Health Survey (commonly referred to as the EDHS) 2016, neonatal mortality declined from 49 deaths per 1,000 live births in 2000 to 29–36 deaths per 1,000 births in 2016, a reduction of 41% over the past 16 years.[14] In 2019, the Ethiopian Mini Demographic and Health Survey reported the neonatal mortality rate to be 30 deaths per 1,000 live births. While both numbers and rates have been decreasing over the last 16 years, they have remained stable since the 2016 EDHS.[15]

Even though Ethiopia established priorities to reduce under five years mortality, such as by increasing skilled birth attendants present at a birth, meeting the unmet need of family planning, improving quality of care, increasing community-based newborn care and expanding quality facilities for newborn care, increasing resources for health financing and increasing focus on research and innovation, the improvement of neonatal morbidity and mortality remains an unaccomplished agenda.[16]

There is limited evidence regarding the NNM concept in Ethiopia. Moreover, available studies are focused on neonatal mortality. Therefore, this study aimed to assess the proportion of and factors associated with NNM among neonates in Ethiopia, using a population of neonates delivered at the Injibara General Hospital in the Awi Zone.

Methods

Study design and setting

This institutional-based cross-sectional study was conducted among 404 neonates at the Injibara General Hospital, Awi Zone, Amhara Region, Northwest Ethiopia from February 1, 2019 to April 30, 2019. The town of Injibara is the capital of the administrative center of Awi Zone. It is located about 447 km away from the capital city of Ethiopia, Addis Ababa, and 118 km from Bahir Dar, a city of the Amhara National Regional State. The Injibara General Hospital provides health services to more than 1.2 million people and in its catchment area there are 46 health centers and 5 district hospitals. The hospital has different departments that provide outpatient service and inpatient service, and has an operative theatre department.

Population

All neonates delivered at Injibara General Hospital were the source population. All neonates delivered at Injibara General Hospital and within the first 28 days of neonatal life from February 1, 2019 to April 30, 2019 were the study population.

Inclusion and exclusion criteria

All neonates with their mothers and within 28 days of neonatal life were eligible to participate, while neonates with gestational age less than 28 completed weeks, readmitted neonates, and congenital anomalous were excluded.

Ethical approval and consent to participate

Ethical clearance was obtained from the ethical review board of Bahir Dar University College of Medicine and Health Science and a supporting letter was written to Injibara General Hospital, Awi Zone. Verbal informed consent was obtained from each study participant after being given an explanation of the purpose and objective of the study.

Sample size determination

The single-population proportion formula was used to determine sample size. Consideration was made for 50% of live births surviving life-threating conditions during the neonatal period, at 5% margin of error (w) and 95% ($Za/2 = 1.96$) confidence interval (CI). To compensate for non-responses, 5% of determined sample size was added, and the final sample size was 404.

Sampling technique

Systematic sampling technique was used to obtain all study subjects. Based on the order of registration on the postnatal log book, data at every other interval was collected from mothers and their neonates until the desired amount of samples were obtained.

Operational definition

NNM rate was calculated as [(number of NNM cases/total number of live births) × 1,000]. NNM was considered when the newborn faced at least one of the following proposed criteria but survived those complications.

Pragmatic criteria

Birth weight <2,500 g, gestational age <37 weeks; 5th-minute APGAR score <7.

Management criteria

Mechanical ventilation, cardiopulmonary resuscitation, intubation, nasal continuous positive airway pressure, parenteral antibiotics, parenteral nutrition, vasoactive drugs, phototherapy during the first

28 days, anticonvulsants, blood products, steroids for the treatment of refractory hypoglycemia, surgical procedures, and antenatal steroids.

Data collection procedure

A combination of data collection methods was used. The data from mothers was collected by using pre-tested interviewer-administered structured questionnaire which was adapted from literature reviews; maternal charts were also reviewed, for clarity of diagnosis and intervention. Data from their neonates were collected by using a standardized checklist adapted from different publications of such in the literature, each of which had been developed for similar purpose by different authors. The maternal data collection tool (the questionnaire, see Supplemental Document S1) was prepared first in English, then translated to a local language (Amharic and Agew) and then re-translated back to English to verify the consistency and content of the questionnaire. Data were collected by five Bachelors of Science midwives and supervised by two senior Bachelors of Science midwives.

Data quality assurance

Training was given for data collectors and supervisors, regarding to the objectives of the study, method of data collection and significance of the study, to prevent any confusion and have a common understanding about the study. Pre-test was conducted for 10% of the total sample at another district hospital that had similar characteristics with the study population. Throughout the course of the data collection, interviewers was supervised and regular meetings were held between the data collectors, the supervisor and the principal investigator, together, in which problematic issues arising from interviews were discussed and addressed. The collected data were reviewed and checked for completeness before data entry.

Data analysis

The collected data were checked, coded and entered into Epi-data (version 3.5) software, then exported into SPSS software (version 20) for analysis. Bivariate analysis was performed for all explanatory variables in relation to NNM. Variables having p-value <0.20 in the bivariate analysis were selected for the multivariate logistic regression modeling, for adjustment of confounding effects between explanatory variables. Adjusted odds ratio (AOR) with 95% CI was computed and variables having p-value <0.05 in the multivariate logistic regression model were considered as statistically significant. Odds ratio was also used to determine the strength of association between independent variables and the outcome variable.

Results

Socio-demographic characteristics of the study subjects in Injibara General Hospital, Awi Zone, Northwest Ethiopia, 2019

A total of 404 mothers with their neonates was interviewed, with a response rate of 100%. Newborns' mothers were in the age group of 20–34 years, and 311 (77%) had the mean age of 29.0 years (standard deviation: 5.4 years). The majority of mothers (n = 400, 99%) were currently married and 391 (96.8%) were orthodox religious followers. Nearly three-fourths (n = 289, 71.5%) were Agew ethnicity, and over one-half (n = 254, 63%) were urban residents. Regarding educational status, 150 (37.1%) mothers had not attended formal education, 58 (14.4%) had attended up to receipt of diploma and above. Over one-half (n = 245, 60.7%) of the mothers were housewives (Table 1).

Obstetrics characteristic of mothers

All selected mothers of newborns attended at list one ante natal care follow-up visit. Women who had attended one to three ante natal care visit(s) numbered 213 (52.7%) and a high proportion of NNM cases was found in this category of ante natal care follow up visit(s), numbering 57 (60.6%). Twenty-eight percent of mothers were primiparous. A high rate of NNM cases was observed in primiparous mothers (n = 36, 38.3%). A total of 148 (36.6%) mothers of newborns were referred from other health institutions, and among them more than half (n = 56, 60%) represented NNM cases; obstetrics complications during the current pregnancy and labor-delivery were noted for 72 (17.8%) and 89 (22%) of mothers respectively (Table 2).

NNM characteristic

A total of 94 (23.3%) live birth neonates met the criteria of NNM. Among the NNM selection criteria, mechanical ventilation was the most commonly identified (n = 50, 53%), with a proportion of 124/1,000 live births, and 35 (37%) of NNM cases represented less than 37 completed weeks of gestation (preterm birth), with a proportion of 86.6/1,000 live births. Almost one-third of NNM cases were low birth weight (n = 29, 31%), accounting for almost 71.8/1,000 live births. More than half of the NNM cases (n = 53, 58%) were faced with more than one NNM criteria (Table 3).

Factors associated with NNM

Multivariate logistic regressions revealed that primiparous, referral linkage, premature rupture of membrane, maternal perception of reduced fetal movement, obstructed labor/cephalo-pelvic disproportion, prolonged labor and non-reassuring fetal heart rate pattern were significantly associated with NNM. Women who were primiparous showed two-times increased odds of NNM, as compared to mothers who were grand multiparous (AOR: 2.06, 95% CI: 1.06–3.98). Women who were referred from other health institutions showed three-times increased odds of NNM, as compared to non-referral cases (AOR: 3.23, 95% CI: 1.89–5.51).

Of the obstetric complications faced during the current pregnancy, premature rupture of membrane showed three-times increased odds of NNM (AOR: 3.10, 95% CI: 1.27–7.59). Maternal perception of reduced fetal movement showed almost six-times increased odds of NNM, as compared to their counter parts (AOR: 5.95, 95% CI: 2.47–14.33).

Of the obstetric complications experienced during labor-delivery, women with prolonged labor (>24 hours of labor) showed three-times increased odds of NNM, as compared to delivery within 24 hours of labor (AOR: 3.00; 95% CI: 1.28–7.06). Women with obstructed labor/cephalo-pelvic disproportion showed four-

Table 1. Socio-demographic characteristics of the mothers of newborns in Injibara General Hospital, Awi Zone, Northwest Ethiopia, 2019

Variables, *n* = 404	Selected mothers with their live births
	***n* (%)**
Age	
<20	17 (4.2)
20–34	311 (77)
>=35	76 (18.8)
Marital status	
Currently in marital union	400 (99)
Currently not in marital union	4 (1)
Religion	
Orthodox	391 (96.8)
Muslim	13 (3.2)
Resident	
Urban	254 (62.9)
Rural	150 (37.1)
Ethnicity	
Agew	289 (71.5)
Amhara	110 (27)
Others	5 (1.2)
Maternal education	
No formal education	150 (37.1)
Primary	144 (35.6)
Secondary	52 (12.9)
Diploma and above	58 (14.4)
Partner education	
No formal education	117 (29)
Primary	157 (39)
Secondary	39 (10)
Diploma and above	87 (22)
Maternal occupation	
Housewife	245 (60.7)
Governmental employed	68 (16.8)
Non-governmental employed	13 (3.2)
Merchant	75 (18.6)
Daily worker	3 (0.7)
Paternal occupation	
Farming	166 (41.4)
Governmental employed	84 (20.9)
Non-governmental employed	15 (3.7)
Merchant	132 (32.7)
Daily worker	3 (0.7)

Table 2. Obstetric characteristics of the mothers of newborns at Injibara General Hospital, Awi Zone, Northwest Ethiopia, 2019

Variables, *n* = 404	Selected mothers with their live births	Neonatal near miss, *n* = 94
	n (%)	*n* (%)
Ante natal care follow-up		
1–3	213 (52.7)	57 (60.6)
>=4	191 (47.3)	37 (39.4)
Parity		
1	113 (28)	36 (38.3)
2–3	155 (38.4)	23 (24.5)
4–5	96 (23.8)	23 (24.5)
>=6	40 (9.9)	12 (12.7)
History of abortion		
Yes	45 (11)	9 (9.6)
No	359 (89)	85 (90.4)
History of still birth		
Yes	22 (5.4)	6 (6.4)
No	382 (94.5)	88 (93.6)
History of obstetric complication during pregnancy		
Yes	72 (17.8)	42 (44.7)
No	332 (82.2)	52 (55.3)
History of obstetric complication during labor-delivery		
Yes	89 (22)	54 (57.4)
No	315 (78)	40 (42.6)
Referral from other health institution		
Yes	148 (36.6)	56 (60)
No	256 (63.4)	38 (40)

Table 3. Criteria for neonatal near miss among live births at Injibara General Hospital, Awi Zone, Northwest Ethiopia, 2019, *n* = 404

Criteria	Proportion of NNM in each category, *n* = 94	Proportion of NNM/1,000 live births
	n (%)	
Gestational age <37 completed weeks	35 (37.2)	86.6
Weight less than 2.5 kg	29 (31)	71.8
5-minute APGAR score <7	21 (22.3)	51.9
Mechanical ventilation	50 (53.2)	124
Cardiopulmonary resuscitation	12 (12.8)	29.7
Intubation	4 (4.2)	1
Nasal continuous positive airway pressure	11 (11.7)	27
Parenteral antibiotics	24 (25.5)	59
Use of parenteral nutrition	13 (13.8)	32
Vasoactive drugs	5 (5.3)	12.4
Phototherapy during the first 28 days	2 (2.1)	5
Anticonvulsants	2 (2.1)	5
Use of steroids for the treatment of refractory hypoglycemia	3(3.2)	7.43
Use antenatal steroid	5 (5.3)	12.4

Note: The values cannot be summed up to 100% because multiple interventions were possible. APGAR, appearance, pulse, grimace, activity and respiration.

Table 4. Multiple logistic regression analysis on factors associated with neonatal near miss at Injibara General Hospital, Awi Zone, Northwest Ethiopia, 2019

Variables, *n* = 404		NNM, *n* = 94		Crude odds ratio (95% CI)	Adjusted odds ratio (95% CI)	*p*-value
		Yes	No			
Residence	Urban	52	202	1	1	0.476
	Rural	42	108	1.51 (0.95–2.42)	1.23 (0.71–2.24)	
History of still birth	Yes	8	14	1.97 (0.80–4.84)	2.27 (0.78–6.55)	0.131
	No	86	296	1	1	
Maternal occupation	Housewife	67	178	1.72 (0.91–3.27)	1.69 (0.82–3.51)	0.152
	Merchant	14	64	1.79 (1.02–3.79)	1.76 (0.84–3.69)	0.131
	Employed	13	68	1	1	
Ante natal care follow-up visit	1–3	57	156	1.52 (0.95–2.43)	1.44 (0.84–2.46)	0.182
	>=4	37	154	1	1	
Parity	1	36	77	2.68 (1.48–4.86)	*2.06 (1.06–3.98)**	0.032
	2–3	23	132	1.48 (0.80–2.74)	1.16 (0.58–2.35)	0.673
	4–5	23	73	1.09 (0.49–2.39)	0.79 (0.32–1.92)	0.598
	>=6	12	28	1	1	
Referral linkage	Yes	56	92	3.49 (2.16–5.64)	*3.23 (1.89–5.51)**	0.001
	No	38	218	1	1	
Obstetric Complications						
Premature rupture of membrane	Yes	13	14	3.39 (1.53–7.51)	*3.10 (1.27–7.59)**	0.013
	No	81	296	1	1	
Maternal perception of reduced fetal movement	Yes	17	11	6.00 (2.70–13.34)	*5.95 (2.47–14.33)**	0.001
	No	77	299	1	1	
Prolonged labor	Yes	14	16	3.22 (1.51–6.87)	*3.00 (1.28–7.06)**	0.011
	No	80	294	1	1	
Obstructed labor/cephalo-pelvic disproportion	Yes	11	12	3.30 (1.40–7.73)	*4.05 (1.55–10.57)**	0.004
	No	83	298	1	1	
Non-reassuring fetal heart rate pattern	Yes	18	18	3.84 (1.91–7.74)	*3.75 (1.69–8.33)**	0.001
	No	76	292	1	1	

*The italicized value indicated a statistically significant association at 95% confidence interval (CI) that did not include 1 in the interval. 1 = reference category. Hosmer and Lemeshow test for multivariable logistic regression, equaling 0.66.

times increased odds of NNM, as compared to normal labor (AOR: 4.05; 95% CI: 1.55–10.57). Presence of non-reassuring fetal heart rate pattern showed almost four-times increased odds of NNM, as compared to those who had normal range of fetal heart rate pattern during labor (AOR: 3.75, 95% CI:1.69–8.33) (Table 4).

Discussion

In this study, the proportion of NNM was 23.3%. This finding is consistent with the finding of a study from Northeastern Brazil, which found 22%.[7] This finding is also high compared to a study from the WHO using a multicounty survey (7.25%), of the Birth in Brazil survey (3.92%), of a study in the South of Brazil (3.3%), and a study in Southeastern Brazil (1.7%).[9,10,17,18] The observed variation of NNM rates in a WHO multicounty survey and Southeast Brazil might be due to methodological difference and use of only pragmatic criteria. Also, both the study of Birth in Brazil and the study in South of Brazil used only four items from the management and pragmatic selection criteria. In this study, the proportion of NNM is low compared to a study in Uganda, which showed 36.7%; this difference might be due to a methodological difference and that the inclusion criteria involved newborns only from mothers with severe obstetric complications.[19]

In this study, we also observed a high proportion of NNM criteria for mechanical ventilation, gestational age <37 completed weeks, birth weight of <2.5 kg, 5-minute APGAR score of <7, and use of parenteral antibiotics, which is in line with a systemic review on NNM, the Birth in Brazil survey, the Northeastern Brazil study and the study in the South of Brazil.[7,9,17] Primiparous was statistically associated with NNM in our study as well, being a two-times increased odds of NNM as compared to that in

grand multiparous mothers. This result is in line with the studies in Northeastern Brazil and Southeast Brazil.[7,18] This also might be due to the fact that primiparous mothers were high-risk for malposition, malpresentation, prolonged labor, increased induction of labor, and obstructed labor/cephalo-pelvic disproportion.

Obstetrics complications during current pregnancy were shown to be statistically significantly associated to NNM. Premature rupture of membrane showed three-times increased odds of NNM as compared to those mothers' counterparts. This might be due to the fact that premature rupture of membrane usually leads to preterm labor, which is a risk factor for birth asphyxia, chorioamnionitis, neonatal sepsis, pulmonary hypoplasia, and cord prolapse. Different studies revealed that premature rupture of membrane significantly related to increased risk of maternal, fetal and neonatal morbidities and mortalities resulting from obstetric complications.[20,21]

Women with reduced fetal movement during pregnancy showed almost six-times increased odds of NNM, as compared to mothers who did not perceive reduced fetal movement. This might be due to fetal compromise, utero-placental insufficiency, intrauterine growth restriction, and/or abnormal amniotic fluid volume. Similarly, different studies revealed that reduced fetal movement was associated with poor prenatal outcomes of those with preterm birth, perinatal birth injury, low birth weight, low APGAR score, increase rate of cesarean section, and neonatal and fetal deaths.[22,23]

Obstetrics complications during labor-delivery were strongly associated with NNM in our study. Women with obstructed labor/cephalo-pelvic disproportion showed four-times increased odds of NNM, as compared to their counterparts. This might be due to obstructed labor causing fetal hypoxia, due to tonic uterine contraction that interferes with the uteroplacental circulation, intracranial hemorrhage due to super molding of the head, birth trauma, and infection. Mothers with prolonged labor showed three-times increased odds of NNM, as compared to mothers who were delivered within 24 hours of labor. This might be due to abnormal progress of labor leading to fetal distress, early neonatal and fetal infections, birth trauma, and fetal hypoxia due to diminished uteroplacental circulation.

Detected non-reassuring fetal heart rate pattern showed almost four-times increased odds of NNM, as compared to detected reassuring fetal heart rate pattern. A supporting study in Indonesia revealed that survival of newborns from mothers without severe complications was better than that of newborns from mothers with obstetric complications, and studies in Brazil also revealed that maternal near miss were strongly associated with prematurity, neonatal asphyxia, and early respiratory discomfort.[24,25] This finding is also supported by studies from the Jimma University Specialized Hospital and the Dessie Referral Hospital, which showed that obstetric complications during current pregnancy and complications during labor and delivery were strongly associated with adverse birth outcomes (low birth weight, preterm birth, low APGAR score, and still birth).[26–28]

Referral linkage was found to be significantly associated with NNM in this study, increasing the odds of NNM by three-times compared to mothers who were not referred. This result is in line with a study by the Jimma University Specialized Hospital, which revealed that referral of mothers with complications from other facilities for delivery service was high risk for adverse pregnancy outcomes when compared to mothers who were not referred.[26] This finding might be due to the fact that referral cases were from mothers who faced obstetric complications and needed more timely and better interventions to avoid maternal and neonatal morbidity and mortality.

Future directions

It is hypothesized that knowing magnitude and associated factors of NNM is meaningful for stakeholders to intervene on preventable factors, which is also of theoretical and practical significance to researchers, policy makers and practitioners. Based upon the finding of this study, we hypothesized that early identification and treatment of obstetric complications could reduce neonatal morbidity and mortality.

Conclusions

The proportion of NNM in the study area of this study was found to be high. Gestational age <37 completed weeks and weight <2.5 kg were the most commonly identified pragmatic criteria, and mechanical ventilation, use of parenteral antibiotics and use of parenteral nutrition were the most commonly identified management criteria. Variables statistically associated with NNM were primiparous, referral linkage, premature rupture of membrane, maternal perception of reduced fetal movement, prolonged labor, obstructed labor/cephalo-pelvic disproportion, and non-reassuring fetal heart rate pattern. Ensuring the continuum of compressive maternal care from pregnancy through delivery will help to avoid preventable causes of neonatal morbidity and mortality and to create good referral linkage with health facilities within catchment areas, including provision of feedback.

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Data availability

The data used to support the findings of this study are available from the corresponding author upon formal request.

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Conflict of interest

The authors have no conflicts of interest related to this publication.

Author contributions

Conceiving the research idea, writing the proposal, designing the study, supervising the data collection process, performing the statistical analysis, and writing the manuscript (HG); participating in the data analysis and revising drafts of the paper (MB); reviewing and finalizing drafts of the paper (SK, TH). All authors read and approved the final manuscript.

Supporting information

Supplementary material for this article is available at https://doi.org/10.14218/ERHM.2020.00011.

Supplemental Document S1. Research questionnaire.

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