Knowledge and practice of immediate new-born care among midwives in governmental health facilities of central zone, Tigray region, north Ethiopia: cross sectional study

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Abstract

Objective
The objective of this study was to assess knowledge and practice of immediate newborn care among midwives in governmental health facilities of central zone of Tigray regional state, 2016.

Results
The mean age of the study participants was 34.1 years. Majority of the participants (83%) were diploma midwives. The score of knowledge of participants on immediate newborn care was 17.7% good and 25.2% poor. More than half (52.4%) of midwives practiced immediate newborn care. Midwives working in health center have 82% lower odds of newborn care compared to those working in hospital (p=0.000, OR=0.18 (0.07, 0.43).

Introduction
New-born is completely tiny and powerless, and dependent on other [1]. Crying after delivery is an indicative of establishing active breathing [2]. Babies die after birth because they have difficulty of adapting to extra uterine life [3]. There are 20 countries with the highest neonatal mortality rates worldwide, out of this 16 are found in Africa. One in eleven children in sub-Saharan Africa dies before celebrating five years [4, 5, 6]. Even-though becoming new-born is not a disease, huge numbers of new-borns are dying immediately after birth [3]. Evidences showed that the day of birth is the riskiest time that is a child is 500 times more likely to die in the first day of life [4]. One million neonatal deaths occur on their day of birth [5, 7]. Knowledge and practice of health care providers is essential in improving the survival of new-born and reduces neonatal mortality and morbidity [8].

In Ethiopia 37 neonates died per 1,000 live births [9]. Similarly in Tigray region, there are
32,098 live births, out of these 3,515 (11%) neonates died at health facilities [10]. Midwives are more likely to attend labour and provide new-born care. Therefore, it is crucial to assess the knowledge and practice of midwives towards immediate new-born care.

**Methods**

Institutional based cross-sectional study design was conducted from January-June, 2016 in governmental health facilities of central zone of Tigray. In central zone, there were 54 governmental health centers and 6 hospitals. There were a total of 210 midwives working in the governmental health facilities of this zone.

A sample of 150 currently working midwives was included in the study. The sample size was determined using single population proportion formula. It was computed by considering 50% ($p = 0.5$) prevalence of knowledge and practice, 95% CI, and 5% margin of error. This resulted in 150 sample size after including 10% contingency for non-response rate. Correction formula was used since the source population was less than the sampled population.

All governmental health facilities were included in the study. Final study subject was selected using convenience sampling method. Those midwives found working in the health facilities during the data collection time was included to the study. Eligibility criteria were all midwives those with diploma and above full time employed and conducting delivery and newborn care during data collection period.

Structured questionnaire was adapted with modification from different related literatures. Observation checklist was adopted from save the children international [12]. The questionnaire and checklist were prepared first in English then translated to Tigrigna and retranslation to English. Questionnaire was pre-tested on 5% of the same source population other than the sampled population. Based on the pre-test, questions were
revised, edited, and those found to be unclear or confusing were modified. Finally, structured closed ended Tigrigna version questionnaire was used for data collection. Moreover, checklist was used to assess immediate new care practice of the midwives. Data was collected by face to face interview and non-participatory observations. Data collectors were 5 BSc Midwives. They were trained for two days on the study instrument and data collection procedures. Additionally, two BSc Nurses, and assisted the data collectors.

**Operational definition**

Knowledge: Refers to the knowledge response of midwives to the structured questions on the steps of new-born care, that is good knowledge when they respond correctly to >75 % of the knowledge questions (>8 steps), fair knowledge respond to 51-74% (5-8 steps) and poor knowledge respond to<50% (<5 steps).

Practice: Refers to the performance of midwives according to prepared checklist regarding new-born care. If the midwives performed the task at least 50% of the steps in the checklists was considered as practiced, and not practiced if performed 50% of the tasks in the checklists.

The collected data was entered in to SPSS version 21.0. Variables with p-value less than 0.3 on bivariate analysis were entered in to the multivariable analysis and adjusted odds ratio with 95% CI was used to ascertain the association between dependent and independent variables. The level of significance was taken at $\alpha <0.05$. Finally, result was presented in texts, and tables.

Ethical clearance and approval was obtained from the research ethics committee of department of nursing and midwifery, Addis-Ababa University. Official cooperation letter was written from Tigray health bureau to each woreda health office and written permission was obtained from each respondents.
Results

Participants’ socio-demographic characteristics

Totally 147 midwives were participated in the study which gives a response rate of 98%.

Among the respondents 88 (59.9%) were from health center and 59 (40.1%) from hospitals.

One hundred seventeen (79.6%) were females and 35 (23.8%) of the participants were in the age group of 25-29. Orthodox Christianity was the dominant religion consisting of 135 (91.8%).

Majority (83.0%) of the respondents were diploma, 55 (37.4%) respondents had work experience of 1-5 years and 49.7% were married.

Participants Knowledge on immediate newborn care

Participants responded that the advantage of early initiation of breastfeeding; 97 (66%) said it prevents the newborn from hypoglycemia and 91 (61.9%) of respondents know the advantage of colostrum on preventing new-born baby from infection. Near twenty percent (19.7%) of the participants said that colostrum is the first immunization for the newborn.

Among all, 137 (93.2%) of respondents had knowledge on the appropriate time of initiation of breastfeeding for the newborn baby.

Most of the respondents know on placing the newborn on mother’s abdomen 141 (95.9%) immediately after delivery. Participants were asked about the importance of vitamin K and 76.9% of the respondents mentioned that it prevents from bleeding (Table S1). When the respondents asked about the immediate new-born complications, majority of them identified hypothermia, hypoxia and infection (Table S2).

Table-1: Knowledge of midwives on care given to immediately born baby in central zone, Tigray, Ethiopia, 2016

The overall Knowledge of midwives on immediate newborn care was 17.7%, 57.1% and 25.2%, good, fair and poor knowledge respectively.
Participants practice of newborn care

Around 146(99.3%) of respondents have prepared cord tie and clamp before delivery, but 98% of midwives did not prepared baby identification material (Table 2).

Table-2: Practice of midwives on immediate newborn care in central zone, Tigray, Ethiopia, 2016

Majority of the respondents, 145(98.6%) have immediately dried the whole body of baby including the head and limbs but 14(9.5%) of respondents have not removed wet cloth used to dry the baby. Most 145(98.6%) of respondents were administered vitamin K to the new-born immediately.

Overall 52.4% of midwives practiced immediate newborn care appropriately.

Factors associated with immediate newborn care

Variables which have p-value less than or equal to 0.3 in Bivariate analysis were entered to multi-variable analysis. The multi-variable analysis result showed that work environment was significantly associated with practice of new-born care that is midwives working at health center were 82% lower odds of new-born care compared to those working in the hospitals (Table 3).

Table-3: Multivariable analysis of variables with practice of newborn care, among Midwives working in central zone, Tigray, Ethiopia, 2016.

Discussion

According to this study even-though 85.7% of respondents had received in service training, participants had poor knowledge regarding care of new-born at birth (25.2%). This is in line with similar study done in Sudan [1]. This indicates that midwives in both study area have knowledge gap on immediate new-born care.

The knowledge of study participants on immediate new-born care of this survey were good (17.7 %), fair (57.1%) and poor (25.2%). This is relatively lower than study done in Egypt
This might be related to the educational status of respondent’s, there was presence of degree and speciality in the study done in Egypt.

About 99.3% of participants in this study were not practiced to put baby identification bands on the wrist and ankle after delivery. This is consistent with the study done in Khartoum, Sudan (1). This will increases misshaping or exchange of babies in busy delivery room or time.

Practice of respondents towards immediate new-born care in this study were 52.4% which is relatively higher than the study done in Sudan [1]. This might be due to the descriptive statistics used at both study areas, that is the study done in Sudan had taken mean where as in this study practice was calculated from median.

This study result indicated that midwives working at health center were 82% lower odds of new-born care compared to those working in the hospitals. This is different from the same study done by MAISHA program in Tanzania [13]. This might be due to difference in socio-demographic characteristics.

**Conclusion**

Based on the finding midwives had knowledge and practice gap on immediate new-born care. Significant numbers of midwives have improper practice of new-born and statistically significant difference of new-born care was observed among the midwives working in the health center and hospital.

**Limitation**

Sampling procedure used for this study was convenience so it is limited to talk with this to the general population. The sample size used might not be enough to detect the statistical difference between the dependent and outcome variable. The nature of study design could not show seasonal variation and temporal relationship of cause and effect. Absence of
similar literature in Ethiopia.

List Of Abbreviations

CI----Confidence Interval
SPSS----Statistical package for social science

Declarations

Ethics approval and consent to participate
Ethical clearance and approval was obtained from the research ethics committee of department of nursing and midwifery, college of health science, Addis-Ababa University. Official cooperation letter was written from department of nursing and midwifery to Tigray regional health bureau. Then Tigray regional health bureau sent written cooperation letter to all of the district health bureaus of central zone and hospitals. Each district health bureaus wrote official letter to each health facilities under their control. Health facility managers gave written permission to the maternal and child health department head. After explaining about the purpose, and the possible benefit of the study; written permission was obtained from each respondents. Confidentiality of the respondent was maintained throughout the study.

Consent for publication
Not applicable for this section

Availability of data and material
The datasets during and/or analyzed during the current study available from the corresponding author on reasonable request.

Competing interests
The authors declared that they have no competing interests.

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Addis Ababa University. The funder has no role in the design, analysis and interpretation of the results.

Authors’ contributions

Tesfay Tsegay carried out the conception and designing the study, performed statistical analysis and wrote the manuscript. Alem Gebremariam participated in the conception and designing the study, performed statistical analysis and wrote the manuscript. Rajalakshimi Murgan participated in designing the study, analysis, reviewing and editing the final draft and manuscript. Mekonnen Haftom participated in the conception and designing the study, performed statistical analysis and wrote the manuscript. All authors read and approved the final manuscript.

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### Table-1: Knowledge of midwives on care given to immediately born baby in central zone, Tigray, Ethiopia, 2016

| Variable                                                      | Frequency (N=147) | Percent |
|---------------------------------------------------------------|-------------------|---------|
| Knowledge of midwives on advantage of skin-to-skin contact    |                   |         |
| Prevent hypothermia                                           | 64                | 55.8%   |
| Help baby stay warm                                          | 84                | 57.1%   |
| Bonding                                                       | 40                | 27.2%   |
| Help expel placenta and uterine contraction                  | 2                 | 1.4%    |
| Knowledge of midwives on measures to be taken for baby unable to cry after delivery |                   |         |
| Suck the baby                                                | 136               | 92.5%   |
| Call a help and start resuscitation                          | 105               | 71.4%   |
| Start cardio-pulmonary resuscitation                         | 10                | 6.8%    |
| Burping                                                      | 3                 | 2.0%    |
| Oxygen administration                                        | 4                 | 2.7%    |
| Knowledge on time of bathing for immediately born baby       |                   |         |
| Before 24 hour of delivery                                   | 9                 | 6.1%    |
| After 24 hour of delivery                                    | 110               | 74.8%   |
| I do not know                                                | 5                 | 3.4%    |
| Counsels mother to wash at home after 24 hour                | 23                | 15.6%   |
| Knowledge on the importance of providing eye ointment        |                   |         |
| Prevent eye infection                                        | 57                | 38.8%   |
| Prevent blindness                                            | 12                | 8.2%    |
| Prevent conjunctivitis                                       | 21                | 14.3%   |
| Prevent from STI                                             | 23                | 15.7%   |
| Prevent Gonorrhoea                                           | 2                 | 1.4%    |
| Prevent syphilis                                             | 8                 | 5.5%    |
| As prophylaxis                                               | 8                 | 5.5%    |
| Prevent dryness of eye                                       | 1                 | 0.7%    |

### Table-2: Practice of midwives on immediate newborn care in central zone, Tigray, Ethiopia, 2016
| Variable                                                                 | Frequency N=147 |
|-------------------------------------------------------------------------|-----------------|
| Washes hands with soap and water, dried with a clean dry               |                 |
| Perform task completely                                                 | 36              |
| Unable to perform task completely                                       | 111             |
| Wipes the eyes and face when the head is delivered                      |                 |
| Perform task completely                                                 | 94              |
| Unable to perform task completely                                       | 53              |
| Clean eyes immediately after birth with swab soaked in sterile water,   |                 |
| using separate swab for each eye                                        |                 |
| Perform task completely                                                 | 44              |
| Unable to perform task completely                                       | 103             |
| Delivery surface covered with sterile dry towel                         |                 |
| Perform task completely                                                 | 135             |
| Unable to perform task completely                                       | 12              |
| When baby not cried within 30 minute of delivery, called help and      |                 |
| prepared for steps of resuscitation                                     |                 |
| Perform task completely                                                 | 42              |
| Unable to perform task completely                                       | 7               |
| Use appropriate size of mask for resuscitation                          |                 |
| Perform task completely                                                 | 45              |
| Unable to perform task completely                                       | 4               |
| Cord Tie                                                                |                 |
| Perform task completely                                                 | 84              |
| Unable to perform task completely                                       | 63              |
| Cord cut with sterile scissor or surgical blade.                        |                 |
| Perform task completely                                                 | 99              |
| Unable to perform task completely                                       | 48              |

Table-3: Multivariable analysis of variables with practice of newborn care, among Midwives working in central zone, Tigray, Ethiopia, 2016.
| Variables                  | Practiced New-born Care | COR (95% CI) | AOR (95% CI) | P-Value |
|---------------------------|-------------------------|--------------|--------------|---------|
|                           | Yes, n (%)              | No, n (%)    |              |         |
| Marital status            |                         |              |              |         |
| Single                    | 23(48.9%)               | 24(51.1%)    | 1            | 1       |
| Married                   | 48(65.8%)               | 25(34.2%)    | 2.00(0.94, 4.23) | 1.90(0.79, 4.58) | 0.15 |
| Divorced                  | 2(16.7%)                | 10(83.3%)    | 0.20(0.04, 1.05) | 0.22(0.04, 1.26) | 0.09 |
| Widowed                   | 4(26.7%)                | 11(73.3%)    | 0.38(0.10, 1.36) | 0.40(0.09, 1.73) | 0.22 |
| Religion                  |                         |              |              |         |
| Orthodox                  | 74(54.8%)               | 61(45.2%)    | 1            | 1       |
| Muslim                    | 3(25.0%)                | 9(75.0%)     | 0.27(0.07, 1.06) | 0.19(0.04, 0.89) | 0.036 |
| Working environment       |                         |              |              |         |
| Hospital                  | 46(78.0%)               | 13(22.0%)    | 1            | 1       |
| Health Center             | 31(35.2%)               | 57(64.8%)    | 0.15(0.07, 0.32) | 0.18(0.07, 0.43) | 0.000 |
| Educational status        |                         |              |              |         |
| Diploma                   | 60(49.2%)               | 62(50.8%)    | 1            | 1       |
| Degree                    | 17(68.0%)               | 8(32.0%)     | 2.2(0.88, 5.47) | 1.10(0.32, 3.72) | 0.87 |
| Knowledge on Newborn care |                         |              |              |         |
| Fair                      | 43(51.2%)               | 41(48.8%)    | 1            | 1       |
| Good                      | 16(61.5%)               | 10(38.5%)    | 1.52(0.62, 3.75) | 1.42(0.48, 4.17) | 0.52 |
| Poor                      | 18(48.6%)               | 19(51.4%)    | 0.90(0.42, 1.96) | 1.3(0.51, 3.33) | 0.57 |
| Training on newborn care  |                         |              |              |         |
| Yes                       | 15(71.4%)               | 6(28.6%)     | 1            | 1       |
| No                        | 62(49.2%)               | 64(50.8%)    | 0.38(0.14, 1.06) | 0.48(0.14, 1.65) | 0.25 |

**Supplementary Files**

This is a list of supplementary files associated with the primary manuscript. Click to download.

Table S1.docx
Table S2.docx