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Research Article

Immediate Newborn Care Practice and Associated Factors Among Health Care Providers in Arbaminch Town Govermental Health Institutions of Southern Ethiopia: Facility Based Cross-Sectional Study

Sofiya Bushera*, Wanzahun Godana, Direslign Miskir

Department of Public Health, Arbaminch General Hospital, Arba Minch, Ethiopia

ABSTRACT

Background and objectives: Globally under-five and infant mortality rates had declined over the past four decades, but high neonatal mortality rates had remained relatively unchanged. Neonatal death account for 43% of under-five child deaths globally and account for 42% of under-five mortality in Ethiopia. And this mortality is related to immediate obstetric and newborn care of babies provided by health provider's related to immediate newborn care and their associated factors among health care provider's in Arba Minch town public health facilities. Study was help cost effective because benefits family members from the medical expense, saving the life of a newborn baby, as a source of information health professionals, health programmers, researchers and policy makers. To assess, the status of immediate newborn care practice and associated factors among health providers in Arba minch Town public health facility, SNNPR.

Methods: Institution based Cross-sectional study design was conducted to assess the status of newborn care practice provided by health professionals in selected Arbaminch Town. The samples (195 health professionals) were allocated proportionally to hospital and health centers of selected Arbaminch Town and finally, selected by simple random method. Then the data was entered Epidata version 4.4.2.1 and analyzed by using SPSS statistical soft-ware verstion.20. Finally, the result was displayed on text, graph and tables.

Results: The response rate were 100% and more than half of respondents 116 (59.5%) of the respondents was good knowledge newborn care step whereas 35 (17.9%) poor knowledge and the rest 44 (22.6%) have not knowledge. The majority of assessed health facilities have not fulfilled necessary equipment. The overall newborn care practice among health professionals was not good as the majority of health professionals 148 (75.9% of participants) misses one or more steps of essential newborn care practice. Most of the health professionals had a good knowledge about newborn care (i.e. 87 (44.6%), a fair knowledge have 62 (31.8%), whereas 46 (23.6%) of health professionals had poor knowledge (scored below the mean). Factors, like work place 99.5%, supportive supervision [AOR 7.485, 95% CI (1.1.933, 28.991)], training status [AOR 33.511, 95% CI (1.769, 634.834)], and knowing danger sign of the newborn [AOR 0.097, 95% CI (0.02, 0.44)] are significantly associated with newborn care practice.

Conclusion and recommendation: Most of health professionals' newborn care practice was not good 148 (75.9%), the majority of them had a good knowledge, and the majority of the assessed facilities have not full filled necessary equipment. Training and supervision was not adequate. So it is necessary to strengthen in-service training, supportive supervision, and fulfilling equipment to enhance newborn care practice of health professionals. Further investigation on the practice of newborn care is recommended.

Keywords: Newborn care; Neonate; Health facility; Health professionals

INTRODUCTION

Globally, an estimated 2.6 million still births and 2.4 million neonatal mortality (death within 28 days or less than 4 weeks of duration), occur each year. The majority occurring around the time of child birth [1]. Among the life span the childhood period neonatal period is very crucial, which to large extent determines the overall health status of the child and in turn adult life. Birth is the major challenge to the newborn to negotiate successfully from intrauterine to extra uterine life [2]. Delivery and the 1st few hours of life are a critical period for the further growth and development of an infant [2,3]. Most babies are born healthy and at term. The

Correspondence to: Sofiya Bushera, Department of Public Health, Arbaminch General Hospital, Arba Minch, Ethiopia, Tel: +251911389879; E-mail: sofiyetati@gmail.com

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care they receive during the first hours, days, and weeks of life can determine whether they remain healthy. Although some babies may require special attention (for example, those who are sick or premature), all babies need basic care to help ensure their survival and well-being [4]. Newborn health care starts long before birth. It starts with caring for pregnant mothers.

Most neonatal illness and deaths are in principle treatable and preventable. Essential Newborn Care (ENC) is a comprehensive strategy designed to improve the health of newborns through interventions before conception, during pregnancy, and soon after birth and in the postnatal period and the major cost effective health intervention in the world and it prevents millions of neonatal death [1].

World Health Organization (WHO) states that there should be attention during immediate delivery of newborn which is an integral part of care in normal Birth [5]. Immediate newborn care involves: Drying the baby with warm towels or clothes, while being placed on the mother's abdomen or in her arms. This mother-child skin-to-skin contact is important to maintain the newborn's temperature, encourage bonding and expose the newborn to the mother's skin bacteria [6]. Ensuring that the airway is clear, removing mucus and other material from the mouth, nose and throat with a suction pump. Taking measures to maintain body temperature, to ensure no metabolic problems associated with exposure to the cold arise. Clamping and cutting the umbilical cord with sterile instruments, thoroughly decontaminated by sterilization [1,7]. This is of utmost importance for the prevention of infections. A few drops of silver nitrate solution or an antibiotic is usually placed into the eyes to prevent infection from any harmful organisms that the newborn may have had contact with during delivery (e.g. maternal STDs).

Weighing newborn, administering vitamin K (to prevent hemorrhagic disease of the newborn), and administering vaccination is performed without interfering skin to skin contact and breast feeding [8]. The newborn's overall condition is recorded at 1 minute and at 5 minutes after birth using the APGAR Scale, Putting the newborn to the breast as early as possible. Early suckling/breast-feeding should be encouraged, within the first hour after birth. About 24 hours or so after birth, the newborn is bathed, but the vernix caseosa (whitish greasy material that covers most of the newborn's skin) is tried to be preserved, as it helps protect against infection [7].

Good of newborn care during childbirth in health facilities reflects the available physical infrastructure, supplies, management, and human resources with the knowledge, skills and capacity to deal with pregnancy and childbirth normal physiological, social and cultural processes, but prone to complications that may require prompt life-saving interventions [9]. Researches show that it is necessary to go beyond maximizing coverage of essential interventions to accelerate reductions in maternal and prenatal mortality and severe morbidity [10].

Over the last three decades, the annual number of deaths among children less than 5 years old has decreased by almost a third. Although infant mortality has fallen in many developing countries over the past two decades, the rate of fall is slowing. One reason is the contribution of neonatal mortality, which has remained fairly steady over this period. As neonatal mortality contributes to over 42% of infant deaths in Ethiopia, interventions to improve child survival must address the neonatal period [10].

Health care provider has direct contact with the neonate during birth. Hence they require the knowledge and skill to take care of the babies keeping in mind the basic principles so that many complications can be prevented. All staff involved in the clinical care of the newborn immediately following delivery are must be competent in newborn life support and neonatal resuscitation [11].

MATERIALS AND METHODS

Study area

Arbamich town is located at 426 km far from Addis Ababa, the capital city of Ethiopia and 156 km from Hawassa, the capital city of southern nation's nationalities and people's regional state. Based on 2007 census conducted the town has a total population of 74,879, of whom 39,208 are men and 35,871 women. Arbaminch consists of the uptown administrative center of Secha and four kilometers away the downtown commercial and residential areas of Sikela which are connected by road. The town has 3 public health institution one general hospital and two health centers. The three health institutions has infrastructure to give delivery service and immediate newborn care. The study was conducted in Arba Minch Town public health institution; Arba Minch General hospital, Secha Health center and Sikela Health center. The town governmental health facility has 329 health workers Arba Minch General hospital 254 health providers, Secha health center 32 health providers and Sikela health center 43 health providers and total of 62 health officers, 49 BSc nurses, 21 BSc midwives, 41, diploma midwives and 156 diploma nurses.

Study period

A facility based cross-sectional study was conducted from, February-June, 2019.

Study design

Facility based Cross sectional study design was employed.

Source population

All health professionals (health officers, nurses and midwives) they are assigned to Arba Minch town of public health institutions.

Study population

Health professionals (Health officers, Nurses and Midwives) they work in Arba Minch town public facility of (Arba Minch G/H, Sech H/C, Sikela H/C) and they was involved in newborn care practice during the study period was the study population for quantitative study.

Inclusion and exclusion criteria

Inclusion criteria: Health professionals (health officers, nurses and midwives) they were assigned to health institutions of Arbaminch general hospital, Secha health center and Sikela health center was included.

Exclusion criteria: Health professionals (health officers, nurses and midwifes) who were on annual leave, and those who were out of the health institution during data collection period due to different reasons like training.

Sample size determination

A single population proportion formula was used to estimate the sample size and the following assumptions was made: Practice of midwives regarding immediate newborn care 54% (32) (p=0.54), level of significance 5% (α=0.05), 95 % confidence level (Z α/2=1.96) and absolute precision or margin of error 5% (d=0.05).

Where, n=sample size

P=Proportion of practice of health care providers (54%)

Z=Standard normal distribution curve value for the 95% confidence interval (1.96)

d=The margin of error or accepted error

N=329

Where, nf=Final sample size

n=First calculated sample size

N=Source population

n final=382/(1+382/329)=177 health professionals

Adding a 10% allowance for a non-response rate, the total sample size is 18+177=195

Sampling procedure

Three health facilities were selected respondents. Sample size was distributed each health facility proportionally. Total sample (195 health professionals) were proportionally allocated to three health facility was observed in the facility setting they were studying and interviewed using lottery method. Those health professionals found working in the health facilities during data collection time were include in the study based on lottery method. In order to get health professionals, who was providing newborn care, data was collect at day and night time (duty time) especially to assess their practice (Figure 1).

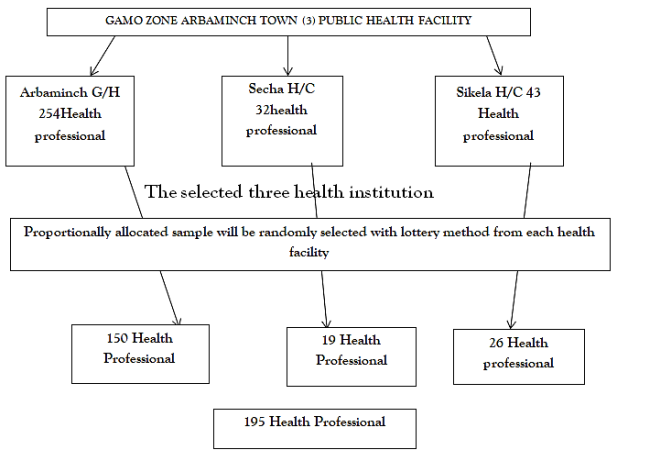

Figure 1: Schematic presentation of sampling procedure.

Variable of the study

Dependent variable: Immediate Newborn care practice (good/poor).

Independent variable:

- Socio demographic factors of health worker
- Age
- Sex
- Marital status
- Religion
- Place of work
- Work experience
- Type of profession (health officer, BSc/diploma nurse, BSc/diploma midwife)
- The level of education (BSc, Diploma or others)
- The level of Knowledge of health professionals about newborn care
- Availability of newborn care service equipment and essential drugs
- Training status health professionals (trained/none trained)
- Availability of supportive supervision within the last 3 month

Operational definition

Good newborn care practice: newborn care that fulfill all the components of newborn care (ensuring the air way is clear and remove mucus from the mouth, nose and throat with suction, immediate skin to skin contact to prevent hypothermia, clean and dry newborn with warm towel, clamp and cut umbilical cord with sterile instrument, providing eye care with TTC eye ointment or silver nitrate, giving vitamin K and vaccine, weigh newborn and start breast feeding within one hour).

Poor (inadequate) newborn care practice: A newborn care practice that misses one or more components of the newborn care.

Good knowledge/knowledgeable: A health professional who scores above 21 (75%) out of 28 of knowledge related questions about newborn care is said to be knowledgeable/had good knowledge.

Fair knowledge: health professional who answered above the mean (i.e.14-21) of knowledge related questions said to had fair knowledge.

Inadequate knowledge: A health professional who scores below the mean (14) (50%) of knowledge related questions about newborn care are said to be had inadequate knowledge.

Skilled Birth Attendant (SBA): An accredited health professional such as a midwife, doctor or health worker who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns (World Health Organization 2004) [12].

Data collection instrument and personnel

The data was collected with semi structure questionnaire which is prepared based on standardized interview guide (i.e. save the children training guide) and another related literature review. The research tool has two main parts 1. Direct observation check list, 2. Interviewer administered questionnaire which has two sub parts (socio demographic assessment, knowledge assessment). The data was collected by 6 degree health professionals, 2 supervisors.

Facility assessment observational check list: Facilities was assessed for supplies and equipment by using a standardized inventory tools developed from labor and delivery observational check list.

Respondent's socio demographic factor assessment tool, developed by reviewing literature.

The immediate newborn care practice assessment tools developed based on WHO standardized procedure of immediate and essential newborn care guide for Doctors, nurses and midwifes and other health professionals and checked for its consistency with the current 2015 IMNCI (integrated management of newborn and childhood illness) guideline [13-17]. The practice is good newborn care practice, if all the components immediate and essential newborn care practice is fulfilled and poor (inadequate) newborn care practice if one or more components are missed.

Health professional's knowledge about newborn care assessment tool is adapted from Eriksson, et. al. [18], who used it in Vietnam to assess health worker knowledge regarding newborn care. Further modification of the tool is done based on literature.

Data quality management: The data quality was controlled by translating the questioner to Amharic and then back to English to ensure its consistency, conduct pre-test in Chencha district on 10 health professionals, training was given for data collectors and supervisors strict follow up of data collection activity provided day to day correction assured the data quality.

Data Processing and analysis: The data was entered Epidata version 4.4.2.1 and analyzed by using SPSS statistical software version 20. The completeness of the data was checked. An error relate to inconsistency was corrected by using data cleansing method. The data was categorized and sorted to facilitate its analysis. For descriptive component different variables was presented as mean or median and Categorical/discrete variables was described as percentages. Logistic regression, the Bivariate analysis was used to identify factors that are associated with good newborn care practice provide by health professionals. To select variables for multiple regressions, variables with a p-value of <0.25 on binary logistic regression are taken into multivariable logistic regression models to assess the association between independent variables and the outcome variable. The unadjusted (crude) and adjusted odds ratios together with their corresponding 95% confidence intervals are compute. A P-value ≤ 0.05 was considered statistically significant in this study. Efforts are made to assess whether the necessary assumptions for the application of multiple logistic regression are fulfilled. In this regard, the Hosmer and Lemeshow's goodness-of-fit test was done to check the fitness of the model. The interaction between different predictor variables was checked. A covariate is an effect modifier only when the interaction term added to the model is statistically significant [19-23].

Ethical Considerations

Ethical approval and clearance was obtained from school of public health, college of medicine and health sciences, university of Arbaminch. Support letter are also obtain from zonal Health. To collect data from participants, explanation was given on the purpose of the study, the importance of their participation and true response. It was also explained that the study has no connection with individual affairs of respondents. Confidentiality of all data collection was kept. All sample populations are encouraged to participate in the study while at the same time their rights not to participate are also respected.

Dissemination of results

The finding of the study result was present to Arbaminch University, College of Medicine and Health Science Department of Public Health, Zonal Health Office, Arbaminch General Hospital, Secha Health Center, Sikela Health Center and other responsible bodies. Publication of the findings on national and international reputable journals are will be considered.

RESULTS

Socio demographic characteristics

The response rate was 100% and the Most 66 (33.8%) of the respondents were at the age of 21-25 years, 57 (29.2%) was at the age of 26-30 years, 47 (24.1.0%) was at the age of 31-35 years, 12 (6.2%) was at the age of 36-40 years, 13 (6.7%) were at the age of greater than 41 years. With the mean (± SD) ages of the respondents were 29.04 (± 5.03) (Table 1).

Table 1: The socio demographic factors of the health professionals, Arbaminch town, February, 2019.

Variables	Frequency	Percent
Religion	195	100
Orthodox	99	50.8
Protestant	95	48.7
Muslim	1	0.5
Profession	195	100
Midwifery	56	28.7
Health officer	34	17.4
Nurse	105	53.8
Respondent's place of work	195	100
Health center	45	23.1
Hospital	150	76.9
Work experience	195	100
0-5 years	114	58.8
6-10 years	54	27.7
Above 10 years	27	13.8
Respondents monthly salary	195	100
1600-2383	13	6.7
2384-3104	32	16.4
3105-3825	31	15.9
3826-4546	58	29.7
>4547	61	31.3
Respondent's level of education	195	100
Diploma	113	57.9
Degree	82	42.1
Where respondents attained their education	195	100
Private institution	19	10.6
Government institution	176	89.4
Status of supportive supervision	195	100
No	125	64.1
Yes	70	35.9

The majority of the respondents were married 118 (60.5%),

unmarried 68 (34.9%), divorced 6 (3.1%), widowed 3 (1.5%). More than half of them were female 166 (85.1%) and less than half of them were male 29 (14.9%). Less than half of health professionals 94 (48.2%) got training about newborn care and 101 (51.8%) of them didn't have training about newborn care. From those who got training 53, (27.2%) of them trained once, 35 (17.9%) of them trained two times, 6 (3.1%) of them trained three times. From a total of 195 health professionals, only 70 (35.9%) of them got supportive supervision from their higher officials and NGOs, whereas most 125 (64.1%) of them did not had supportive supervision.

Result on health facility assessment

A total of 3 health facilities were assessed with direct observation to assess the availability of basic equipment within the facility. Over all most of health facility was did not fulfills all the basic supportive medical equipment needed for immediate newborn care. All of the respondents said that their health facility's human resource and infrastructures were not fulfilled because there is a problem in zone health offices like managerial problems, lack of attentions, and a shortage of budget, a deficit of health professionals and especially high turnover of health professionals [24-28].

From a total of 3 health facilities assessed, 2 (66.7%) had well-illuminated room, all health facility had thermometer; More than half 2 (66.7%) had no vitamin K injection, 2 (66.7%) of the health facilities had adequate lightning in the delivery room, Two (66.7%) of them had overhead heater, and the rest 1 (33.3%) of them had overhead heater but not functional, 2 (66.7%) health facility had blanket the rest had no blanket. All health facilities had no baby cape. Only one health facilities had adequate room, but the rest had not adequate room, all health facility fulfill, disposable glove, clean gown, cord cutting clumping set (Table 2).

Table 2: Health facility assessment to see the availability of medicines and necessary equipment, Arabaminch Town South Ethiopia, February, 2019.

Items assessed	Result	Frequency	Percent
An essential medicine list exists and is used, WHO, national list	Yes	2	66.7
	No	1	33.3
No expired medicine and products	Yes	1	33.3
	No	2	66.7
There is a fridge were to store medicines that need refrigeration	yes	3	100
Well illuminated room (pharmacy)	yes	2	66.7
	No	1	33.7
FEFO system	Yes	3	100
There are procedures to dispose of expired/damaged pharmaceutical products	Yes	3	100
first line antibiotics (amoxicillin, cotrimoxazole, gentamycine, ampicillin)	Yes	1	33.3
	No	2	66.7
All vaccines available	Yes	2	66.7
	No	1	33.7
Vitamin K	Yes	1	33.7
	No	2	66.7
Eye ointment	Yes	2	66.7
	No	1	33.3
Folic acid/ferrous sulphate	Yes	1	33.3
	No	2	66.7
Ergometrine/oxytocin	Yes	3	100
Intravenous solutions (Ringer's lactate, NS, DNS infusions)	Yes	3	100

More than half 2 (66.7%) of health facilities had newborn resuscitation table, one (33.3%) of health facilities had newborn size stethoscope. All most all health institution had self-inflating Ambu-bag, of health facilities had newborn mask size 0 and 1. Two (66.7%) of health facilities had no newborn nasal cannula. Two (66.7%) of the health institution had no oxygen concentrator/cylinder, one of them had oxygen concentrator. Majority of the health facilities, all most all 2 (66.7%) had no wall clock. The 2 (66.7%) of health institution had a functional suction tube for mucus extraction. All health facilities have soap for hand washing, and water for hand washing and. The majority had piped water. Almost all health facilities had chlorine based solution and sharp container. All health facilities had an incinerator, 2 (66.7%) had no electric sterilizer. All health facilities had already mixed decontamination solutions. All health facilities had a surgical glove and disposable surgical mask, all health facilities had electric power/functioning generator with fuel. Three (100%) of health facilities had a safe water source within 500 meters of health facilities. All most all of health facilities had functional improved type toilet. Majority 3 (100%) of health facilities had communication/teaching aid. All most all of health facilities had emergency transport, 2 (66.7%) of health facilities had a baby weight scale. one (33.3%) of health facilities had tape meter. All most all of health facilities had gauze (which is sterile or not) [28].

Result of newborn care practice

The table below shows that the health workers preparation and practice of newborn care. When we observe the delivery room, at the beginning of delivery, 95.9% were clean, Majority 192 (98.5%) of health professionals prepared cord cutter and clamper before the onset of delivery. Majority 136 (69.7%) of them did not prepared baby identification, Majority 143 (73.3%) of health professionals prepared suction device before the start of delivery, Most 142 (72.8%) of them prepared neonatal ambubag and mask before the onset of delivery, From the total of 195 health professionals only 66 (33.8%) provide vitamin K for newborn, the rest majority 129 (66.2%) did not provide it. And 146 (74.9%) of them did not placed newborn's identification band on the wrist and ankle, but 49 (25.1%) placed newborn's identification band. Overall most of the practice of newborn care was not good 148 (75.9%) but 47 (24.1%) of respondents provide good newborn care practice (Figures 2 and 3).

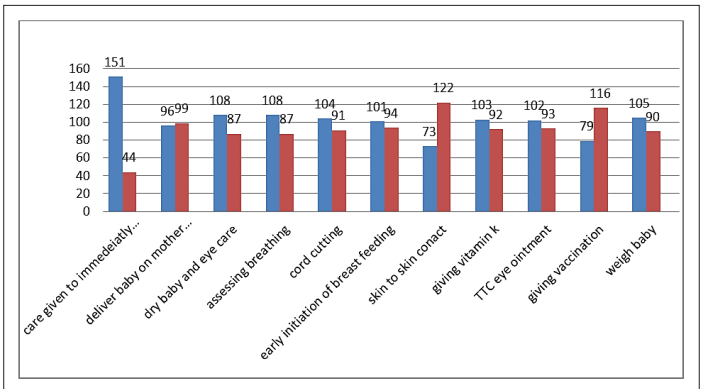

Figure 2: Health professional's knowledge on the steps of newborn care, Arbaminch Town south Ethiopia, February, 2019. **Note:** (■) Yes, (■) No.

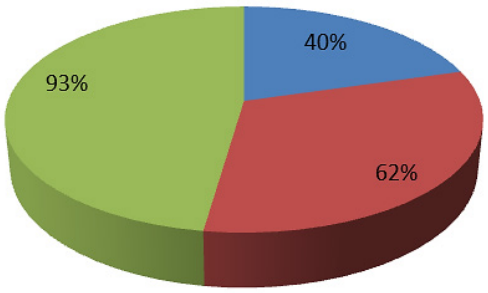

Figure 3: Health professional's knowledge about component of resuscitation, Arbaminch Town, South Ethiopia, February, 2019.

Note: ( ) Not answer, ( ) Poor answer, ( ) Good answer

From a total of 195 respondents 99 (50.8%) of them practiced hand washing with water and soap and dry with a cloth, All most all of them 195 (100%) of them puts on the sterile glove. 184 (94.4%) of health professionals wipes the eye and face when the head is delivered, 77 (39.5%) cleans eyes after birth with a separate swab, 145 (74.4%) of health professionals immediately dry the whole body with cloth/towel. Fifty (25.6%) of health professionals keeps warm by putting the baby skin to skin contact, 176 (90.3%) of them cover the baby's body and head with a clean cloth, All most all health professionals 192 (98.5%) check the baby is crying while drying it (Table 3).

Table 3: Newborn care practice provided by HP, Arbaminch Town, South Ethiopia February, 2019.

Newborn care practice observed	Frequency	Percent
Sucks the air way after delivery	195	100
Yes	184	94.4
No	11	5.6
if not breathing well in 30 seconds of birth, start resuscitation	24	100
Yes	24	100
Use appropriate size of mask if there is neonatal resuscitation	24	100
Yes	21	87.5
No	3	12.5
Ties the cord one at two fingers from the baby's abdomen and second tie two fingers from the first tie	195	100
Yes	195	100
Cuts the cord after 2-3 minutes with sterile scissors/blade	195	100
Yes	183	93.8
No	12	6.2
Explains to mother not to put anything on cord stump	195	100
Yes	103	52.8
No	92	47.2
Take APGAR Score 1st and 5th min.		100
Yes	98	50.3
No	97	49.7
Helps to start breastfeeding		100
Yes	59	30.3
No	136	69.7
Initiates BF within 1 hr of delivery	195	100
Yes	181	89.7
No	14	10.3
Helps mother and baby get into a good position and attaches for BF	195	100
Yes	184	94.4
No	11	5.6
Mother and baby kept together	195	100
Yes	184	94.4
No	11	5.6
Apply 1% TTC ointment to each eye	195	100
Yes	130	66.7
No	65	33.3
The tube not touch the eye of baby	133	100
Yes	71	68.2
Not	62	31.8
Weighs the baby	195	100
Yes	165	84.6
No	30	15.4
Not washed baby until discharge	195	100
Yes	195	100
Counsels mother bath baby	195	100
Yes	91	46.7
No	104	53.3
Give vaccination	195	100
Yes	177	76
No	56	24
Head-to-toe examination	195	100
Yes	131	71.3
No	64	32.8
Responds to mothers question	195	100
Yes	171	87.7
No	24	32.8
Counsels before discharge	195	100
Yes	171	87.7
No	24	12.3
Records all care given	195	100
Yes	149	76.4
No	46	23.6

Essential newborn care practice

The overall newborn care practice was done based on the WHO 10 basic newborn care practice; respondent who practiced all the components of newborn care practice was said having good newborn care practice and the respondents who misses one or more component were said having not good newborn practice. From the total of 195 respondents 148 (75.9%) had no good newborn care practice and the rest 47 (24.1%) had good newborn care practice. This is supported by the qualitative result (i.e. from a total of 10 interviewees, most of them said that there was no good newborn care practice in their health institution due to different reasons.

Most of the interviewees stated that most of the reasons for not providing good newborn care were shortage of equipment, trained health professionals, knowledge gap, lack of attention from health professionals as well as from zonal health departments, and few

of them there is no reason providing good/quality newborn care practice.

Most of the respondents reported that the better solution for the future to provide good newborn care will continue training for health professionals with trainers selecting criteria, fulfilling the basic medical equipment by consulting the institution's health professionals, providing supportive supervision continuously, and employ trained and qualified health professionals. Few of the respondents said that providing attention and widening of the neonatal room will improve newborn care practice in the future. Most of health professionals 130 (66.7%) administer Eye drop/TTC eye ointment and less than half of health professionals 66 (33.8%) Administer vitamin K injection.

Knowledge of respondents about newborn care

The overall knowledge was computed by adding all the knowledge related questions and divided by two. A respondent who answered above the mean (14-21) are said to had fair knowledge, above (21) are said to had good knowledge and below the mean are said to had not good (poor) knowledge. From the total of 195 respondents 87 (43.5%) of health professionals had good knowledge, 62 (31.8%) had fair knowledge whereas 46 (23.6%) of health professionals were not knowledgeable (scored below the mean).

From a total of 195 health professionals, among them 151 health professionals; out of them 116 (59.5%) knows all the ten steps of newborn care practice, but less than half of them 35 (17.9%) did not knows the ten steps of newborn care practice. Health professionals were asked about newborn care practice steps 79.3% of them said immediately deliver newborn on mother's abdomen, 89.2% dry baby and give eye care, 89.3% assessing breathing, 86% cord cutting and care, 83.4% of them said early initiation of breast feeding, 60.3% of them skin to skin contact, 84.3% providing TTC eye ointment, 85.1% providing vitamin K, 65.3% providing vaccination, 87% weigh the newborn (Table 4).

Table 4: Ten step of newborn care practice provided by HP, Arbaminch Town, South Ethiopia February, 2019.

Newborn care practice observed	frequency	Percent
Immediately dry the whole body, while assessing the baby's breathing	195	100
Yes	171	87.7
No	24	12.3
Evaluate breathing (if not birthing-call for help and start resuscitation)	195	100
Yes	193	99
No	2	1
Cord care (clamping, tying and cutting, sterile blade after 1-3 min of birth)	195	100
Yes	185	94.9
No	10	5.1
Place newborn on the mother's abdomen skin to skin (KMC)	195	100
Yes	47	24.1
No	148	75.4
Helps initiate immediate breastfeeding within one hour	195	100
Yes	181	92.8
No	14	7.2
Administer Eye drop/TTC eye ointment	195	100
Yes	130	66.7
No	65	33.3
Administer Vitamin K injection	195	100
Yes	66	33.3
No	129	66.2
Place the newborn's identification bands on the wrist and ankle	195	100
Yes	49	25.1
No	146	74.9
Weigh the newborn	195	100
Yes	165	84.6
No	30	15.4
Vaccination at birth (OPV0 and BCG) given	195	100
Yes	177	76
No	56	24

Most, 180 (92.3%) of health professionals know the complications of immediate newborn, whereas few of them 15 (7.7%) do not know the complications of immediate newborn, from those who know the complication 121 (67.2%) of them said hypothermia, 134 (74.4%) said asphyxia, 117 (65) said infection is mostly occurred complications of immediate newborn. From the total of 180 health professionals who know the complications of newborn, 83 (46.1%) of them said Newborn complication can be prevented by keeping newborn warm, 104 (60) of them said early management of resuscitation, 104 (57.8%) of them said by practicing early initiation of breast feeding, and the rest 25 (13.9%) of them did not know how to prevent newborn complication. The majority of them 170 (87%) said the immediately delivered newborn can be put on mothers abdomen, 24 (12%) of them said the immediately delivered newborn can be placed on the clean separable place and the rest 2 (1%) put simply any place.

Most 169 (86.7%) of the health professionals know skin to skin contact of mother and newborn, but 26 (13.3%) did not know skin to skin contact of mother and newborn baby. from those who knows skin to skin contact, 128 (75.7%) of them know the importance of skin to skin contact but the rest 41 (24.3%) did not know the importance of skin to skin contact.

All most all 183 (93.8%) of health professionals said breast feeding is initiated within the first hour of delivery, but few 12 (6.2%) of them said after one hour of delivery. And 169 (86.7%) of them know the advantage of first milk, whereas the rest 26 (13.3%) did not know. From those who knows the advantage of first milk, 159 (81.5%) said it prevents infection, 161 (82.6%) of them said it provides important nutrients for immediate newborn. From 195 health professionals 111 (56.9%) of them said giving formula feed in case of no milk, whereas most 84 (43.1%) of them said to continue with breast feeding even when milk is not coming. 155 (79.5%) of health professionals know the components of newborn resuscitation, but 40 (20.5%) did not know the components of newborn resuscitation.

Majority 193 (99%) of health professionals said that newborn bleeding is prevented by providing vitamin K, 2 (%) of them didn't know prevention of newborn bleeding. They were asked about the dose of vitamin K, 167 (85.7%) of them said know the dose 28 (14.4%) of them said didn't. from the total of 110 (56.4%) of them said 0.5 gm, the rest 57 (43.6%) of them said 1 gm Majority

133 (68.3%) of them said that TTC eye ointment is important for prevention and treatment of eye infection, 62 (31.7%) of them said TTC eye ointment is important for detection of infection. All Health professionals were asked about cord care in case of infection, (51.3%) of them said leave to dry, 32 (16.4%) of them said apply iodine, 91 (46.7%) of them said to refer to hospital, 28 (14.4%) of them said wash with soap and water, 20 (10.3%) of them said add antibiotics.

From all 195 health professionals who asked about the definition of low birth weight baby, majority 143 (72.8%) of them said below 2500 gm, 33 (16.9%) of them said below 1500 gm, 18 (9.2%) of them said below 1000 gm. And again they are asked how do you care low birth weight baby, most 175 (89.7%) of them said that warm the newborn, 91 (46.7) of the said breast feeding early and frequently, 78 (40%) of them said that prevent infection from developing, 6 (3.1%) of them said bath often. From 195 health professionals, 165 (84.6%) of health professionals know the danger signs of a newborn baby, whereas 30 (15.4%) of health professionals did not know the danger signs of the newborn. They were also asked about when the newborn is bathed, 166 (85.1%) of them said after 24 hours of delivery, and the rest of 24 (10.8%) of them said before 24 hours of delivery.

Socio demographic characteristics

Bivariate analysis: The variables like type of profession, health facility, supportive supervision, training status, know how to stabilize newborn; knowing steps of newborn care and knowing complication prevention, danger sign, and knowledge assessment of the newborn are significantly associated with newborn care practice on bivariate analysis, whereas the rest are not significant (Tables 5 and 6).

Multivariate analysis: The variables that fulfilled the criteria for multivariate analysis are, work experience, training status, work place, supportive supervision, knowledge on steps of newborn care, mention newborn complications, knowing prevention of newborn complication, knowing component of new born resuscitation, cord care after delivery, knowing danger signs, mention danger sign, advantage of early initiation of breast feeding, stabilize temperature of low birth baby, and care of low birth weight baby. The variables that are significant on multiple logistic regression analysis include knowledge of step newborn care, work place, training status, supportive supervision, and knowing danger sign of the newborn. Respondents who had got supportive supervision within the last three month were seven times more likely to give good newborn care than those respondents who hadn't got supportive supervision AOR=7.49, 95% CI (1.933, 28.99) (Table 7).

The odds of respondents who were trained about newborn care are 33 times more likely to provide good newborn care practice than the odds of respondents who are not trained about newborn care AOR=33.511, 95% CI (1.769, 634.834). The respondents they got training 2 times about newborn care practice by 95% good newborn care given respondents they got one times training.

Table 5: The bi-variate analysis the dependent (newborn care practice good/not good) and independent variables, Arbaminch Town, South Ethiopia, February, 2019.

Variable name	Response	Newborn care		OR, 95% C.I
		Not good	good	
Types of profession	Midwife	38	4	3.55 (1.09, 11.61)
	Nurse	80 30	25	2.34 (.75,7.29)
	Health officer		18	1
Work experience	1-5	91	23	1
	6-10	41	13	1.25 (1.087, 11.613)
	>10	16	11	2.72 (1.11, 6.65)
Training status	No	89	9	1
	Yes	59	38	6.37 (2.87, 14.14)
No of training	one time	89	9	1
	Two times	44	9	2.023 (.75, 5.45)

Table 6: The bi-variate analysis of newborn care practice with knowledge of health professionals, Arbaminch Town, South Ethiopia, February, 2019.

Variable name	Response	Newborn care practice		OR, 95% C.I
		Not good	good	
Knowledge Step of newborn care	no	43	1	
	yes	70	46	28.26 (3.76, 212.4)
Newborn Complication mention	no	58	5	1
	yes	90	42	5.41 (2.02, 14.48)
Newborn Complication prevention	no	123	32	1
	yes	25	15	2.31 (1.1, 4.87)
Cord care after delivery	Not correct	103	18	1
	correct	45	29	3.688 (1.860, 7.312)
Component of new born resuscitation	Not correct	35	3	1
	correct	113	44	4.54 (1.33, 15.53)
Advantage of early initiation of BF	no	11	1	1
	yes	137	46	3.693 (.46, 29.39)

Care of low birth weight	Not correct	58	8	1
	correct	90	39	3.14 (1.37, 7.21)
How stabilize temperature of low birth weight	Not correct	92	14	1
	correct	56	33	3.87 (1.91, 7.86)
Do you know danger sign	no	44	121	1
	yes	3	27	3.273 (.945, 11.329)
Knowledge about danger sign	Poor answer	27	3	1
	Good answer	45	38	7.60 (2.14, 27.02)
Knowledge assessment	Poor	45	1	1
	Fair	55	7	5.23 (.68, 48.29)
	good	48	39	36.56 (4.82, 28.32)

Table 7: The multivariate analysis of the dependent and independent variables, Arbaminch Town South Ethiopia, February, 2019.

Variable name	Response	Newborn care		COR, 95% C.I	AOR,95% C.I
		Not good	good		
Knowledge assessment	Poor	45	1	1	1
	Fair	55	7	5.23 (.68, 48.29)	28.466 (1.29, 625.67)
	good	48	39	36.56 (4.82, 28.32)	
Knowledge about new born care step	no	43	1	1	1
	yes	70	46	28.26 (3.76, 212.42)	21.839 (1.21, 392.369)
Supportive supervision	no	90	8	1	1
	yes	58	39	7.56 (3.30, 17.33)	7.48 (1.93, 28.99)
Place of work	H/C	44	1	1	1
	Hospital	104	46	19.46 (2.60, 145.57)	156.31 (6.57, 3719.1)
knowledge about danger sign	fair	27	3	1	1
	good	45	38	7.60 (2.14, 27.02)	0.097 (0.02, 0.44)
Training status	no	89	9	1	1
	yes	59	38	6.369 (2.87, 14.14)	33.51 (1.77, 634.83)
How many times trained	One times	89	9	1	1
	Two times	44	9	2.023 (.75, 5.45)	0.047 (0.002, 0.89)

DISCUSSION

A good newborn care is crucial for the survival of newborn. And it includes essential basic newborn care practice (ensuring the air way is clear and remove mucus from the mouth, nose and throat with suction, immediate skin to skin contact to prevent hypothermia, clean and dry newborn with warm towel, clamp and cut umbilical cord with sterile instrument, providing eye care with TTC eye ointment or silver nitrate, giving vitamin K and vaccine, weigh newborn and start breast feeding within one hour, vaccination).

This study showed that the health professional works 150 (76.9%) in hospital and 45 (23.1%) respondents works in health center. The respondents are worked in health center decrease the performance by 99.4% This might be due to inadequate basic newborn care material, their performance decrease due to their access to new update is decreased, and it will be high if there is decreased in service training and supportive supervision. Hospital works respondents are more likely to provide good newborn care practice than respondents who work in health center. AOR=156.31, 95% CI (6.57, 372) means hospital worked respondent increase the practice of newborn care by 99.4%.

The result of this study showed that, less than half of health professionals 97 (49.7%) attend training related to newborn care and 98 (50.3%) of them didn't had training about newborn care. A study was done in Khartoum and Khartoum North Teaching Hospital (Labor Room) on Knowledge and Practice of Nurses Midwife Regarding Immediate Health Newborn care, showed that 92% of the health professionals was attended training course about immediate newborn care, 7.5% not attend (34) and a study done in Khartoum state teaching hospitals showed that, most of the study populations were received in service training courses related to immediate care of newborn (93%) (25). The difference in training status may be due to the study in Khartoum and Khartoum North Teaching Hospital (Labor Room) are conducted in hospitals which requires high specialty and training, but this study is done in Arba Minch Town health facilities and might be trainers focus on hospitals rather than health centers, and there might be problem in selection of trainees. The odds of respondents who were trained about newborn care are 33 times more likely to provide good newborn care practice than the odds of respondents who are not trained in newborn care.

This study showed that, from a total of 195 health professionals, only 97 (49.7%) of them got supportive supervision from their higher officials and NGOs, whereas 98 (50.3%) of them did not had supportive supervision. Supportive supervision is significantly associated with newborn care practice. (P=0.004), [(AOR=7.485(1.933, 28.991)]. Respondents who had got supportive supervision within the last three month were seven times more likely to provide good newborn care than those respondents who hadn't got supportive supervision. This might be due to supportive supervision may motivate and initiate health professionals to perform well than those who had not get supportive supervision.

The finding of this study showed that from the total of 195 health professionals only 66 (33.8%) provide vitamin K for newborn, the rest majority 129 (67.8%) did not provide it, but Majority 167 (85.7%) of health professionals said that newborn bleeding

is prevented by providing vitamin K. they know importance of vitamin K, but their practice were low (33.8%).whereas a study done in North Ethiopia showed that 145 (98.6%) of respondents were administered vitamin K for immediately born baby [29] and study done at University Hospital in El kom-Minoufiya, Egypt [30] showed that the practice of providing vitamin K was 69.5%). This difference might be due to the unavailability of vitamin K on health institution in this study, (i.e. two (66.7%) of the health institution had no vitamin K), there might be difference in availability of equipment and medicine in this two sites.

The finding of the study showed that Most 169 (86.7%) of the health professionals know skin to skin contact of mother and newborn, but only 47 (21.1%) of health professionals practiced skin-to-skin contact to provide warmth for the newborn. This is lower than a study conducted in Kenya on the quality of maternal and newborn care showed that skin-to-contact was 65% [31]. There is a great difference between these two studies might be due to the low level of health professional's information and awareness on the advantage of skin to skin contact in this study area.

The result of this study showed that, health professionals Initiated breast feeding within one hour after delivery was 181 (89.7%). This is lower than a study done in North Ethiopia showed that total of 142 (96.6%) of respondents were initiated breast feeding within one hour of delivery for a newborn baby [29]. The difference might be due to health professionals may not give emphasis on initiation of breast feeding within one hour of delivery, lack of attention was one problem of health professionals. The result of this survey showed that 165 (84.6%) health professionals weighed the newborn. A study done in North Ethiopia showed that 143 (97.3%) of midwives were weighed baby immediately after delivery [29]. The discrepancy might be due to shortage of weight scale (66.7%) of the health facilities had weight scale), a shortage of human resource may lead to decreased compliance with all the steps of newborn care.

In this current study, (92.3%) of health professionals know the complications of immediate newborn, whereas few of them 15 (7.7%) do not know the complications of immediate newborn, from those who knows the complication 121 (67.2%) of them said hypothermia, 134 (74.4%) said asphyxia, 117 (65) said infection is mostly occurred complications of immediate newborn. A study done in North Ethiopia showed that, One hundred twenty-one (83.4%) of respondents had knowledge on Asphyxia that is a complication of newborn baby followed by hypothermia 84 (57.9%) and 10 (6.9%) had knowledge on hypoglycemia as a complication of a newborn baby [29]. This discrepancy might be due to the level of educational status since this study includes health officers and degree nurses.

The finding of this study showed that, most of the health professionals were not providing good newborn care practice (newborn care that fulfills all the components of newborn) 148 (75.9%), whereas some health professionals provide good newborn care practice 47 (24.1%). This Performance is lower than a study done in Khartoum, average performance of nurse midwives towards immediate care of newborn (41.1%) [26]. This gap may be due to unavailability sufficient human resource, medication and materials needed for immediate newborn care practice in town health facilities of this study area.

This study showed that, from the total of 195 respondents, 87 (44.6%) of health professionals had good knowledge, 62 (31.8) had fair knowledge, whereas 46 (23.6%) of health professionals have poor knowledge (scored below the mean). According to a descriptive non participatory observational research design at the university hospital of El-komminoufiya, Egypt, knowledge of nurse midwives towards immediate newborn care was good (43.5%), fair (8.7%) and poor (47.8%) [30]. Respondents who had good knowledge and fair knowledge are higher, but those who had poor knowledge are lower than the result in Egypt, the difference might be due to health professional mix and high-level educational status of the study population in the current study and might be due to training and supportive supervision [32,33].

The odds of respondents who had good knowledge about the danger sign of a newborn are 90.3% provide good newborn care practice than odds of the respondents who had poor knowledge about the danger sign of a newborn. Health workers who are aware of the danger sign of the newborn were more active and give attention for providing immediate newborn care. AOR=0.097, 95% CI (0.021, 0.44).

CONCLUSION

The overall newborn care practice among health professionals was not good as the majority of health professionals (75.9% of them) miss one or more steps of essential newborn care practice. Most of the health professionals had a good knowledge about newborn care 44.6%, fair knowledge 31.8% of health professionals, whereas 23.6% of health professionals had poor knowledge (scored below the mean). The majority of health professionals did not attend training, less than half of them did not get supportive supervision. The majority of health facilities did not fulfills all basic supportive medical equipment needed for immediate newborn care. Supportive supervision, training status, and knowing danger sign, step of newborn care, and knowledge about newborn care are significantly associated with newborn care practice, whereas the rest are not significantly associated with newborn care practice.

RECOMMENDATION

Based on the finding of this study, Federal ministry of health, SNNPR health bureau, Arba Minch Town health bureau, other stakeholders in collaboration with district health office and health professionals are encouraged to:

- Strengthen in-service training given to health professionals on training related to newborn care practice regularly, especially on the selection of health professionals for training.
- A training opportunity should be created and regular training should be conducted to enhance health professionals' knowledge and practice about newborn care.
- Increase supportive supervision of health professionals who had providing immediate newborn care practice and making experience sharing with other health facility who had a good practice.
- Practice assessment of availability and functionality of medical equipment and medicines that are basic for immediate newborn care practice
- Providing by motivation by supportive supervision health professionals and leaders who provide and facilitate conditions for provision of good newborn care practice

Further longitudinal investigation on the quality of newborn care practice is recommended.

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AUTHOR CONTRIBUTION

SB and designed the study, analyzed the data, drafted the and critically reviewed the manuscript. WG and DM advise the thesis. All authors read and approved the final manuscript.

CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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