



# Evaluating the Quality of New Born Care Immediately After Birth in Public Health Facilities

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## ABSTRACT

**Background:** Despite a tangible drop in the newborn death in the previous years across the globe, neonatal mortality in resource limited countries is still distressingly elevated. Therefore this study aimed to assess the quality of immediate newborn care in the public health facility of Benishangul Gumuz regional state, Ethiopia

**Methods:** Mixed case study design was employed on ten randomly selected public health facilities. 58 health care providers and 423 newborns were selected purposively during the study period. Data collection was done through a structured interview, in depth interviews, and observation. The quantitative data were entered and analysed via SPSS 23. The deductive qualitative data analysis technique was employed automatically through the predetermined framework.

**Results:** The overall mean quality of immediate newborn care after delivery in the public health facility of the region was 66% and it is perceived as poor by most respondents. The overall mean score of knowledge and practice of essential newborn care was 49.21% and 83.4% respectively. The average facility readiness of the public health facilities was found 51.7%. As a consequence, the neonatal mortality rate was 38 deaths per 1000 live birth in the studied public health facilities.

**Conclusion:** The quality of immediate newborn care was identified as poor in both quantitative and qualitative reports. The competency of health care providers, availability of resources, referral and linkage, and experience of care providers were the most compromised component of immediate newborn care. Improvements on quality of immediate newborn care could be attained through planned in service training, strengthening mentorship, and investing financial resources for pipe water supply and infrastructure, by using adaptable quality improvement initiatives.

**Keywords:** Quality; Immediate newborn care; Ethiopia

## ABBREVIATIONS

(AGH) Assosa General Hospital; (BGRS) Benishangul Gauze Regional State; (BSc) Bachelor of Science; (HC) Health Center; (HSC) Health Science College; (MCH) Maternal and Child Health; (MRN) Medical Registration Number; (MSc) Master of Science; (PGH) Pawe General Hospital; (PI) Principal Investigation; (IDI) In Depth Interview; (CEO) Chief Executive Officer; (ENC) Essential New Born Care; (LBW) Low Birth Weight

## INTRODUCTION

Globally, newborn death remains as the main obstacle to reduce the death of young children. Almost all neonatal deaths happen in low income countries, and 39% of them occur in East African countries. It is predicted that over two-thirds of these deaths could be prevented if practicable interferences are mounted up [1-5].

The economical context and proactive position, particular-

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ly those associated with antenatal care, birth, and immediate newborn care reflect death in the newborn period. Due to the accelerated decrease in the postneonatal component of newborn care, mortality in the newborn period has been found as the core factor of mortality in the infancy period, across various regions of the globe [6-9].

To date, quality enhancement programs and policies to lessen neonatal death have been dedicated to different intervention approaches. But, there has been restricted concurrent motivation to improve the immediate newborn care accessible in the healthcare setting where the newborns are being transferred. In many care settings of low income countries, newborn are nursed in pediatric care units devoid of specialized attention. Where specialty based newborn care has been applied, significant impacts on newborn mortality have been demonstrated [10-13].

Despite an incredible drop in the young child died in the earlier decade of years, the newborn death in the emerging globe is still disturbingly tough. Currently, in many regions of the world, losses in the first 28 days of newborn life have founded the main component of infant mortality. Over 39% of entire losses of young children occur in sub-Saharan Africa [14,15].

The quality of immediate newborn care delivery significantly differs, and exposed people may be at risk for receiving sub-optimal care, which translates into sub-optimal outcomes. The quality of care taken by neonates in emerging globe is frequently told as low in the last decade. So far exertions to tackle this responsible factor for losses of a newborn have received fewer considerations when matched with fences of accessibility to healthcare. Newborn neonates are at a boundless threat to develop infection. Due to shortage of buildings, numerous socials, congestion, and absence of pipe water, delivering quality care is ideal in low income countries. Incubators and mechanical ventilators are the common scarce reasons that put disease prevention measures tedious in low income countries. On the other hand, delivery of fundamental tools and guidelines, continuing training, and devoted care provider can condense neonatal mortality considerably even with no sophisticated instrument, by which, newborn death can decrease by 8% [16,17].

As a response, community, primary care, and obstetric activities in low income countries including Ethiopia looked to reduce neonatal mortality. Such programmers have considered on cultivating the quality of immediate neonatal care, identification of diseased neonates, and promoting transfer to better healthcare settings. There has been imperfect concurrent energy to advance the immediate newborn care accessible in the public healthcare setting where the neonates are being transferred [12,13].

An improved effort on quality progress for immediate newborn care within the healthcare setting and application of health strategies is censoriously significant. In Ethiopia generous progress of newborn healthcare in terms of access and quality in the latest years was reported. The improvement can be considerably hastened if the worth of care is warranted in the healthcare setting. Identifying gaps to provide valuable immediate neonatal care in the public healthcare settings is one of the se-

rious strides in the progress of neonatal care at the healthcare setting level. This study aimed to evaluate the quality of immediate newborn care in the public health facility of Benishangul Gumuz regional state, Ethiopia.

## Quality of Newborn Care Framework

The worth of care is multifactorial. Several healthcare approaches were used to design a predetermined framework to direct different actors in improving the quality of newborn care. The quality framework during the time of birth incorporates six areas to attain adequate newborn healthcare quality and highlights the interplay of health system factors and evidence based care (Figure 1). Each area is defined by quality criteria which are marked with specific quality descriptions and supported by measures that can road the necessary inputs, outputs, and outcomes associated with quality care. Though it emphasizes the care offered in the healthcare setting, it is also responsible for the critical role of communities and service users in recognizing their needs and preferences and in managing their health. The experience of women, health workers, and managers on the quality of newborn care services influence their decision to seek care and are essential components in creating a demand for and access to high quality newborn services.



**Figure1:** The quality framework of newborn care adapted from the world health organization .

## METHODS AND MATERIALS

### Study Setting and Design

An institution based mixed case study was employed in ten public health facilities Between December 1/2019 and January 30/2020, in Benishangul Gumuz regional state, South West Ethiopia. Benishangul-Gumuz Regional State is the one included in the ten regional states of the federal democratic republic of Ethiopia. The capital city of the region is named Assossa where it is 675 km far from Addis Ababa to the North West. The region is administratively composed of 3 zones, 22 Woreda, two city administrative, and one special Woreda.

### Quantitative Study

**Study participants:** Eight health centers and two general hospitals were included in the evaluation. In that healthcare setting, an entire 423 births were observed and 58 healthcare provid-

ers were addressed to check their knowledge across ten public health facilities in the region. Information on their clinical qualifications, training, and experience to offer newborn care was also gathered.

**Data collection procedure:** A structured questionnaire and observation checklist were used. The data collection techniques were self-administered interviews and observations. A structured checklist was used to witness deliveries to check the eminence of immediate newborn care. Equipment needed for immediate newborn care after birth, components of immediate newborn care, signs and symptoms of newborn sepsis, and actions to be taken to care for low birth weight babies were included in the Health worker knowledge test. Each question had multiple answers, so respondents were asked to provide as many answers as came to their minds. A facility inventory was also conducted, and observations were made of supplies and equipment essential for newborn care services. Qualified data gathering personnel were assigned to observe the immediate newborn care. During an observation, no intervention was expected.

**Quality indicators:** To measure the Quality of immediate neonatal care, standards described in the WHO's MCPC evidence based guideline were used as the gold standard for Quality measurement of immediate neonatal care (20). Gauges of the worth of neonatal care included:

1. Scrutiny watching of neonatal care practice: dry baby with a towel immediately, dispose wet towel and cover with a dry towel, place new born skin to skin, tie or clamp cord when pulsations stop or two up to three minutes after birth, cut cord with clean blade or scissors, help the mother to initiate breastfeeding within the first hour of birth, and practice infection prevention
2. Health care provider knowledge of immediate newborn care: immediate newborn care, signs of sepsis, and care of low birth weight babies and related equipment and supplies
3. **Facility readiness:** disposable cord ties/clamps, clean dry towel or blanket to wrap the baby, sterile scissors or blade, bag and mask, and suction machine, were employed for computing the quality indicators.

**Data analysis:** After data collection, quantitative data were entered into SPSS version 23. Descriptive statistics were produced to present frequencies and mean. The indicator of facility's readiness, health worker knowledge test, and immediate newborn care was computed to assess the quality of neonatal care. Then data were disaggregated by name of the healthcare setting to judge prospective variances among each other.

## Qualitative Study

**Study participants:** 18 key respondents and 58 health care providers have participated in an interview. The health facility head, delivery ward/delivery room head, and mothers were the key person to participate in an in depth interview. Ten public health facilities were selected randomly from thirty health facilities. All health care providers in the maternal and child health unit during the data collection period were recruited purposively for knowledge test interviews. Key respondents

were recruited purposively and all delivery procedure during the data collection period was included for direct observation.

**Data collection procedure:** Semi structured interview guide was used to generate data. Audio tape recorder and field note sheet was also used to capture interview data. Semi structured interview guide was prepared on the basis of newborn care quality framework. The interview guide was translated to local language (Amharic language) prior to data collection.

Before the starting of data collection the key informants (CEO, CCO and nurse director) will be contacted before the actual date of interview to access potential participants from health-care providers, mothers. Then participants were contacted by person to arrange the date, time and the location of interview. Data was collected by investigators.

After administration of verbal consent, Face to face in depth interview was conducted with the help of interview guide. Initial probes during the first interview was primarily direct the respondent to expand his/her answers as appropriate to the flow of the interview. Finally, before closing the session chance was given for interviewee to add comments on raised issue and permission was seek for another contact.

**Data analysis:** Deductive qualitative data scrutiny was employed automatically. Interview data were transcribed and translated verbatim. A Field note was summarized daily in English to prepare it for coding. Familiarization of data, generating initial codes, reviewing codes, reviewing categories, and categorizing into pre-determined themes was done.

Then conceptually reduced qualitative data and representative quotes were narrated under each category of the theme. Then research report was made by triangulation of quantitative and qualitative data based on a predetermined framework.

## RESULTS

### Quantitative Results

**Health facilities and health care providers profile:** The quality of immediate newborn care evaluation was conducted in a total of ten public health facilities. Eight health centers and two general hospitals were included in the assessment. In this healthcare setting, an entire 423 births were observed and 58 healthcare providers were addressed to check their knowledge across ten public health facilities in the region. Information on their clinical qualifications, training, and experience to offer newborn care was also gathered. **Table 1** illustrates the characteristics of 58 health care providers who were interviewed. The majority of them were level IV health workers. Predominantly female health worker respondent was seen in an entire public healthcare setting.

**Table1:** Shows the characteristics of participated health care providers in ten selected healthcare Settings of Benishangul Gumuz Regional state, 2020.

Variable	Frequency	Percentage
Sex		
Male	24	41.4
Female	34	58.6

**Age Minimum(18), Mean(25.64),Maximum(32) and Standard deviation(2.87)**

Marital status		
Singe	18	31
Married	40	69
Qualification		
Diploma Midwifery	38	65.5
BSc Midwifery	19	32.8
Integrated emergency surgery officer(IE-SO)	1	1.7
Total	58	100
Current work area		
Health center	32	55.2
Hospital	26	44.8

**Service year Minimum(1),Mean(4.14),Maximum(18), and Standard Deviation (2.85)**

Training provided		
Yes	54	93.1
No	4	6.9
Type of training provided		
Neonatal resuscitation	12	22.2
Basic emergency maternal and neonatal care( BeMONC)	20	37.2
Prevention of mother to child transmission(PMTCT)	15	27.7
Other	7	12.9
Total	54	100

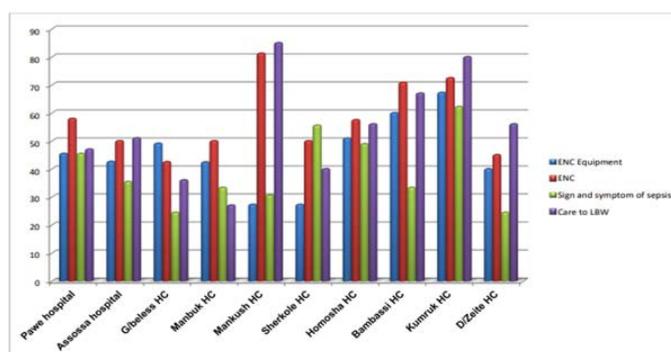
9. Sterile cord-cutting materials	32.8
10. Sterile cord ties/clamps	50
11. Clock with seconds hand	17.2
Mean percentage score for the category	44.83
Immediate newborn care % (N=58)	
1. Wipe face after birth	70.7
2. Cut the cord with sterile cutting materials	69
3. Perform dry cord care	55.2
4. Ensure baby was breathing	43.1
5. Provide thermal protection	60.3
6. Initiate breast feeding within one hour	61.3
7. Assess/examine the neonate within one hr.	46.6
8. Provide eye prophylaxis	44.8
Mean percentage score for the category	56.38
Signs of sepsis % (N=58)	
1. Poor/no breastfeeding	60.3
2. Hypothermia	25.9
3. Hyperthermia	19
4. Restlessness/irritability	55.2
5. Breathing difficulties	29.3
6. Convulsions	46.6
7. Pus/redness around the umbilicus	50
8. Abscess on any part of the body	39.7
9. Lethargy / no movement	22.4
Mean percentage score for the category	37.8
Care of Low Birth Weight newborns % (N=58)	
1. Provide thermal protection	96.6
2. Offer extra care to mother to establish and maintain breast-feeding	63.8
3. Monitor sucking capability	36.2
4. Follow baby strictly for first 24 hours of birth	29.3
5. Ensure infection prevention	20.7
Mean percentage score for the category	49.32
Mean percentage score for the knowledge test	47.31

**Health care provider knowledge:** Table 2 shows, breaches of acquaintance on newborn care were witnessed in all selected healthcare settings and substantially various in each basic area. The overall mean score of the four fundamental parts of the knowledge category was 49.21%. Mean scores for knowledge on basic equipment and supplies needed to offer immediate care after birth was ranged from 27.3% to 67.3%, by healthcare settings and 17.2% to 72.4%, with pronounced differences by sort of equipment (Figure 2).

**Table 2:** Show health care provider’s knowledge on essential newborn equipment and care in ten healthcare settings of Benishangul Gumuz regional state, 2020.

**Percentage of health workers with the number of correct answers of ten health facilities**

<b>Basic equipment and supplies needed for immediate care after birth</b>		<b>% (N=58)</b>
1. Two dry warm towels or cloths		72.4
2. Flat surface with a warm cloth		55.2
3. Source of warmth heat lamp		46.6
4. Self-inflating ventilation bag		46.6
5. Newborn face mask size 1		32.8
6. Newborn face mask size 0		29.3
7. Mucus extractor/suction/bulb syringe		60.3
8. Sterile or disinfected clamps and cord ties		50



**Figure 2:** The mean score of each knowledge category of health provider by facility name in Benishangul Gumuz regional state, 2020.

Only 5.2% of health care provider knows all the rudimentary apparatus and materials needed to offer immediate care after

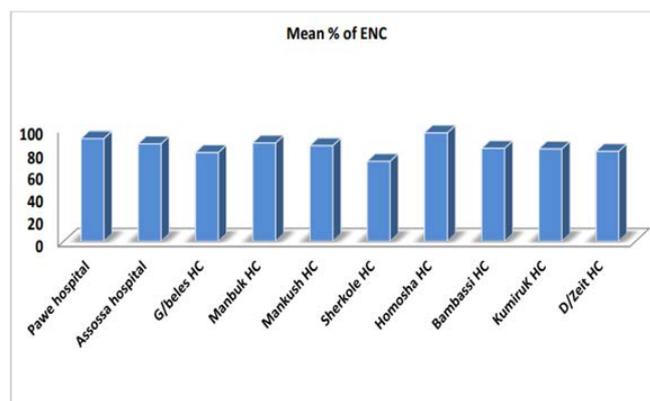
birth. The mean score for knowledge on immediate newborn care practices was found at 56.38%. Regarding the recognizing of newborn sepsis and care of low birth weight babies, the mean notch of acquaintance was extended from 19% to 60.3% and 20.7% to 96.6%, respectively. Most health workers knew that low birth weight babies needed thermal protection but have been less informed about ensuring infection prevention measures.

**Readiness of medical apparatus and materials:** Table 3 shows, the overall presence of equipment needed for labor and delivery management was 76% when pooled to all health facilities, with a range between 20% and 100%. Towels for drying and wrapping newborn babies, a Filled oxygen tank with flow meter, Long sleeve glove, and a portable suction machine were found below 70%. The mean presence of essential drugs that must be available in the emergency drug cabinet of the Labour and delivery room was found 73% with a range between 10% and 100%. The less available essential drug was IV fluids, sterile glove, and vitamin K, which was found below 70%. While uterotonic medication and Tetracycline eye ointment were found 100% in all health facilities (Table 4).

**Table 3:** Show the readiness of equipment in the ten selected public healthcare settings in Benishangul Gumuz regional state, 2020.

S.N	Item	Availability by % (N=10)
1.	Functional Sphygmomanometer	100
2.	Stethoscope	100
3.	Suction machine portable	60
4.	Thermometer	100
5.	Filled oxygen tank with flow meter	30
6.	Nasal prongs	40
7.	Nasal catheter	50
8.	Delivery sets	100
9.	Sterile suture kit	80
10.	Vacuum extractor	70
11.	Urinary Catheter	60
12.	HIV test kits	80
13.	Stand lamp	70
14.	Speculum for vaginal examination	100
15.	Steam or dry Sterilizer	90
16.	Ambu-bag with sterile mask	100
17.	Bed with accessories	90
18.	Intravenouspole	100
19.	Mask for oxygen administration	60
20.	Cord-cutting/clumping set	90
21.	Heater	70
22.	Drying and wrapping material	20
23.	Weight scale	90
24.	Tape to measure the baby length and Head circumference	90
25.	Functional clock	50
26.	Suction bulb	100
27.	Elbow size glove	60
	Average	76%

**Immediate ENC practices:** 423 new born babies were observed by health care providers immediately after birth. The overall mean score of newborn care provided for a new born was found 83.8% (SD=16). The minimum and maximum score of essential newborn care among observed newborn care is 10% and 100% respectively. The mean score of immediate essential newborn care among healthcare settings is 83.4% and the minimum and maximum value is 70.45% and 95.45% respectively (Figure 3).



**Figure 3:** The mean score of essential newborn care provided by health facilities in percentage

**Table 4:** Show the readiness of essential drugs that must be available in the emergency drug cabinet of the Labor and delivery ward or room of ten selected health facilities in Benishangul Gumuz regional state, 2020.

S/NO	List of drugs	Availability by % (N=10)
1.	Uterotonic medication	100
2.	Magnesium sulphate	80
3.	Diazepam	60
4.	Antihypertensive medication (Nifedipine and Hydralazine)	70
5.	40% glucose	80
6.	Venouscannula	80
7.	Local anaesthesia	90
8.	Syringe & needle	90
9.	Intravenousfluids	70
10.	Tetracycline eye ointment	10
11.	Surgical gloves	100
12.	Atropine	30
13.	Vitamin K	60
14.	Adrenaline	80
15.	Ampicillin	80
16.	Ca gluconate	50
17.	Anti-retro viral (ARV) drugs	80
18.	Nevirapine syrup	90
19.	Aminophylline	40
20.	Hydrocortisone	50
	Average	

## Qualitative Results

**The analysis yields five themes. Theme one:** the perceived quality of newborn care; it has eight categories that identify the key feature of the new born care quality framework. Theme two: availability of resources; it has six categories. Theme three: competency of the healthcare provider; it has nine categories and theme four: The extent of institutional newborn death; it has four categories. Theme Five: Experience of the care; it has two categories. All categories of the five themes were predetermined categories from quality indicators of newborn care framework and literature. The category of theme one is the key feature of the patient centered care framework.

**Theme one: Perceived quality of newborn care:** Except for a few health managers, most of the respondents are perceived that the worth of care offered to a newborn in their healthcare setting is poor. Different reasons are reported by the interviewee. But the most frequently reported reason for this poor quality of newborn care is a shortage of medical supplies and equipment, poor technical skills, and poor referral linkage between the health center and hospitals.

**One of the health managers said:** “.....shortages of supplies, poor follow up of laboring mother spatially at night, lack of oxygen tank with flow meter and lack of interest to use partograph to follow the laboring mother.”(ID12).

**Theme two: Availability of resource:** In these theme human resources, vehicles, medical supplies, and equipment, financial resource, water access, and space are reported as essential resources to offer quality immediate newborn care. A detailed report of some of the resource categories will be presented below. See [Table 5](#) for the summary of the subthemes and main quotes of this theme.

**Theme three: Competency of the health care provider:** The same voice is heard from more than half of the interviewee reports regarding the capability of health workers. Most of the health manager respondents split the ability of the health care provider into three: knowledge, skill, and attitude. Knowledge deficit among health care providers is not common. But skill and attitude is the commonest gap faced by health care providers. The implication is performing physical examination for the newborn after birth is uncommon. The other skill gap commonly observed in health care providers is unable to provide basic emergency care for referred laboring mothers and distressed newborns during transportation before the arrival of the hospital. Even most of the health care providers arriving with the referral case have no information about the condition of the patient and patient handover is not successful.

The interview report of the respondent clearly states this problem as follows.

“The health care providers that ambulances the referral case has not provided enough information about their cases. This problem plays a great role in the bad outcome of the patient. Even they are not providing basic emergency care for their patient while they are on transportation.”(ID13).

**Theme four:** The extent of institutional new born death: The

institutional new born mortality in the past three month quarterly report is perceived high. Most respondents agreed with the presence of high neonatal mortality. They have been reported different reasons for this high neonatal mortality. The main reason for this high mortality is poor referral linkage between health facilities. The neonates referred from the distant health center are arrived hospitals with no basic emergency support during transportation.

“[.....] for example during referral, the neonate which has oxygen hunger has no oxygen access. So in this situation you can judge the outcome of the neonate, death of neonate is expected.”(ID15).

**Theme five: Experience of the care:** The degree of worry and appliance of emotional care to relieve from worry is conveyed by peak participants and they agreed that most of the women visiting the healthcare setting for the first time are very distressful by probing their corresponding service area. Health worker participant said that:

“We provide direction for those patients who have difficulties reaching the respected service units because our patients commonly develop fear and anxiety due to difficulty of reaching their respected service units” (IDI health care provider participant).

Most of the participants supposed that assurance and locating the path of their corresponding service area for the women is the common remedy to relieve their worry. Most of the women participants conveyed that, emotional care is provided by health workers and most of the emotional care is related to assurance and provision of information. One of the women participants supposed that:

“I was admitted for delivery, my first arrival was at card room then to the maternity ward, the doctor advises me not to fear, and he said that ‘it is simple, delivery will be done soon and you will return back to your home” (IDI women Participant).

## DISCUSSION

This study revealed that the worth of newborn care in the participated healthcare setting was found low. The overall mean quality of newborn care in the health care setting was 66%. The quantitative judgment of the finding is also braced by the qualitative finding of the study. Most of the respondents are perceived that the worth of care offered to the newborn in their healthcare setting is poor and different reasons were reported by the interviewee. However, shortage of medical supplies and equipment, poor technical skills, and poor referral linkage between the health center and hospitals were the most frequently reported reason. As a consequence, the neonatal mortality rate was 38 per 1000 live birth in the studied facilities. As to the 2011 EDHS, the national neonatal mortality rate of Ethiopia was 37 per 1000 live births. The finding is high compared to other African country’s average neonatal mortality rate. This was 35.9 per 1000 live births [18].

Despite small variations in the overall quality of newborn care, a wide range of knowledge scores was reported in the observed health facilities. This was between 38% and 70%. Knowledge is the basis for any evidence based practice. Meanwhile, the average reported the finding of essential newborn care practice

was 83.4% at the facility level. Doing something with limited knowledge is not that much evidence based practice. For instance, the overall mean percentage score of the four key areas of the knowledge category was 49.21%. Only 5.2% of health care provider knows all the simple apparatus and materials required to offer e newborn care after birth. It makes a slight difference with an earlier study (2017) done in Ethiopia at the national level. The average acquaintance of the health worker was 46.75% [19]. The knowledge deficit in this study was driven by a lack of sufficient training for health care providers. Based on the assessment, only 37.2% and 22.2% from 58 health care providers took BeMoNC and neonatal resuscitation. Research done in the Jimma zone on awareness of neonatal care indicated that the average acquaintance of health workers was 23.27% [20]. It is greatly less than our study findings.

Practically investing resources for facility readiness to advance the worth of neonatal care is poor. As the quantitative finding shows, the average facility readiness of the public health facilities was found 51.7%. Without facility readiness; successful promotion of facility births only has not always caused the better newborn outcome and offering quality newborn care is not witnessed [21].

The most scarcity of a resource in the health facilities was reported on essential medical supplies and equipment. Which was found between 20% and 100% among items must found in the labor and delivery room of each public health facility. The mean availability of cloths for dehydrating the skin of the baby in the labor and delivery room of the ten healthcare settings was 20%. As in depth interview (IDI) report; vehicle, medical supplies, and equipment, financial resource, water access, and space are reported as essential resources to provide quality newborn care by the respondents of the health facilities. Both quantitative and qualitative data support the availability of limited resources in public health facilities, which largely impact the outcome of newborn care. According to an institution based cross-sectional study in six east African countries pursues devotion to the grave required to increase healthcare institutions willingness to offer quality immediate neonatal care and to warrant that health care providers have the necessary apparatus, material, acquaintance, and acute abilities to bar the lives of the new born [22-25].

According to quantitative data of this study, the mean score of immediate newborn care offered to each newborn baby immediately after birth among health facilities was found 83.4%. The minimum and maximum values were found at 70.45% and 95.45% respectively. This figure implies, above 15% worth of needed neonatal care for each newborn baby was missing. On the other hand, the knowledge of health care providers on immediate newborn care was scored under the ideal average knowledge. This was 58%. The implication is clear. Practicing essential newborn care without sufficient knowledge is not efficient to decrease the mortality of immediate newborn death in health facilities. The observational data report was supported by qualitative data reports. Most of the participants perceived that the worth of immediate care offered to the baby after birth in their healthcare setting is poor. Different reasons are reported by the interviewee. But the most frequently reported reason was a shortage of medical supplies and equipment, poor technical skills, and poor referral linkage between

the health center and hospitals. In emerging countries, due to the lack of adequate essential newborn care practices, the difficulty is continuing. However, the possibility of loss might be purely barred and circumvented with a pretentious, stumpy budget and little length of time [26,27].

## CONCLUSION

The quality of immediate neonatal care was evaluated as poor in both quantitative and qualitative reports. The difficulty of timely ambulance access, lack of adequate in service training, lack of adequate pipe water supply, lack of adequate space, and imbalance of demand and supply of medical equipment and supplies among suppliers were frequently reported reasons for the poor quality of newborn care in the setting. Improvements on quality of essential newborn care quality could be attained through planned in service training, strengthening mentorship, investing financial resources for pipe water supply and infrastructure, by using adaptable quality improvement initiatives.

## LIMITATIONS

Observation of participants without actively participating was used as a data collection method for evaluating neonatal care practice with a structured checklist and there might be bias due to reactivity in which individuals modify an aspect of their behavior in response to their awareness of being observed.

## ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Ethical clearance sheets were taken from Pawe Health Science College. A written permission letter was written by BG regional health bureau. The healthcare setting CEO gave information to labor and delivery department heads of the selected public healthcare settings. After clarifying the purpose and the possible benefit of the study, written consent was taken from each participant before taking the interview. Confidentiality was retained throughout the study and the participants' informed consent was also include publication of anonymized responses.

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## AUTHOR CONTRIBUTION

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis, and interpretation, or in all these areas; took part in drafting, revising, or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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## COMPETING INTEREST

The authors declare that they have no competing interests.

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