Quality of Essential Newborn Care and its Associated Factors in Public Health Facilities of West Gujji, Oromia, Ethiopia: A Cross Sectional Study

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Abstract

Background: Assuring quality essential newborn care during delivery and postpartum period is critical in improving health outcome and decreasing mortality and morbidity in newborn. Moreover, research done in Ethiopia on this regard is limited.Hence,this study was done to identify the quality of essential newborn care and associated factors in public health facilities of West Gujji, Ethiopia.

Objective: Objective of this study is to find out the quality of essential newborn care and associated factors in public health facilities.

Methods: An institutional based cross sectional study was carried out from April 2020 to September 2020 in West Gujji, Ethiopia. The quality of newborn care facilitated by 200 health care workers on 200 newborns were observed during labor process and during postpartum period in the public health facilities. Structured questionnaire and checklists were deployed to gather data. The components on infrastructure, essential neonatal care and demographic variables as well as knowledge of health professionals were included. Therefore, the essential newborn care was considered good quality if the observational check list score was more than75%.One-way ANOVA F-test, student independent t-test and Karl Pearson correlation coefficient methods were utilized to find out the factors associated with quality of essential newborn care.

Results: There were gap in the all-time accessibility of infrastructure, essential equipment, supplies and skilled health professionals.17.9% of the newborns received good quality newborn care. The independent variable such as work experience (F=155.36 p=0.001), training(t=17.34 p=0.001)and knowledge (r= 0.59 P=0.001) of health professionals had significant association with quality of essential new born care.

Conclusion It is very essential to scale up the availability of resources and skilled health professionals and also enhance the quality of service rendered to the new born in order to reduce new-born mortality.

Keywords: Quality, Essential Newborn Care, Health Facility, West Gujj

Introduction

The transition from intrauterine to extra uterine life is abrupt, requiring the baby to go through significant physiological changes in order to survive. [1]The subsequent care time is critical for the babies' long-term well-being and adaptation. [2]

ENBC is a holistic approach for improving infant health through strategies before conception, during pregnancy, at and shortly after delivery, and in the postnatal phase. [3] ENBC practices, according to WHO recommendations, include drying and covering the infant shortly after birth, facilitating skin-to-skin contact, dry cord treatment, timely breastfeeding, and delayed bathing. [4]

Quality of care is known as degree to which health care services given to patients and patient groups promote preferred healthcare outcomes. [5]Quality of Care (QoC) is a central factor of health services in order to increase population health in a sustainable manner. [6] Expanding the number of facilities alone would not suffice to minimize neonatal mortality and morbidity unless quality of care is preserved. [7]

Need for the study

Globally, 2.4 million children died in the first 28days of life in 2019.Roughly 7000 newborn die every day. Under five children constitute 47% of all child deaths.47% of all child death under the age of 5 years happens in the neonatal period with nearly 1/3 die on the first day of birth and around ¾ die within one week of life.[8]A great proportion of children (99%) that die during the first 28 days of birth takes place in the low and middle income countries, especially in Sub-Saharan Africa and South Asia.[9]The Ethiopian Demographic Heath Survey (EDHS) 2016 estimated a mortality rate of 67, 48 and 29 deaths per 1,000 live births among under-5, infant and neonates respectively.[10]

Ethiopia has made magnificent achievement by reducing the child death rate through execution of the National strategy for Newborn and Child Survival (2005-2015);but presentlyunder five and neonatal mortality rates are unsatisfactorily elevated.[11]Evidences recommend that the most of these mortality rates can be avoided, especially that take place during delivery and shortly thereafter by easy, evidence related essential newborn care practices carried out by skilled health professionals with available amenities.[12]These immediate institutional based measures include keeping the newborn warm by instant drying, providing stimulation to initiate breathe, skin to

skin contact, resuscitating the baby with bag and mask, early commencement of exclusive breast feeding, preventing infection and hygienic care of umbilical cord.[13]

Evidence suggests that birth attendant's skill and competency within health care institutions are not adequate to raise newborn survival. [14] Thus, UNICEF has emphasized two areas: timely availability of health care services and betterment of quality of that service. [15]

Upgrading the quality of care in health care facilities is a dual-stepaction. Firstly, readiness of the health facilities to facilitate care through infrastructure, equipment's, medicines and health care workers. Secondly, availing high quality care need implementation through group of quality enhancement interventions. [16]

Very few studies have been conducted in Ethiopia to identify the associated factors and the quality of newborn care. [17-19]Identifying the availability of resources and exploring the service providers characteristics and knowledge as well as evaluating the quality of newborn care has provided us with necessary information required to develop quality improvement measures to improve quality of care in the study area

Objective of the study

Keeping in view the essential new care importance in the West Gujji region the following objectives were formulated

- To determine the quality of essential newborn care practice in West Gujji Zone
- To identify factors associated with quality of essential newborn practice in West Gujji.

Methodology of the study

Study area

West Gujji zone is located in Oromia regional state of south of Ethiopia. This zone is found in South of Addis Ababa which is the capital city of Ethiopia and is away from the center by 470-570km. According to 2007census conducted by the Central Statistical Agency of Ethiopia (CSA), there are 2.5 million population live in the two zones in which 1.56 million (50.4%) are males and 0.94 million are (49.6%) females.In this zone there are 1 general hospital 2 district hospitals 54 health centers, 200 health posts with 1582 health care workers.The study was

conducted in BuleHora general hospital, Karcha district hospitals, BuleHora and Karcha health centers providing newborn services from West Gujjizone were randomly selected for the study due to its easy accessibility

Study design and population:

An institutional based cross sectional study design was used among newborn and health care workers.All alive new born babies who were delivered in West Gujji health care facilities during data collection period were included in the study. All sick newborns were excluded from the study. A total of 200 new born and 200 health care workers were included in the study.

Sampling and instrument

The study participants were selected using systematic random sampling identifying the previous 1 month clients flow to the health facilities for delivery service from registration book to estimate the expected number of new born to be delivered in the health facility. The dependent variable used in this study wasquality of essential newborn care. The independent variables were Infrastructure, essential equipment,essential drugs and Profile of health professionals (socio demographic characteristics and knowledge)

1.   **To assess quality of newborn care** an observational check list with 45 items which is given score of 0-3 adapted from WHOwas used.[20]The individual baby's score will be categorized as receiving good quality if they scored more than 75%.

2.   **To assess the associated factors** a facility inventory checklist with yes or no option was used adopted from the components defined by Donabedian. [21]and a structured questionnaire with two sections (Section 1 assessed socio-demographic characteristics and Section 2 comprising of 10-items to assess knowledge of essential newborn care among health professionals was used with score above 70%, will be considered as having adequate knowledge.

The data was collected from April to September 2020.Prior to the actual data collection, Validity and reliability of the tool was assessed.Content validity was determined by experts from Nursing,Midwifery and Medical.Reliability of the tool was assessed by using Test-retest method and Cronbach Alpha method. Correlation coefficient r –values were knowledge (0.81) and

Checklist (0.84). These correlation coefficients were very high and it was considered as a good tool.

Data analysis

Data entry and analysis was carried out using the Statistical Package for Social Sciences (SPSS, version 22) and STATA (version 12) softwares and Epi info (Version 3.5.1).

Ethical approval

Ethical clearance was obtained from BuleHora University, Institutional Review Board (IRB). Written Informed consent was obtained from health professional and family members prior to study to confirm willingness for participation of their neonate at health facility level prior to study.

Results.

1. Availability of resources in public health facilities

With respect to basic infrastructure in facility Clean Water 92(46%) and Sink with soap 88(44%)availability is poor level. Considering the essential equipment's for post-delivery new born care Oxygen cylinder 52(26%), Radiant warmer 95(47.5%) and Cup to measure breast milk72(36%) availability is not adequate. Availability of essential drugs for new born survival shows that Intravenous diazepam93(46.5%) andIntravenous fluids and infusion sets 95(47.5%) availability has scarcity. (Table 1)

Resources	Always Accessible			
	Yes		No	
Infrastructure				
Clean Water	92	46.00%	108	54.00%
Reliable electricity	163	81.50%	37	18.50%
Fridge for storage	140	70.00%	60	30.00%
Sink with soap	88	44.00%	112	56.00%
Essential equipment's				
Bag and mask	111	55.50%	89	44.50%
Oxygen cylinder	52	26.00%	148	74.00%
Nasal suction /aspirator	152	76.00%	48	24.00%

Radiant warmer	95	47.50%	105	52.50%
Baby scale	102	51.00%	98	49.00%
Cup to measure breast milk	72	36.00%	128	64.00%
Essential drugs				
Intravenous/intramuscular Ampicillin	109	54.50%	91	45.50%
Intramuscular Gentamicin	112	56.00%	88	44.00%
Intravenous diazepam	93	46.50%	107	53.50%
Intramuscular dexamethasone	110	55.00%	90	45.00%
Intravenous fluids and infusion sets	95	47.50%	105	52.50%
Vitamin k	120	60.00%	80	40.00%
Tetracycline eye ointment	124	62.31%	75	37.69%

Table 1: Availability of resources in public health facilities of West Gujji, 2020.

2. Demographic characteristics of health professionals

Considering age most of the health professionals 85(42.50%) are between 20-24 years. Majority of the respondents were males 136(68%).Regarding heath workers professional qualification major part of them were B.Sc. Midwives 122(61%).Concerning work experience greater number 77(38.5%) had more than 3 years of experience. A large proportion 120(60%) had not received training in essential new born care. Considering the frequency of essential newborn care trainings received most of them 60(75%) had attained it only once.(Table 2)

N=200

Demographic variables		Number of health professionals	%
Age	20 -24 yrs	85	42.50%
	25 -29 yrs	75	37.50%
	30 -34 yrs	28	14.00%
	≥35 yrs	12	6.00%
Sex	Male	136	68.00%
	Female	64	32.00%
Professional qualification	MBBS	12	6.00%
	B.Sc nursing	22	11.00%

	B.Sc midwifery	122	61.00%
	Diploma nursing	9	4.50%
	Diploma midwifery	35	17.50%
Work experience	< 1 years	49	24.50%
	1-3 years	74	37.00%
	>3 years	77	38.50%
Trained in essential newborn care	Yes	80	40.00%
	No	120	60.00%
Frequency of training	One	60	75.00%
	Two	15	18.75%
	>Two	5	6.25%

Table 2: Demographic characteristics health care providers in public health facilities of West Gujji, 2020.

3. Knowledge of health professionals on essential new born care

Knowledge regarding essential newborn care depictedthatoutof200health professionals 35(17.5%) had good knowledge and 50(25%) had moderate knowledge and 115(57.5%) had poor knowledge.

4. Quality of essential newborn care

The good quality essential newborn care provided to newborn was only 35(17.5%) and majority of the service received for the newborn was poor quality 115(57.5%)and around 50(25%) received moderate quality service.

The observational check list score was more than half in all the domains of essential newborn care with Preparedness for the birth (54.2%), Newborn infant assessment and immediate care (56.2%), Neonatal Resuscitation (55.15%), Initiation of breastfeeding (57.71%),Routine procedures and prophylaxis(58.33%)(Table 3)

Area	Mean score	SD	% of mean score
Preparedness for the birth	16.26	5.48	54.20%
Newborn infant assessment and immediate care	16.86	5.34	56.20%

|	Mean	SD	%
Neonatal Resuscitation	14.89	5.36	55.15%
Initiation of breastfeeding	13.85	5.34	57.71%
Routine procedures and prophylaxis	14.00	5.48	58.33%
Total	75.86	24.61	56.19%

Table 3: Area wise observational check list score

Factors associated with the quality of essential new born care

After including variables with p-value less than 0.05 the health workers with more than 3 years' work experience and with individuals trained in essential newborn care had significant correlation with the quality of essential new born care (Table 4)and there was also significant positive moderate correlation(r= 0.59 P=0.001) between knowledge of health care provider (Mean±SD 5.87±1.68)and quality(Mean±SD 75.86±16.55) (Fig 1)

Demographic variables		Mean	SD	N	One way ANOVA F-test/t-test
Age	20 -24 yrs	16.41	5.61	85	F=0.10 p=0.96
	25 -29 yrs	16.31	5.71	75	
	30 -34 yrs	15.82	5.12	28	
	>35 yrs	15.92	4.34	12	
Sex	Male	16.07	5.57	136	t=0.62 p=0.54
	Female	16.66	5.32	64	
Professional qualification	MBBS		4.93	12	F=0.79 p=0.54
	B.Sc Nursing	17.73	6.01	22	
	B.Sc Midwifery	15.82	5.41	122	
	Diploma Nursing	15.78	5.83	9	
	Diploma Midwifery	16.77	5.58	35	
Work experience	< 1 years	12.51	3.11	49	F=226.16 p=0.001*
	1-3 years	13.51	3.96	74	
	>3 years	21.29	3.94	77	
Trained in essential new-	Yes	21.02	4.32	80	t=20.93 p=0.001*

born care	No	13.08	3.53	120	
Frequency of trainings received	One	20.88	4.44	60	F=0.79 p=0.46
	Two	21.40	4.29	15	
	>Two	21.60	4.04	5	

Table 4: Association between qualityand health professional'sdemographic variables

*p≤0.05 significant variable
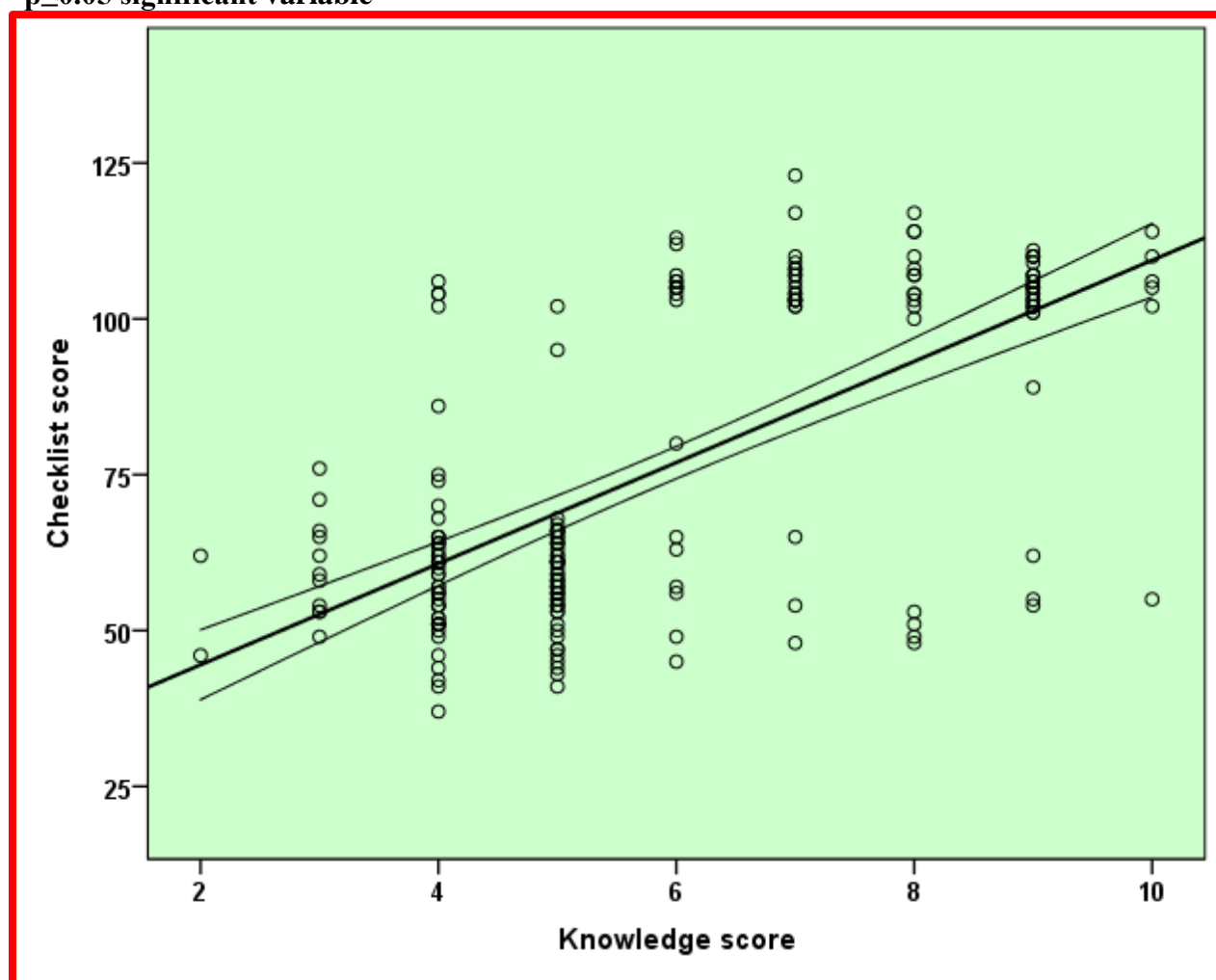
Fig 1:Association of Knowledge with quality of essential new born care

Discussion

Availability of necessary infrastructure facilities with power supply (81.50%) and fridge for storage (70%) of necessary items was less of a problem in the assessed areas as there was back up power supply in most of the facilities. The major portion of the essential equipment for newborn care in health facilities was available most of the time. .However, availability of cup to

measure breast milk (36%) and oxygen cylinder (26%) was not adequately available. Majority of the facilities were stocked with adequate supply of medicines except for diazepam (46.5%) and Intravenous fluids and infusion sets (54.5%). This scarcity could be due to their availability is not noticed by the service providers from time to time and most of the drugs were stored in the pharmacy rather than in the labour room. But,in general the all-time availability of the resources is not adequate in the study area.A similar study conducted in Kenya and Malawi that surveyed eight regions structural variables identified that the necessary supplies were not always available in the health facilities of this area. [22,23]Assessment of health facility capability to assure care of newborn in Bangladesh, Haiti, Malawi, Senegal, and Tanzania recognized low availability of resources.[24]Moreover, Availability of resources, will have an impact on the quality of service rendered and outcome.[25]

The quality of newborn care was found to be substantially low in this area. The standard care acquired by newborns were only 17.5%. Moreover, our results were relatively low compared to the results of studies done inTigray region, Ethiopia (67.6%)[19]and Ghana (33%).[26]This difference in the result may be due to variations in the measurement criteria used to identify the quality of newborn care ,category of health facilities, study sample engaged, the data gathering time.

Our research findings showed a positive correlation between experience of the health care professionals and quality of care. This result resembles the studies previously done inAfar regional state,North East Ethiopia[27] and Jimma [28]which shows good practice with experience. There was also an association with training received in essential newborn care and knowledgeof service providers with quality in this study which is in line with a study done in Jimma.[28]This association with training, knowledge and experience might be due to interest, positive behavior and competency of service providers in rendering care.

Conclusion

The quality of care is in West Gujji region was minimal. The availability of the facility resources were moderate. Experience, training and knowledge had significant association with the quality of newborn care. Quality improvement strategies in the form of in-service education to the providers, quality monitoring protocols should be made available in the health facilities.Facilities

should furnish effective methods for procurement and supply of essential medicines and equipment for newborn care so there availability will be ensured always.

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