Original Article

Quality of maternal and newborn health services and their impact on maternal–neonatal outcome at a primary health center

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Abstract

Introduction: The utilization of the maternal and newborn health services has increased, but mere increase in utilization of services does not ensure that quality services are being provided. The aim of the study was to assess the quality of maternal and newborn services and their impact on maternal and neonatal outcome at a primary health center of Western Rajasthan in India. **Materials and Methods:** An exploratory study was undertaken at a conveniently selected primary health center providing 24-hour delivery services. Information regarding the availability of services was collected from the available medical officer in charge using an Indian Public Health Standards (IPHS) Proforma. Assessment of quality of services was performed by using WHO standards of care based on assessment of quality of maternal and newborn services tool by the perspectives of the provider as well as the mothers utilizing the services. 36 mothers who delivered at the selected PHC were interviewed. **Results:** All basic obstetric care services were available at the selected primary health centers including the 24 × 7 delivery services. The assessment of quality by provider's perspective revealed that the system of referral could be improved. Quality of maternal and newborn services assessment revealed that the practice of skin to skin contact between the mother and newborn just after the delivery was not being followed and few (30%) mothers informed that they could not start breastfeeding within 1 hours of birth. 47% mothers reported that they were not given the freedom to ask questions during delivery. Maternal and newborn outcome revealed that all mothers (100%) had a normal vaginal delivery, and 22% mothers had an episiotomy. All (100%) newborns cried immediately after birth, and average birthweight was 2.89 kg. **Conclusion:** PHCs are the first point of contact of mothers and healthcare delivery system. Assessment of quality of services is an important tool for quality assurance. Inclusion of evidence-based practices like skin-to-skin contact and early initiation of breastfeeding is important to improve the maternal and newborn well-being.

Keywords: Maternal outcome, neonatal outcome, primary health centers, quality of maternal and newborn services

Introduction

Appreciable progress has been made in making the shift in the mindset of the general public to opt for institutional deliveries, and as a result, the proportion of institutional deliveries has improved significantly. The rate of institutional deliveries has surpassed to more than 80%. The reduction in maternal and newborn mortality and morbidity also has seen a considerable drop, but still much progress needs to be made as every life counts. Sustainable Development Goals (SDG) set by United Nations aims at reducing the global maternal mortality ratio to less than 70 per 100,000 live births. For 2018–20, MMR estimate for India is 97, and for Rajasthan, it is 113.[1]

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With increasing births in health facilities, attention has shifted to quality of care provided at these health facilities. The period around the childbirth is the most crucial period to save maximum number of maternal and newborn lives. It has been observed that maximum number of maternal and newborn deaths occur during the labor and within first 48 to 72 hours after birth. Donabedian model of quality of care advocates that quality of care depends on multiple factors including the structure, process, and outcome. Physical infrastructure, human resources, knowledge, skills, and capacity to deal with normal as well as complicated pregnancies are important determinants of quality of maternal and newborn services.[2,3]

Identifying the gaps in quality of maternal and newborn health services available at primary health centers is a crucial step toward improving the available maternal and newborn health services.[4]

WHO framework for the quality of maternal and newborn health care includes the structure (health system), and the process part includes provision of care and experience of care and the outcomes include individual and facility-based outcomes.[1]

As the number of institutional deliveries has increased to more than 80% the mortality burden of the mother and newborn also has shifted from community to facilities. This can be attributed to low quality of care in the facilities and improving the quality of care at primary health facilities has emerged as a bigger challenge.[5]

Assessment of quality of care is a primary step in identifying the gaps and making strategies to bridge those gaps as poor access to quality health care is an important factor contributing to maternal and newborn mortality and morbidity.[6]

Increased utilization of institutionalized delivery services does not ensure that quality services are provided.[7] The Indian Public Health Standards (IPHS) for PHCs are designed to establish benchmark of standards for infrastructure, human resource, and services so that comprehensive quality care is available at the primary level.[8,9]

PHCs are the first point of contact between the public and healthcare delivering system. Assessment of quality of available services is an important quality assurance tool and improving the PHCs to qualy of maternal and newborn services will help be better utilization of these facilities and also decrease the burden on the CHCs and district hospital facilities.

Therefore, the researchers thought to assess the quality of maternal and newborn care at a primary health center.

Materials and Methods

Exploratory study design was adopted for the present study. As a pilot project for the main study 1, primary health center of Jodhpur district of Western Rajasthan was selected by convenience sampling and 36 postnatal mothers who have delivered at the selected primary health center were interviewed.

Data were collected using observation, questioning, record analysis, and interview technique in the month of June 2021 as the number of COVID-19 cases decreased. Medical Officer In charge at the Primary Health Center was approached, and IPHA facility tool was filled by using observation, record analysis, and interview technique.

Mothers who have delivered at the primary health center and those who have not completed 3 days after delivery were interviewed at the primary healthcare center. Quality-of-care checklist was filled by observation, record analysis, and interview technique.

Indian public health standards (IPHS) facility survey proforma was used to assess the available services at the PHC. Quality of maternal and newborn services assessment tool is based on WHO standards of maternal and newborn care and quality statements by service providers with 23 items under eight domains and was used to assess the quality of maternal and newborn services by the perspective of service provider. Assessment of quality of services by service user's perspective (postnatal mothers) was performed with 21 items under six domains. A self-structured checklist was used to assess the maternal and fetal outcome that included 11 items to assess maternal outcome and five items to assess fetal outcome.

The tools were validated from seven nursing and public health expert from different institutions and certain modifications were performed. CVI index for maternal and fetal outcome checklist was found to be. 91. Reliability of quality of maternal and newborn services checklist and maternal–fetal outcome checklist was checked by inter-rater method and was found to be. 8 and. 75, respectively.

Data were clean coded, and descriptive and inferential statistics was used for data analysis.

Ethical clearance was obtained from the institutional Ethics committee. Certificate Reference Number: AIIMS/IEC/2020-2021/3052, Date: -09/07/2020. Both written and verbal information about the study were given to women who participated in the present study, and consent was taken from the participants as well as the district administration.

Results

Sample characteristics

A total of 36 mothers were selected by convenient sampling who delivered by a normal vaginal delivery at the selected primary health center. Average age of mothers was 25.28 years (SD = 2.4). 11.1% mothers were primigravidae, 44.4% had conceived for the second time, and 44.5% mothers were multigravida. 77.8%

mothers had no formal education, and 22.2% mothers had primary education. All mothers were homemakers [Table 1].

Quality of maternal and newborn services

Availability of services at the selected primary health center was assessed by using the IPHA standards for primary health center. The selected primary health center was functional for 24 hours and was providing delivery services around the clock. The PHC was functional in its own building and covered a population of 25000. All necessary physical facilities for labor room, registration counter, admission ward, and utility were present. Cleanliness at the primary health center was observed as fair, and there was scope for improvement in cleanliness. Separate newborn care corner was available in the labor room. Prominent display of service availability and Standard Operating Procedures (SOP) was observed [Table 2].

All obstetric services including antenatal, intranatal, and postnatal were available. All lab tests were available at the PHC including routine urine and blood test. Availability of family planning services excluding the MTP services was present. Immunization services were available on the primary health center and weekly one day (every Monday) was designated as immunization day at the PHC [Table 3].

After assessing the availability of services, the quality of available services was assessed by using a quality of maternal and newborn services assessment tool based on the WHO standards of maternal and newborn care. Medical officers of the PHC were interviewed about 23 statements of quality of maternal and newborn services under eight domains by the perspective of the service provider. Responses of the medical officer were verified by record review and observation of practice. It was observed that thorough assessment was made during labor and delivery and also partograph was maintained. It was observed that there was no information exchange between PHC and referral center when a mother or newborn was referred to a higher center [Table 4].

Assessment of quality of care by the motherd equipment is available for routine care and management of cfter birth, but practice of skin to skin contact was not followed, and a few (30%) mothers reported that they could not start breast feeding within 1 hour after birth. 47% of mothers reported that they were not informed about what treatment is being given to them at the time of delivery. 44.4% of mothers reported that they were not given the freedom to ask questions during their delivery. All mothers (100%) reported that they were regularly assessed during labor and all infection control practices were being followed. All mothers (100%) reported that newborn just after the birth was wrapped in a clean pre-warmed cloth and they were allowed to have a companion of choice during their delivery. All mothers agreed that proper privacy was maintained, their consent was taken before examination, and they were treated with respect by the healthcare provider. 66% of mothers agreed that the healthcare worker informed them about the methods and benefits of breastfeeding [Table 5].

Table 1: Frequency and percentage distribution of sample characteristics (*n*=36)

	f (%)
Age (Mean±SD)	25.28±2.4
Gravidity	
1 (Primigravida)	4 (11.1)
2	16 (44.4)
>2	16 (44.5)
Educational status	
No formal education	28 (77.8)
Primary education	8 (22.2)
Occupation	
Home maker	36 (100)
Self-employed/private	-

f (%) = frequency (percentage)

Table 2: Infrastructural facilities at selected primary health centers (*n*=01)

Infrastructure facility	Availability of facility Yes/No
Own building	Yes
Labor room	Yes
Provision for laboratory	Yes
Registration counters	Yes
Pharmacy for drug dispensing	Yes
Separate public utility for male and female	Yes
Family welfare clinic	Yes
Separate ward for male and female	Yes
OT	Yes
Cold chain facility	Yes
Equipment	Yes
Newborn care corner	Yes
Water supply	Yes
Cleanliness	Fair
Prominent display of service availability and SOP's	Yes
Suggestion/Complaint box	Yes

Table 3: Maternal and newborn services available at selected primary health centers (*n*=01)

Maternal and newborn services	Availability of facility (Yes/No)
OPD Services	Yes
Basic Emergency Obstetric Services (BEmOC)	Yes
Antenatal care	Yes
Intranatal care (24-h delivery service)	Yes
Postnatal care	Yes
Newborn care	Yes
Child care including immunization	Yes
Family planning	Yes
Mgt of RTI/STI	Yes
Facilities under JSY	Yes
Antenatal clinic	Yes
Normal delivery (24 h)	Yes
Tubectomy and vasectomy	No
MTP (Abortion)	No
Fixed immunization day	Yes
Lab test including blood, urine, and stool	Yes

Table 4: Domain wise scores of quality statements by provider's perspectives (*n*=01)

Standards and quality statements	Yes/No
Domain 1 – Evidence-based care: Every woman and newborn receives routine, evidence-based during labor, childbirth and the early postnatal period, according to defined protocols and guidelines	
Women are assessed routinely on admission and during labor and childbirth and are given timely, appropriate care.(Is partograph maintained Y/N)	Yes
Newborns receive routine care immediately after birth.	Yes
Mothers and newborns receive routine postnatal care.	Yes
Newborns who are not breathing spontaneously receive appropriate stimulation and resuscitation with a bag-and-mask within 1 min of birth, according to guidelines.	Yes
All women and newborns receive care according to standard precautions for preventing hospital-acquired infections.	Yes
No woman or newborn is subjected to unnecessary or harmful practices during labor, childbirth, and the early postnatal period.	Yes
Domain 2 – Health Information System: The health information system enables use of data to ensure early, appropriate action to improve the care of every woman and newborn.	
Every woman and newborn has a complete, accurate, standardized medical record during labor, childbirth, and the early postnatal period.	Yes
Every health facility has a mechanism for data collection, analysis, and feedback as part of its activities for monitoring and improving performance around the time of childbirth.	Yes
Domain 3 – Appropriate and Timely Referral: Every woman and newborn with condition (s) that cannot be dealt with effectively with the available resources is appropriately referred	
Every woman and newborn is appropriately assessed on admission, during labor and in the early postnatal period to determine whether referral is required, and the decision to refer is made without delay.	Yes
For every woman and newborn who requires referral, the referral follows a pre-established plan that can be implemented without delay at any time.	Yes
For every woman and newborn referred within or between health facilities, there is appropriate information exchange and feedback to relevant health care staff.	No
Domain 4 – Communication: Communication with women and their families is effective and responds to their needs and preferences	
All women and their families receive information about the care and have effective interactions with staff.	Yes
All women and their families experience coordinated care, with clear, accurate information exchange between relevant health and social care professionals.	Yes
Domain 5 – Respectful Care: Women and newborns receive care with respect and preservation of their dignity.	
All women and newborns have privacy around the time of labor and childbirth, and their confidentiality is respected	Yes
No woman or newborn is subjected to mistreatment, such as physical, sexual or verbal abuse, discrimination, neglect, detainment, extortion or denial of services.	Yes
All women have informed choices in the services they receive, and the reasons for interventions or outcomes are clearly explained.	Yes
Domain 6 – Emotional Support: Every woman and her family are provided with emotional support that is sensitive to their needs and strengthens the woman's capability	
Every woman is offered the option to experience labor and childbirth with the companion of her choice.	Yes
Every woman receives support to strengthen her capability during childbirth.	Yes
Domain 7 – Human Resource: For every woman and newborn, competent, motivated staff is consistently available to provide routine care and manage complications	
Every woman and child has access at all times to at least one skilled birth attendant and support staff for routine care and management of complications.	Yes
The skilled birth attendants and support staff have appropriate competence and skills mix to meet the requirements of labor, childbirth, and the early postnatal period.	Yes
Domain 8 – Infrastructure: The health facility has an appropriate physical environment, with adequate water, sanitation and energy supplies, medicines, supplies and equipment for routine maternal and newborn care and management of complications	
Water, energy, sanitation, hand hygiene and waste disposal facilities are functional, reliable, safe and sufficient to meet the needs of staff, women and their families.	Yes
Areas for labor, childbirth, and postnatal care are designed, organized, and maintained so that every woman and newborn can be cared for according to their needs in private, to facilitate the continuity of care.	Yes
An adequate stock of medicines, supplies and equipment is available for routine care and management of complications.	Yes

Maternal and fetal outcome: All mothers (100%) had normal vaginal delivery. 22.2% of mothers had an episiotomy. Only 1 mother (2.8%) had a preterm delivery. No mother (0%) reported any abnormal bleeding or any signs of infection after 7 days of delivery. All newborns (100%) cried immediately after birth, and all newborns (100%) had an APGAR score of more than 7. Average birthweight was 2.9 kg (SD =0.38) [Table 6].

Discussion

The present study reported the average age of mothers was 25.28 years (SD = 2.4). The rate of episiotomy was reported to be 22% that is not consistent with the findings of Ajit Kumar Dey who reported it to be 56.6% in his study conducted in Assam.[10]

Table 5: Domain wise scores of quality statements by receiver's (mother's) perspectives (*n*=36)

Standards and quality statements	f (%)
Domain 1 – Evidence based care: Mother and newborn receive routine, evidence-based care during labor, delivery, and the early postpartum period, according to defined protocols and guidelines.	
Were you fully examined by the health worker on admission? (BP/PULSE/Abdominal check/Baby's heartbeat/Temperature)	36 (100)
Did the health worker check you at regular intervals during delivery? (Delivery Progress Checked)	36 (100)
Was the health worker who delivered you wearing gloves?	36 (100)
Was your newborn cleaned with a clean cloth immediately after birth?	36 (100)
Was your newborn made skin-to-skin contact with you by placing him on your chest immediately after birth?	0 (0)
Was your newborn weighed after birth?	36 (100)
Did a health worker tell you about the methods and benefits of breastfeeding?	24 (66)
You started breastfeeding your newborn within one hour of birth	25 (70)
Did a health care worker vaccinate your new born	360 (100)
Were you were constantly instructed by a health worker during labor (when to push, how to breathe)	19 (53)
Domain 2 - Communication: Was communication with you and your families effective and their needs and priorities are addressed?	
Were you given full information about the treatment done before delivery and during delivery?	19 (53)
Did you see coordination among health workers?	36 (100)
Were you given the freedom to ask questions?	20 (55.6)
Domain 3 – Respectful Care: You and the newborn receive care with respect and protection of their dignity	
Allowed to have a birth partner (partner) of your choice during your labor	36 (100)
All health workers treated you with respect during and after delivery	36 (100)
Your consent was taken before the internal examination	36 (100)
Domain 4 – Emotional Support: Provided emotional support to each woman and her family that is sensitive to their needs and strengthens the potential of the woman	
Did the health workers encourage you during labor?	36 (100)
Domain 5 – Human Resource: For each woman and newborn, competent, motivated staff are constantly available to provide routine care and manage complications.	
Did the health worker who delivered your delivery deliver you with full confidence and competence?	36 (100)
Domain 6 – Infrastructure: The health facility has an appropriate physical environment with adequate water, sanitation and energy supplies, medications, supplies, and routine maternal and neonatal care and management of complications.	
Was clean drinking water available at the health center?	36 (100)
Was the health center and delivery room clean and tidy?	36 (100)

Table 6: Frequency and percentage distribution of the maternal and neonatal outcome (*n*=36)

Maternal outcome	f (%)
Delivery Type	
Normal Vaginal Delivery	36 (100)
Assisted	0 (0)
Perineal damage	
Episiotomy	8 (22.2)
Period of gestation at delivery	
Term	35 (97.2)
Preterm	1 (2.8)
Abnormal bleeding before/during/after delivery	
Yes	0 (0)
No	36 (100)
Any infection/fever in the first 7 days after delivery	
Yes	0 (0)
No	36 (100)
Neonatal Outcome	
Birth weight in kg (Mean±SD)	2.9±3.8
Did the newborn cry immediately after birth?	
Yes	0 (0)
No	36 (100)
APGAR - birth at >7	36 (100)

The observed primary health center was functional for 24 hours and was providing round the clock delivery services. All basic obstetric services including the antenatal, intranatal, and postnatal were available. These findings were consistent with the study conducted by Jaspreet Kaur that assessed the readiness of public health facilities in Bihar.[6]

Assessment of quality of care by motherndings were consistent with the study conducted by Jaspreet Kaur that assessed the readiness of puof mothers could start breastfeeding in the first hour after birth. Skin-to-skin contact and initiation of breastfeeding immediately after birth are two very important interventions of essential newborn care. Findings reported by Jaspneet Kaur in their study to assess readiness of public health facilities to provide quality maternal and newborn care across the state of Bihar, are consistent with the same.[11] A study conducted by Lazzernia et al, in Italy to study the maternal and newborn care with respect to WHO standards also reported that only 67% mothers could start breastfeeding in first hour. [6]

The findings of the present study stated that all mothers (100%) reported that they were regularly assessed during labor and all infection control practices were being followed. All

mothers (100%) reported that newborn just after the birth was wrapped in a clean prewarmed cloth and they were allowed to have a companion of choice during their delivery. These findings are not consistent with the observation of Jigyasa Sharma in their study conducted on can India's primary health centers deliver. They reported 30% PHC's not offering any intrapartum care.[11]

The concept of quality of care is an evolving concept especially in developing countries like India and the beneficiaries and health personnel need to be sensitized regarding the same.[12]

It is very important in understanding the concept of quality of care to understand the mother India and the beneficiaries and health personnel need to be sensitized regarding t[13] In this study, mothers studyoective was also explored and mothers reported that proper privacy was maintained, their consent was taken before examination, and they were treated with respect by the healthcare provider.

In the present study, all mothers (100%) had a normal vaginal delivery and all newborns cried immediately after birth with an APGAR score of more than 7 and an average birthweight of 2.98 kg. Ashish KC in their study on quality of maternal and newborn care in Nepal concluded that the improvement of available services improves the newborn outcome.[14]

Initiatives need to be taken to develop an insight in the healthcare providers and stakeholders for continuous quality monitoring and interventions to improve the quality of care to improve the maternal and newborn care.[15]

This study has its own strengths and limitations. The strengths of the study are that it makes an effort to assess the quality of maternal and newborn care comparing it with the standards given by IPHS and also makes an effort to assess the quality by mothers' perspective also. The limitations of the study is that the assessment of quality of services is based on the responses of medical officer incharge and mothers who delivered at the selected primary health center and direct observation of care during procedures was not performed. Ceiling effect can also be identified as a limitation as mothers tend to rate the available services superlatively as they complete the process of labor and they have their baby in their hands.

Conclusion

Inclusion of evidence-based practices like skin-to-skin contact and early initiation of breastfeeding is important to improve the quality of maternal and newborn services and reducing the maternal and newborn mortality and morbidity. Proper communication between healthcare personnel at different levels of facilities is needed to improve referral system. A robust system of quality appraisal and interventions to improve the quality of maternal and newborn care is the need of the hour for quality assurance and to address the maternal and newborn mortality and morbidity. The findings of this paper can help in devising strategies for periodic assessment of quality of services at primary health centers and developing strategies to improve quality of services at primary health centers.

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Conflicts of interest

There are no conflicts of interest.

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