Compliance to immediate newborn care practice among midwives working in maternity wards: a best practice implementation project

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ABSTRACT

Background: The WHO has a series of comprehensive care instructions to improve the health of newborns from prior to conception, throughout pregnancy, soon after birth and in the postnatal period.

Objective: The objective of this best practice implementation project was to promote evidence-based best practice of immediate newborn care practice among midwives working in the maternity ward.

Methods: Baseline and postimplementation audits were conducted using the JBI Practical Application of Evidence System using nine audit criteria for immediate newborn care. The gaps and barriers were analyzed using Getting Research into Practice strategies based on the baseline audit result. Discussion was conducted on the identified gaps and the implementation strategies.

Results: A total of 94 cases were observed for both a baseline and follow-up audit. We found that follow-up compliance rates for all criteria were improved compared with the baseline audit. For instance, criterion 5 improved from 26% during baseline to 96% during follow-up audit, and the overall average compliance at baseline was 58% and for the postimplementation audit was 96%.

Conclusion: The current project revealed that training of the health professionals and presenting evidence summaries to them were strategies that resulted in improved compliance to best available evidence to immediate newborn care.

Key words: best practice implementation, clinical audit, immediate newborn care


Introduction

Newborn care signifies the completion of gestation within the womb, and provides the foundation for future health and wellbeing of the neonate. Safe and effective newborn care can also contribute to reduce neonatal morbidity and mortality as newborn health and safety is closely linked to the quality of postnatal care.1-3

The optimal approach to immediate newborn care is comprehensive bundles package assessments, care and therapeutics for safe, effective management of newborns. These include guidelines for clean delivery, thermoregulation, cord care, initiation of breastfeeding, eye care, immunization and management of low birth weight and evaluation for the presence of newborn illness. Lack of use of best practice guidelines and recommendations

What is known about the topic?

- The components of immediate newborn care practice.
- When and how to implement these components of immediate newborn care practice.
- The outcomes/death of newborns in the country.

What does this article add?

- Identify barriers and facilitators to achieving compliance with evidence-based criteria regarding immediate newborn care in low-income countries.
- To improve knowledge regarding best practice amongst care providers working in the maternity ward in low-income countries.
- To improve outcomes regarding immediate newborn care amongst care providers working in the maternity ward in low-income countries.
may be associated with an increased risk of neonatal morbidity or mortality.5,6

A set of practices that reduce newborn morbidity and mortality has been identified as immediate practice and these include clean cord care (cutting and tying of the umbilical cord with a sterilized instrument and thread), thermal care (drying and wrapping the newborn immediately after delivery and delaying the newborn’s first bath for at least 6 h or several days to reduce hypothermia risk), and initiating breastfeeding within the first hour of birth.5,7

Globally, 2.7 million neonates die before they reach one month of age every year which accounts for 45% of under-five mortality, with the highest proportion in the first 24 h after birth (up to 37% of neonatal deaths).8 The biggest burden (98%) of this neonatal death occurs in low-income and middle-income countries. The major contributing factors for this mortality are unhygienic cord care, hypothermia, delaying breastfeeding and identification and appropriate referral of sick neonates.8,9

On the other hand in sub-Saharan Africa, average coverage with skilled care has increased at only 0.2% per year in the past decade; without faster progress, coverage of skilled attendants was still less than 50% in 2015, which makes addressing neonatal mortality difficult.10

Also, in Ethiopia, around 87,000 newborns die every year in the first month of life. The risk of death is highest in the first 24 h of life when more than half of deaths occur, and about three-quarters of all neonatal deaths occur within the first week of life.1,11,12

Even though, the majority of the neonatal deaths occur from preventable causes, or failure to implement best practice care bundles, there are also potentially harmful practices. These include poor feeding choices, unhygienic cord care, lack of thermal control and bathing or skin care that can cause infections. These are common challenges in low-income country settings.1,3,14

Several factors have been identified as barriers to access to newborn care. These include unavailability of the services, inadequate number of skilled personnel, geographical inaccessibility, poor quality of care, financial constraints, lack of perceived need for such services, cultural practices, discouraging the service and lack of awareness or knowledge about newborn care.15

The evidence implementation project was used for promoting evidence-based healthcare using audit reaudit evidence-based criteria. Furthermore, we also undertook team-based analysis of the organizational barriers, and setting strategies to overcome the barriers. Therefore, the aim of this best practice evidence study was to assess immediate newborn care.

Objective
The aim of this study was to assess compliance with evidence-based criteria regarding immediate newborn care amongst care providers working in the maternity ward.

The specific objectives were:

1. To determine current compliance with evidence-based criteria regarding immediate newborn care amongst care providers working in the maternity ward.
2. To identify barriers and facilitators to achieving compliance with evidence-based criteria regarding immediate newborn care.
3. To develop strategies to address areas of noncompliance.
4. To improve knowledge regarding best practice amongst care providers working in the maternity ward.
5. To improve compliance with evidence-based criteria regarding immediate newborn care amongst care providers working in the maternity ward.
6. To improve outcomes regarding immediate newborn care amongst care providers working in the maternity ward.

Methods
The study was conducted in May 2018 (the baseline), May to September 2018 (intervention) and September, 2018 (follow-up) at public hospitals. This evidence implementation project was conducted using the JBI Practical Application of Clinical Evidence System (PACES) and Getting Research into Practice (GRiP) audit and feedback tool, which are used to promoting evidence-based healthcare using audit reaudit evidence-based criteria and team-based analysis of the organizational barriers and identification of strategies to overcome these barriers. Since the project was registered as a quality improvement activity within the hospital, it did not require ethical approval; however, support was granted from the hospital administration to conduct the project.

The study activities, which involved three distinct but interrelated phases of activity, are described below.

Phase 1: Stakeholder engagement (or team establishment) and baseline audit
The major activities of phase 1 include identifying a study topic, audit criteria, setting and sample, organizing a study team, and conducting a survey and a baseline audit.

Once we decided the study topic, we organized the study team as follows based on their position and willingness to participate at the meeting and agreement
to implement the project and provision of their support for the study.

(1) Team leader, who was responsible for conducting the baseline and postimplementation audit, analyzing and reporting the findings, and overseeing the overall implementation of the project.

(2) Head of maternity ward, responsible for making relevant administrative actions to correct barriers regarding resources, acting as a role model for other staff in clinical practice, working to fill the skill gaps through discussion, overseeing the technical aspect of the project and responsible for assigned staff at the point of care.

(3) Nursing director, responsible for overseeing the technical aspect of the project.

(4) One person from hospital quality management: responsible for overseeing the technical aspect of the project and checking for timely delivery of necessary supplies.

(5) Overall team organizers: a team member who was responsible for overseeing the whole project; he observed activities with the team leader and helped in bringing these team members together.

We conducted a study to examine midwives’ practice of immediate newborn care.

For identifying audit criteria, we used the JBI PACES criteria for immediate newborn care practices to assess compliance to evidence-based newborn care (Table 1).

**Phase 2: Design and implementation of strategies to improve practice (Getting Research into Practice)**

To collect and analyze the audit data, the study team used JBI PACES, online software to assist the audit process. We developed the baseline and follow-up audit criteria based on the evidence summary. The study team selected the maternity ward and all of the 50 midwives providing the service in this project, a setting based on the nature of the service. After delivery when mothers were transferred to postnatal as some of the activities were accomplished by those assigned to the postnatal ward. The data were collected by trained midwives tutors and the team leader who is in maternity nursing by profession. The average number of live births per 24 h varies between 10 and 20, with 5 to 10 of these deliveries occurring during the day time; the duration of the study (observation period) was 2 weeks (10 working days). Therefore, we expected $5 \times 10 = 50$ opportunities to observe compliance with best practice recommendations for baseline and the phase 3 postimplementation audit for a total of $50 \times 2 = 100$ observations.

**Phase 3: Follow-up (postimplementation) audit**

The study team conducted the follow-up audit at the end of the 4-month (May to September 2018) implementation period. We collected the data in the same way we collected the baseline audit from 44 midwives, as six of them left the organization during the follow-up period.

**Table 1. Audit criteria used during baseline with a description of the sample and approach to measuring compliance with best practice among midwives working in the maternity wards, May 2018**

<table>
<thead>
<tr>
<th>Serial no.</th>
<th>Audit criterion</th>
<th>Sample</th>
<th>Method used to measure % compliance with best practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Healthcare providers have received education regarding essential newborn care</td>
<td>All 50 midwives</td>
<td>Interview</td>
</tr>
<tr>
<td>2.</td>
<td>Thermal care was provided by healthcare staff to the newborn (immediate drying, warming, skin-to-skin, delayed bathing)</td>
<td>Midwives</td>
<td>Observation</td>
</tr>
<tr>
<td>3.</td>
<td>Exclusive breastfeeding was initiated within 1 h of birth</td>
<td>Midwives</td>
<td>Observation</td>
</tr>
<tr>
<td>4.</td>
<td>Hygienic cord care was provided to the newborn by healthcare staff</td>
<td>Midwives</td>
<td>Observation</td>
</tr>
<tr>
<td>5.</td>
<td>Education to parents/caregivers was provided by healthcare staff regarding thermal care of the newborn, in relation to delayed bathing</td>
<td>Midwives</td>
<td>Observation</td>
</tr>
<tr>
<td>6.</td>
<td>Education to parents/caregivers was provided by healthcare staff regarding initiation of breastfeeding within 1 h of birth</td>
<td>Midwives</td>
<td>Interview</td>
</tr>
<tr>
<td>7.</td>
<td>Education to parents/caregivers was provided by healthcare staff regarding exclusive breastfeeding of the newborn</td>
<td>Midwives</td>
<td>Interview</td>
</tr>
<tr>
<td>8.</td>
<td>Education to parents/caregivers was provided by healthcare staff regarding hygienic cord care for the newborn</td>
<td>Midwives</td>
<td>Observation</td>
</tr>
</tbody>
</table>

All of the 50 midwives working in the maternity ward during the study period were purposively included in the study as all of them have a duty to provide the service.
We compared the follow-up audit results with those of the baseline audit to examine any change in compliance rate with best practice criteria before and after implementation (Table 2).

**Results**

**Phase 1: Baseline audit**

A total of 50 midwives were interviewed for the first criterion and 50 cases were observed for immediate newborn care practices for baseline audit. The results of the baseline audit showed that nearly 75% (three quarters) of the healthcare providers had not received education regarding immediate newborn care. Hygienic cord care was not provided for 20 (40%) of the observed cases and education about the thermal care of the newborn was not provided for 37 (74%) of the observed cases. The compliance to immediate newborn care practice was lowest for criterion 5 (education to parents/caregivers was provided by healthcare staff regarding thermal care of the newborn, in relation to delayed bathing) and criterion 9 (education to parents/caregivers was provided by healthcare staff regarding hygienic cord care for the newborn). The compliance rate was highest for criterion 8 (education to parents/caregivers was provided by healthcare staff regarding exclusive breastfeeding of the newborn) during the baseline audit (Fig. 1).

<table>
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<th>Method used to measure % compliance with best practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Healthcare providers have received education regarding essential newborn care</td>
<td>All 44 midwives</td>
<td>Interview</td>
</tr>
<tr>
<td>2</td>
<td>Thermal care was provided by healthcare staff to the newborn (immediate drying,</td>
<td>Midwives</td>
<td>Observation</td>
</tr>
<tr>
<td></td>
<td>warming, skin-to-skin, delayed bathing)</td>
<td>Observation</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Exclusive breastfeeding was initiated within 1 h of birth</td>
<td>Midwives</td>
<td>Observation</td>
</tr>
<tr>
<td>4</td>
<td>Hygienic cord care was provided to the newborn by healthcare staff</td>
<td>Midwives</td>
<td>Observation</td>
</tr>
<tr>
<td>5</td>
<td>Education to parents/caregivers was provided by healthcare staff regarding thermal</td>
<td>Midwives</td>
<td>Observation</td>
</tr>
<tr>
<td></td>
<td>care of the newborn, in relation to delayed bathing</td>
<td>Observation</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Education to parents/caregivers was provided by healthcare staff regarding</td>
<td>Midwives</td>
<td>Observation</td>
</tr>
<tr>
<td></td>
<td>thermal care of the newborn, in relation to use of warm clothing</td>
<td>Observation</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Education to parents/caregivers was provided by healthcare staff regarding</td>
<td>Midwives</td>
<td>Interview</td>
</tr>
<tr>
<td></td>
<td>initiation of breastfeeding within 1 h of birth</td>
<td>Interview</td>
<td></td>
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<td>8</td>
<td>Education to parents/caregivers was provided by healthcare staff regarding</td>
<td>Midwives</td>
<td>Observation</td>
</tr>
<tr>
<td></td>
<td>exclusive breastfeeding of the newborn</td>
<td>Observation</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Education to parents/caregivers was provided by healthcare staff regarding</td>
<td>Midwives</td>
<td>Observation</td>
</tr>
<tr>
<td></td>
<td>hygienic cord care for the newborn</td>
<td>Observation</td>
<td></td>
</tr>
</tbody>
</table>

We compared the follow-up audit results with those of the baseline audit to examine any change in compliance rate with best practice criteria before and after implementation (Table 2).

**Phase 2: Strategies for Getting Research into Practice**

The finding of the baseline was disseminated among the team. A half-day discussion session on the findings and on the implementation of the strategies was conducted. Then the gaps and barriers were analyzed using GRIP strategies based on the baseline audit result. Following that, actionable strategies that could improve the practice of the midwives were developed (Table 3). To encourage them to actively participate in this project, our team first decided to provide a brief introduction to evidence-based practice (EBP) and best practice of immediate newborn care for the midwives, believing that conducting this project without midwives’ understanding of EBP and best practice for newborn care would not be sustainable for their practice. In addition, during the baseline audit only 13 (26%) of them reported that they had received training regarding immediate newborn care, which indicates that they do not understand the concept of, and the steps to perform immediate newborn care in their workplace.

The project team developed the protocol for the training and submitted it to the nursing director’s office, and training on immediate newborn care was provided. The contents of the training were derived from the WHO immediate newborn care training package, which indicates that they do not understand the concept of, and the steps to perform immediate newborn care in their workplace.

All of the 44 midwives working in the maternity ward during the study period were included in the study, as six of them left the study facility during the follow-up study.

Table 2. Audit criteria used during follow-up together with a description of the sample and approach to measuring compliance with best practice among midwives working in maternity wards, September 2018
Criteria Legend

1. Healthcare providers have received education regarding essential newborn care. (50 of 50 samples taken)
2. Thermal care was provided by healthcare staff to the newborn (immediate drying, warming, skin-to-skin, delayed bathing). (50 of 50 samples taken)
3. Exclusive breastfeeding was initiated within one hour of birth. (50 of 50 samples taken)
4. Hygienic cord care was provided to the newborn by healthcare staff. (50 of 50 samples taken)
5. Education to parents/caregivers was provided by healthcare staff regarding thermal care of the newborn, in relation to delayed bathing. (50 of 50 samples taken)
6. Education to parents/caregivers was provided by healthcare staff regarding thermal care of the newborn, in relation to use of warm clothing. (50 of 50 samples taken)
7. Education to parents/caregivers was provided by healthcare staff regarding initiation of breastfeeding within one hour of birth. (50 of 50 samples taken)
8. Education to parents/caregivers was provided by healthcare staff regarding exclusive breastfeeding of the newborn. (50 of 50 samples taken)
9. Education to parents/caregivers was provided by healthcare staff regarding hygienic cord care of the newborn. (50 of 50 samples taken)

Figure 1. Compliances to immediate essential newborn care during baseline audits among midwives, May 2018.

Table 3. Identified gaps and barriers during the baseline audit and suggested strategies, 2018

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Strategies</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge gaps about INC as evidenced</td>
<td>Providing training on the current evidence and recommendations</td>
<td>Increased knowledge and skill about immediate essential newborn care</td>
</tr>
<tr>
<td>by training status of the midwives</td>
<td>Providing training supported by demonstration</td>
<td>Change in skill of immediate essential newborn care</td>
</tr>
<tr>
<td>Skill gap</td>
<td>Working with ANC unit care providers to work on BPCR, timely purchasing and</td>
<td>Addressing the shortage of gloves and towels</td>
</tr>
<tr>
<td>Shortage of gloves and towels</td>
<td>delivering of gloves</td>
<td>Changes in supervision and team spirit</td>
</tr>
<tr>
<td>Limited teamwork and inconsistency of</td>
<td>Orientation</td>
<td></td>
</tr>
<tr>
<td>supervision</td>
<td>Discussion with stakeholders</td>
<td></td>
</tr>
<tr>
<td>Lack of awareness about EBP</td>
<td>Providing information about EBP</td>
<td></td>
</tr>
</tbody>
</table>

ANC, antenatal care; BPCR, birth preparedness and complication readiness; EBP, evidence-based practice; INC, immediate newborn care.
Phase 3: Follow-up audit(s)
During this phase a total of 44 midwives were interviewed for the first criterion and 44 cases were observed. During the follow-up audit, 95% of the healthcare providers reported that they had received education regarding immediate newborn care. Hygienic cord care was provided for all 44 (100%) of the observed cases. Education was provided to 98% of the interviewed parents/caregivers regarding initiation of breastfeeding within the first 1 h after birth. In addition, education was provided to 98% of the interviewed parents/caregivers regarding exclusive breastfeeding of the newborn during the follow-up audit. In general, the overall compliance to immediate newborn care increased from 58% at baseline to 96% during follow-up audit. The compliance rates are reported in Fig. 2.

Criteria Legend
1. Healthcare providers have received education regarding essential newborn care. (44 of 44 samples taken)
2. Thermal care was provided by healthcare staff to the newborn (immediate drying, warming, skin-to-skin, delayed bathing). (44 of 44 samples taken)
3. Exclusive breastfeeding was initiated within one hour of birth. (44 of 44 sample taken)
4. Hygienic cord care was provided to the newborn by healthcare staff. (44 of 44 samples taken)
5. Education to parents/caregivers was provided by healthcare staff regarding thermal care of the newborn, in relation to delayed bathing. (44 of 44 samples taken)
6. Education to parents/caregivers was provided by healthcare staff regarding thermal care of the newborn, in relation to use of warm clothing. (44 of 44 samples taken)
7. Education to parents/caregivers was provided by healthcare staff regarding initiation of breastfeeding within one hour of birth. (44 of 44 samples taken)
8. Education to parents/caregivers was provided by healthcare staff regarding exclusive breastfeeding of the newborn. (44 of 44 samples taken)
9. Education to parents/caregivers was provided by healthcare staff regarding hygienic cord care for the newborn. (44 of 44 samples taken)

Figure 2. Compliance with best practice for audit criteria in follow-up audit compared with baseline audit among midwives, September 2018.
Discussion

Evidence-based immediate newborn care is essential to reduce neonatal morbidity and mortality and the failure to effectively use the recommendations by the healthcare providers may lead to increased neonatal mortality. Hence, this study audited current practice of immediate newborn care and implemented strategies to improve midwives’ compliance with immediate newborn care recommendation. However, midwives were not basing their usual practice on EBP recommendations. We found that follow-up compliance rates with all criteria were increased compared with baseline audit.

After the baseline audit, the major gaps identified were: lack of awareness about EBP, lack of training on immediate newborn care, unhygienic cord care and poor thermal care. We found that the training during the implementation phase provided them the opportunity to learn the concept of EBP, immediate newborn care and steps of immediate newborn care. This was evidenced by an improvement in compliance rate from 58 to 96% during baseline and follow-up audits, respectively.

The interviewed midwives for this study were less aware of the evidence-based best practice. This was evidenced by one of the major barriers identified during baseline audit where 37 (74%) of them had not received education regarding newborn care. This might be amongst the barriers why the midwives found it difficult to follow the evidence-based best practice for immediate newborn care. Interactive training on evidence-based best practice for immediate newborn care was carried out by the project team, which was followed by supportive supervision. There was improvement in compliance rate in use of the evidence-based best practice from baseline to follow-up audit. This improvement in compliance rate could be the impact of the training and supportive supervision measures. Also the previous project conducted to assess the compliance to hand hygiene practice among nurses showed significant change in compliance across all of the evidence-based audit criteria ranging from 43 to 96% by providing education to the nurses and correcting some misperceptions. This improvement reflects the strength of education in informing best practice as it was found that the nurses who complied in this area were those who had received education.

The current study had some limitations. Subjective data concerning parents’/caregivers’ understanding of care and their satisfaction about the care were not collected and incorporated. Some staff members who were part of the baseline did not continue until the end of the study; the nursing director during the baseline was switched in between. This might have underestimated the effect of our interventions. Despite the limitation, we believe that this study was successfully implemented. The team spirit initiated during the current project has led to increased evidence utilization.

This may be utilized in different areas. Also the existence of this evidence-based centre in our university and intentions for the EBP may contribute a lot in familiarizing the care providers with EBP which will back for the sustainability of the practice as quality is the current direction of the government.

Conclusion

Audit and feedback method proved to be relatively applicable for implementing the clinical practice for immediate newborn care. Through the process, midwives were able to comply with best practices. To make the changes achieved by the project, the hospital should consider allocation of budget, time and human resources. Furthermore, we recommend that there should be regular and frequent supervision and follow-up started during the intervention period from the university higher official and ministry of health representatives. Also the findings of the study may be applicable in similar study settings.

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Conflicts of interest

The authors report no conflicts of interest.

References


