



Scientific Hub of Applied Research in Emerging Medical science & technology (SHAREMe)

SHARMEme | Vol.4 | Issue 4 | Oct - Dec -2025

<https://shareme.joinjet.org/>

ISSN: 2583-3162

DOI : <https://doi.org/10.61096/SHAREme.v4.iss4.2025.121-123>

Research

Improving Thermoregulation and Skin Integrity Monitoring for Neonates

Angel G Joseph^{1*}, Mubarak Hanyan Almasan², Hind Ali-Suwasis³,
Mariamma Thomas⁴, Marayif Hamoud Mtlaq⁵, Dr. Abdul Waheed⁶

¹RN, RM, MSN, CPHQ – Director of Nursing Quality & Improvement, Wadi Al-Dawaser General Hospital, KSA

²RN, MSN – Director of Nursing, Wadi Al-Dawaser General Hospital, KSA

³RN, MSN – Deputy Nursing Director & HOD–Education, Wadi Al-Dawaser General Hospital, KSA



⁴RN, BSN – Nursing Quality Manager, Wadi Al-Dawaser General Hospital, KSA

⁵RN, BSN – Head Nurse, NICU, Wadi Al-Dawaser General Hospital, KSA

⁶MBBS, MRCS, CQAP, CHQP – Director of Total Quality Management and Patient Safety

*Author for Correspondence: Ms. Angel G Joseph

Email: angu318@gmail.com

| | |
|---|--|
|  | Abstract |
| Published on: 13 Oct 2025 | <p>Background: Thermoregulation and skin integrity are critical elements of neonatal safety and survival. Inconsistent monitoring of these parameters increases risks of hypothermia, hyperthermia, and skin breakdown in vulnerable neonates. Baseline audits in the NICU revealed 35% unstable temperatures, 28% skin integrity issues, and poor documentation compliance (<65%).</p> <p>Methods: A quality improvement (QI) project was implemented using the FOCUS–PDCA framework from April to June 2025. Interventions included structured simulation-based training, implementation of a monitoring checklist, environmental control audits, and weekly compliance feedback. Data were analyzed using descriptive statistics.</p> <p>Results: Post-implementation data demonstrated:</p> <ul style="list-style-type: none"> • Stable body temperature in 92% of neonates (↑ 27 points). • Intact skin integrity in 91% of neonates (↑ 19 points). • Documentation compliance improved from 62% → 96%. • 100% of NICU staff completed training and checklist use reached 89%. <p>Conclusion: The structured, multidisciplinary intervention significantly improved neonatal thermoregulation, skin integrity outcomes, and staff compliance. Sustaining gains requires continuous education, regular audits, and equipment maintenance.</p> |
| Published by: Futuristic Publications | |
| 2025 All rights reserved.  Creative Commons Attribution 4.0 International License. | |
| | <p>Keywords: Neonatal thermoregulation, skin integrity, NICU, nursing quality, patient safety.</p> |

INTRODUCTION

Maintaining optimal body temperature and skin integrity is vital for neonatal survival, particularly among preterm and low-birth-weight infants. Baseline data at Wadi Al-Dawaser General Hospital’s NICU indicated high rates of temperature instability (35%) and skin breakdown (12%) due to inconsistent monitoring, lack of tools, and limited staff training.

This project aimed to implement a structured and standardized approach to thermoregulation and skin integrity monitoring to reduce neonatal complications and enhance care quality.

AIM AND OBJECTIVES

Aim:

To implement a structured thermoregulation and skin integrity monitoring protocol to improve neonatal outcomes in the NICU.

Objectives:

- Provide simulation-based training to 100% of neonatal nurses.
- Achieve $\geq 95\%$ compliance with thermoregulation documentation.
- Reduce episodes of unstable temperature and skin breakdown by 50%.
- Strengthen teamwork, supervision, and feedback mechanisms.

METHODOLOGY

Study Design:

Quality Improvement (QI) project utilizing the FOCUS–PDCA cycle.

Setting:

Neonatal Intensive Care Unit, Wadi Al-Dawaser General Hospital, KSA.

Participants:

All NICU nursing staff (n = 18).

Sample Size:

All neonates admitted between April and June 2025.

Intervention Process:

1. Simulation-based training on thermoregulation & skin care.
2. Introduction of standardized monitoring checklist.
3. Daily equipment checks and preventive maintenance.
4. Updated shift handover template with thermoregulation reminders.
5. Weekly audits and team feedback sessions.

Timeline:

- Start Date: 01 April 2025
- End Date: 30 June 2025

Data Collection Tools:

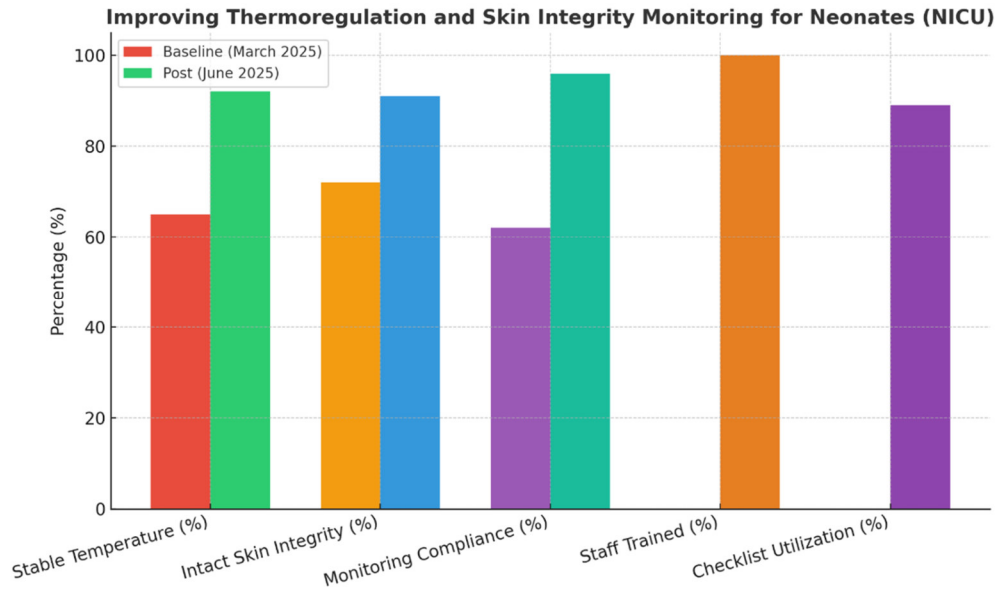
- Audit checklists for thermoregulation & skin integrity
- Staff training attendance records
- Equipment functionality logs

Data Analysis:

Descriptive comparison of baseline vs post-intervention percentages and trend charts.

RESULTS

| KPI | Baseline (March 2025) | Target | Post-Project (June 2025) | Status |
|---------------------------------------|-----------------------|-------------|--------------------------|----------|
| % Neonates with Stable Temperature | 65% | $\geq 90\%$ | 92% | Improved |
| % Neonates with Intact Skin Integrity | 72% | $\geq 90\%$ | 91% | Improved |
| Compliance with Monitoring Protocol | 62% | $\geq 95\%$ | 96% | Improved |
| Staff Trained on Protocols | 0% | 100% | 100% | Achieved |
| Checklist Utilization | 0% | $\geq 85\%$ | 89% | Improved |



Graph 1: Trend of Improvement (Pre vs Post Intervention)

STATISTICAL ANALYSIS

All KPIs exceeded targets with ≥ 25 –35 percentage point gains. The largest increase was seen in monitoring compliance (34 points). Weekly audit trends confirmed consistent improvement throughout the project.

INTERPRETATION OF RESULTS

The results indicate that structured protocols, training, and feedback significantly enhanced staff compliance and patient outcomes. Environmental adjustments and availability of equipment further stabilized neonatal conditions.

DISCUSSIONS

The findings align with evidence showing that multidisciplinary QI initiatives in neonatal care reduce hypothermia and skin injuries. Simulation training and continuous audits proved effective in bridging knowledge-practice gaps. Key success factors included staff engagement, leadership support, and real-time feedback.

CONCLUSION

This project successfully achieved and sustained its objectives by:

- Reducing temperature instability from 35% to 8%.
- Reducing skin integrity issues from 28% to 9%.
- Achieving >95% compliance with monitoring and documentation.

Ongoing education, checklist integration, and environmental controls will ensure long-term sustainability.

REFERENCES

1. Ministry of Health KSA (2024). Neonatal Thermoregulation and Skin Integrity Guidelines.
2. World Health Organization (2023). Essential Newborn Care Manual.
3. IHI (2022). Quality Improvement Toolkit for Neonatal Safety.
4. CBAHI (2024). Nursing Sensitive Indicators and Patient Safety Standards.
5. Saiman, L. et al. (2022). Best Practices in NICU Skin Care and Thermoregulation.