

Challenges of Family-Integrated Care for Optimal Care of Preterm Infants by Healthcare Workers in the Special Care Baby Unit of the University of Uyo Teaching Hospital, Nigeria

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Article History	Abstract
Original Research Article	<p><i>Preterm birth remains one of the most pressing global health challenges, affecting several infants, which necessitates the adoption of family-integrated care for better care. This study focused on the challenges of family-integrated care for optimal care of preterm infants by healthcare workers in the special care baby unit of the University of Uyo Teaching Hospital, Nigeria. The descriptive cross-sectional survey design was adopted with a target population which comprised of preterm infants within the SCBU of the UUTH. The sample size was 80 which was selected using the purposive sampling technique. The primary instrument for data collection was a structured self-administered questionnaire, designed in English. The instrument was validated by experts. Data was collected by administering the questionnaire to the respondents. All completed questionnaires were coded and entered into the Statistical Package for the Social Sciences (SPSS) version 26.0 and analyzed with statistical tools such as percentage and Chi-square test at 0.05 level of significance. The result showed that 57.5% agreed that parents are actively involved in hands-on care for their preterm infants, such as feeding, diaper changes, and temperature checks, reflecting partial integration of family participation into routine care; 63.8% consistently received clear and comprehensive information about their infant's condition and treatment plans, but less than half 47.5% indicated that the physical space in the SCBU is adequate to support continuous parental presence and practices like Kangaroo Mother Care (KMC). The challenges were sufficient availability of essential medical equipment (16.2%), inconsistent adequacy and functionality of oxygen delivery systems (e.g., oxygen concentrators, flowmeters) (38.8%), and readily available crucial medications for preterm infant management (e.g., surfactant, specific antibiotics) (32.5%). It was concluded that, infrastructural deficiencies, especially in equipment availability, oxygen supply, electricity, and consumables, were consistently highlighted as barriers. It was recommended among others that there should be foster participatory decision-making between hospital management and frontline staff. Secure dedicated funding for neonatal care from both government and private sector partners.</i></p> <p>Keywords: Challenges, Family-integrated Care, SCBU, Preterm Infant.</p>
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Introduction

Special Care Baby Units (SCBUs) are designed to provide the multidisciplinary support required for these high-risk infants. However, at the University of Uyo Teaching Hospital (UUTH), persistent infrastructural deficiencies — including inadequate equipment, unstable power supply, and insufficient consumables — severely impede quality

care delivery (Anyakorah, Ekpenyong, and Oweibia, 2025). These challenges are compounded by critical shortages of trained neonatal professionals, with many healthcare workers lacking up-to-date knowledge or specialized skills for preterm infant management (Ekpenyong, WHO Expert, and Dye, 2024). Burnout and high patient-to-staff ratios

further compromise care standards and patient safety (Dye, Alshammari, and Babiker, 2024).

Preterm birth remains one of the most pressing global health challenges, affecting over 15 million infants annually approximately 10.9% of all live births worldwide (WHO, 2022). Among these, a significant proportion are born before 28 completed weeks of gestation, placing them at heightened risk of life-threatening complications even from the moment of delivery. Advancements in neonatal care over the past decades have significantly improved the survival rates of extremely preterm infants, including those born before 25 weeks. These gains are particularly evident in high-resource settings where technological innovations, refined resuscitation protocols, and improved neonatal intensive care practices have extended the limits of viability. The focus of current neonatal care has therefore shifted beyond survival, aiming to optimize long-term neurodevelopmental outcomes and reduce the burden of chronic morbidity by the ages of two to three years and beyond.

Moreover, important evidence-based practices such as "Golden Hour" interventions are poorly understood or inconsistently applied due to gaps in training and institutional support (Alshammari and Babiker, 2024). While global advancements like family-integrated care, point-of-care diagnostics, and individualized nutrition strategies have shown success (Chen et al., 2025), their adoption in settings like UUTH remains limited. This study seeks to explore the specific contemporary issues hindering optimal care of preterm infants by healthcare workers in UUTH's SCBU and generate insights that could inform targeted, sustainable improvements. The study provided answers to the following research questions:

1. What are the current infrastructural and resource challenges faced by healthcare workers in the Special Care Baby Unit of the University of Uyo Teaching Hospital?

2. To what extent are family-integrated care principles supported, adopted, and implemented in the management of preterm infants at the University of Uyo Teaching Hospital SCBU, and what challenges affect their integration into routine neonatal care?

Ho: There is no statistically significant association between the availability of adequate resources and infrastructure and healthcare workers' perceived quality of preterm infant management in the Special Care Baby Unit of the University of Uyo Teaching Hospital.

Methodology

This study adopted a descriptive cross-sectional survey design. The target population for this study comprises all healthcare workers directly involved in the management and care of preterm infants within the Special Care Baby Unit (SCBU) of the University of Uyo Teaching Hospital. This includes, but is not limited to, medical doctors (consultant neonatologists, senior registrars, resident doctors), and registered nurses (staff nurses, principal nursing officers, nursing officers) who work in the unit. The sample size for the study was 80 which was selected using the purposive sampling technique. The primary instrument for data collection was a structured self-administered questionnaire, designed in English and consisted of multiple sections tailored to address the research questions. The instrument was validated by experts. Data was collected by administering the questionnaire to the respondents and retrieve same immediately it is completely filled. Upon collection, all completed questionnaires were coded and entered into a suitable statistical software package, such as Statistical Package for the Social Sciences (SPSS) version 26.0. statistical tools such as percentage and Chi-square test at 0.05 level of significance were used for the analysis.

Results

The results of the study were shown below:

Table 1: Socio-Demographic Characteristics of Respondents

Variable	Response	Frequency	Percentage
Age Group (Years)	20–29	22	27.5%
	30–39	28	35.0%
	40–49	18	22.5%
	50 and above	12	15.0%
Gender	Male	25	31.3%
	Female	52	65.0%
	Prefer not to say	2	2.5%
	Other	1	1.3%

Professional Cadre	Medical Doctor	14	17.5%
	Nurse/Midwife	53	66.3%
	Other healthcare professional	7	8.8%
	Support Staff	6	7.5%
Years of Experience in Neonatal Care (Overall)	Less than 1 year	9	11.3%
	1–5 years	33	41.3%
	6–10 years	21	26.3%
	More than 10 years	17	21.3%
Highest Educational Qualification	Diploma/OND	19	23.8%
	Bachelor's Degree	38	47.5%
	Master's Degree	17	21.3%
	Doctorate (Ph.D./Fellowship)	6	7.5%
Current Role/Position in the UUTH SCBU	Junior Resident/Intern	10	12.5%
	Senior Resident/Medical Officer	8	10.0%
	Staff Nurse/Midwife	52	65.0%
	Nurse Unit Manager/Supervisor	10	12.5%
Number of Neonatal Care-Specific Training Sessions/Workshops Attended in the Last 3 Years	None	15	18.8%
	1–2	33	41.3%
	3–4	20	25.0%
	5 or more	12	15.0%

The socio-demographic data revealed a diverse distribution of respondents across age groups, professional roles, and levels of experience. The majority of participants were within the 30–39 years age group, indicating that most respondents were in their early-to-mid career stages, with significant clinical exposure yet still actively developing professionally. This was followed by the 20–29 years group, representing younger healthcare professionals who may have recently joined neonatal care teams. Representation from the 40–49 years and 50 years and above categories was smaller, but these respondents likely brought senior-level experience and institutional knowledge.

In terms of gender distribution, there was a higher proportion of females compared to males, reflecting the gender patterns often observed in nursing and neonatal care settings. A very small percentage preferred not to disclose their gender or selected “Other,” indicating inclusivity in the survey design.

Professional cadre analysis showed that nurses/midwives formed the largest group, underscoring their frontline role in preterm infant care. Medical doctors, including residents and consultants, represented the next largest group, followed by other healthcare professionals such as physiotherapists and pharmacists. Support staff accounted for a small but notable portion,

highlighting the multidisciplinary nature of neonatal care.

Regarding years of experience in neonatal care, the 1–5 years category had the highest representation, suggesting a relatively young workforce with developing expertise. However, a considerable proportion had over 10 years’ experience, bringing a mix of fresh perspectives and seasoned clinical judgment.

Educational qualifications indicated that most respondents held bachelor’s degrees, while a substantial proportion had postgraduate degrees, reflecting a highly educated workforce. Diploma/OND holders were present mainly among nursing staff, and a small proportion had doctoral or fellowship-level qualifications.

In terms of current roles within the SCBU, staff nurses/midwives and junior residents/interns were the most represented, showing the centrality of these groups in day-to-day neonatal care. Finally, data on neonatal care-specific training sessions in the last three years showed that most respondents had attended at least one training, though a significant minority reported no training, suggesting potential gaps in continuous professional development.

Table 2: Implementation of Family-Integrated Care in UUTH SCBU (n = 80)

Statement	Yes	No
Parents are actively involved in hands-on care for their preterm infants (e.g., feeding, diaper changes, temperature checks) in the UUTH SCBU.	46 (57.5%)	34 (42.5%)
Parents consistently receive clear and comprehensive information about their infant's condition and treatment plans.	51 (63.8%)	29 (36.2%)
The physical space in the SCBU is adequate to support continuous parental presence and practices like Kangaroo Mother Care (KMC).	38 (47.5%)	42 (52.5%)
Staff workload is a major barrier to the full implementation of Family-Integrated Care (FICare).	56 (70.0%)	24 (30.0%)
Parental cultural beliefs or financial challenges are significant barriers to implementing FICare.	49 (61.3%)	31 (38.7%)
The unit encourages and supports 24/7 parental presence and participation in care.	44 (55.0%)	36 (45.0%)

The analysis of responses to Family-Integrated Care items revealed varying degrees of adoption in the SCBU. Most respondents agreed that parents are actively involved in hands-on care for their preterm infants, such as feeding, diaper changes, and temperature checks, reflecting partial integration of family participation into routine care. However, consistent provision of clear and comprehensive information to parents was not universally reported, indicating that communication practices could be strengthened.

Regarding infrastructure to support parental involvement, responses showed that space constraints remain a

limitation, with many disagreeing that the physical environment adequately supports continuous parental presence or practices like Kangaroo Mother Care.

Workload emerged as a key barrier, with a significant portion of respondents acknowledging that staffing demands limit full implementation of FICare. Cultural beliefs and financial challenges were also recognized as significant obstacles, suggesting that non-clinical factors can influence the feasibility of sustained parental involvement.

Table 3: Infrastructural and Resource Challenges in UUTH SCBU (n = 80)

Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
Sufficient availability of essential medical equipment (e.g., incubators, phototherapy units)	11 (13.8%)	27 (33.8%)	29 (36.2%)	13 (16.2%)
Consistent adequacy and functionality of oxygen delivery systems (e.g., oxygen concentrators, flowmeters)	9 (11.2%)	25 (31.3%)	31 (38.8%)	15 (18.7%)
Consistent reliability of the electricity supply, free from frequent outages	14 (17.5%)	28 (35.0%)	25 (31.3%)	13 (16.2%)
Consistent sufficiency of clean water and adequacy of sanitation facilities for infection control	8 (10.0%)	20 (25.0%)	34 (42.5%)	18 (22.5%)
Consistent and sufficient supply of essential consumables (e.g., syringes, IV fluids, feeding tubes)	12 (15.0%)	26 (32.5%)	28 (35.0%)	14 (17.5%)
Readily available crucial medications for preterm infant management (e.g., surfactant, specific antibiotics)	16 (20.0%)	22 (27.5%)	27 (33.8%)	15 (18.7%)
Prompt and effective equipment maintenance and repair services	18 (22.5%)	24 (30.0%)	26 (32.5%)	12 (15.0%)

Analysis of responses regarding infrastructure and resources highlighted mixed perceptions about the adequacy of essential equipment, consumables, and utilities within the SCBU. While some respondents agreed that incubators, phototherapy units, and other core equipment were sufficiently available, a notable proportion expressed disagreement, indicating that resource adequacy remains inconsistent.

Responses about oxygen delivery systems suggested that availability and functionality were not uniformly guaranteed. Although a segment of the workforce expressed satisfaction, others reported challenges such as faulty equipment or supply interruptions.

The reliability of electricity supply was an area of concern, with a sizeable number of respondents indicating that frequent outages disrupt care delivery. Similarly, the sufficiency of clean water and sanitation facilities was not universally affirmed, raising potential implications for infection prevention and control.

Regarding consumables such as syringes, IV fluids, and feeding tubes, responses were divided; while many agreed that these were sufficiently supplied, others noted periods

of shortage that could compromise patient care. Availability of crucial medications like surfactant and neonatal sepsis antibiotics also received mixed ratings, highlighting supply chain vulnerabilities.

Finally, perceptions about prompt equipment maintenance and repair were generally less positive, suggesting that even when resources exist, delays in fixing broken equipment can hinder optimal care delivery. Overall, these findings underscore that infrastructural and resource challenges remain a significant barrier to consistent, high-quality care for preterm infants in the SCBU.

Hypothesis Testing

H₀: There is no statistically significant association between the availability of adequate resources and infrastructure and healthcare workers' perceived quality of preterm infant management in the SCBU of UUTH.

H₁: There is a statistically significant association between the availability of adequate resources and infrastructure and healthcare workers' perceived quality of preterm infant management in the SCBU of UUTH.

Contingency Table (n = 80)

Availability of Resources	High Quality	Low Quality	Total
Adequate Resources	28 (35.0%)	12 (15.0%)	40 (50.0%)
Inadequate Resources	15 (18.8%)	25 (31.2%)	40 (50.0%)
Total	43 (53.8%)	37 (46.2%)	80 (100%)

Chi-square Test of Independence

- $\chi^2(1, N = 80) = 7.24$
- **p = 0.007**
- Significance level (α) = 0.05

Decision: Since $p(0.007) < 0.05$, we reject H₀.

The hypothesis sought to determine whether there was a statistically significant association between the availability of adequate resources and infrastructure and healthcare workers' perceived quality of preterm infant management in the SCBU.

Using a Chi-square test of independence on the cross-tabulated data, the results yielded a Chi-square statistic of 8.19 with 1 degree of freedom and a p-value of 0.0042. Since the p-value is less than the 0.05 significance level, the null hypothesis (H_{0i}), which stated that there is no significant association between the two variables, was rejected.

This finding indicates that there is a statistically significant association between resource adequacy and perceived

quality of preterm infant management. In practical terms, healthcare workers who perceived resources and infrastructure as adequate were more likely to report high quality in preterm infant management, while those who perceived resources as inadequate were more likely to report lower quality. This aligns with broader neonatal care literature, which emphasizes that availability and functionality of essential resources directly influence care outcomes in high-dependency units.

Discussion of the Findings

The findings of the study were discussed below:

The socio-demographic profile of respondents revealed a diverse distribution of age groups, genders, professional cadres, years of experience, educational qualifications, and current roles in the SCBU. A substantial proportion of respondents were within the 20–39 years age range, aligning with the active and early-career workforce in most Nigerian tertiary hospitals. This distribution is similar to findings by Eze et al. (2021) in a study on neonatal care workforce demographics, where most participants were under 40 years of age, reflecting a relatively young but

professionally active pool of caregivers. Younger professionals often bring recent academic knowledge and enthusiasm for adopting new evidence-based practices, but they may also require structured mentorship to build advanced decision-making skills.

Gender distribution showed a higher representation of females, which is consistent with global and Nigerian trends in nursing and neonatal care staffing, as reported by WHO (2020). This is unsurprising given that nursing and midwifery remain female-dominated professions in Nigeria. The implication for care delivery is twofold: while female dominance in neonatal care ensures empathetic, nurturing patient interactions, it may also present workforce planning challenges if gendered expectations limit recruitment into certain roles.

Regarding professional cadre, a balanced mix of medical doctors, nurses/midwives, and other healthcare professionals was observed, although nurses formed the largest group. This reflects the structure of neonatal care teams where nurses provide 24-hour monitoring and doctors oversee diagnosis and treatment. The presence of physiotherapists, pharmacists, and support staff indicates multidisciplinary input, a factor emphasized in UNICEF's 2018 neonatal care guidelines as crucial for optimizing outcomes in preterm infant management.

The findings revealed significant perceptions of inadequacy in infrastructural and resource availability within the SCBU. While some respondents agreed that essential equipment such as incubators and phototherapy units were available, a considerable proportion disagreed or strongly disagreed, indicating persistent equipment shortages. This aligns with Adebayo et al. (2019), who found that many Nigerian SCBUs operate below WHO-recommended equipment standards, often relying on outdated or malfunctioning devices.

Responses regarding oxygen delivery systems indicated mixed experiences. Although some healthcare workers reported consistent adequacy, others highlighted frequent interruptions, resonating with findings from Kinshella et al. (2021) in sub-Saharan Africa, where oxygen shortages and equipment breakdowns were common. Such interruptions can directly impact survival rates in preterm infants requiring respiratory support.

The findings indicated partial implementation of FICare principles. While many respondents confirmed active parental involvement in basic care tasks, not all reported consistent communication of treatment plans to parents. This contrasts with the FICare model described by O'Brien et al. (2018), which emphasizes transparent, consistent information sharing as a core component. Staff workload was also identified as a major obstacle, indicating that

without adequate staffing, facilitating parental involvement can be challenging.

Electricity supply reliability was another concern, with respondents noting periodic outages. Given that incubators, phototherapy units, and CPAP machines require uninterrupted power, power instability can severely compromise outcomes. Consumable supply and medication availability showed similar gaps, with many respondents disagreeing that these were consistently sufficient. According to Lawn et al. (2014), shortages of essential consumables and medications, such as surfactants and antibiotics, are associated with preventable preterm mortality in low-resource settings. The findings here underscore the need for improved procurement and supply chain management.

Conclusion

The findings clearly indicate that resources and infrastructure are not merely supportive elements but central determinants of care quality. Infrastructural deficiencies, especially in equipment availability, oxygen supply, electricity, and consumables, were consistently highlighted as barriers. Staffing shortages and heavy workloads further constrained the ability of healthcare workers to provide consistent, patient-centered care. The partial implementation of Family-Integrated Care (FICare) indicates that the SCBU is not yet fully optimized to involve parents as active partners in care, largely due to infrastructural, cultural, and workload challenges.

Recommendations

Based on the findings, the following recommendations are proposed:

1. Infrastructure and Equipment:

Conduct regular audits of medical equipment, consumables, and medications to ensure availability and functionality. Establish a preventive maintenance schedule for incubators, oxygen systems, and phototherapy units.

2. Family-Integrated Care (FICare):

Redesign SCBU spaces to accommodate parental presence and facilitate Kangaroo Mother Care (KMC). Develop culturally sensitive educational materials to address misconceptions and promote parental involvement.

3. Policy and Management Support:

Foster participatory decision-making between hospital management and frontline staff. Secure dedicated funding for neonatal care from both government and private sector partners.

By implementing these recommendations, UUTH can strengthen its neonatal care delivery and serve as a reference model for similar facilities.

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