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Knowledge, Attitudes, and Practices of Neonatal Healthcare Caregivers Regarding Family-Centred Care for Preterm Infants in Kinshasa

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ABSTRACT

Introduction
Family-Centred Care (FCC) is a fundamental paradigm in modern neonatology.

Purpose
This study evaluated the knowledge, attitudes, and practices (KAP) of neonatal healthcare professionals regarding FCC and supportive family care for premature infants in Kinshasa, Democratic Republic of the Congo (DRC).

Methods
A descriptive, cross-sectional, multicentre study was conducted across four health facilities providing neonatal care in Kinshasa between September 3 and November 3, 2025. A non-probability sample of 82 eligible physicians and nurses was recruited. Data were collected using a structured electronic questionnaire via KoboCollect and analyzed using IBM SPSS Statistics (Version 25.0). Categorical variables were summarized as frequencies, percentages, and 95% confidence intervals (CIs). Continuous variables were summarized as means and standard deviations (M ± SD). Ethical approval and written informed consent were secured.

Results
The majority of participants were female (73.2%, 95% CI [62.6, 82.0]) and nurses (73.2%, 95% CI [62.6, 82.0]), with an overall mean age of 36.4 ± 8.9 years. Most respondents (59.8%, 95% CI [48.8, 69.9]) had <2 years of clinical experience in neonatology. Overall, 46.3% (95% CI [35.6, 57.1]) claimed to know the meaning of FCC, but only 7.9% (95% CI [2.7, 20.8]) provided an internationally consistent definition. While 90.2% (95% CI [82.0, 95.1]) agreed that family supportive care reduces neonatal mortality, 92.7% (95% CI [85.0, 96.6]) had never received formal training in FCC or parental education. Regarding clinical practices, only 25.6% (95% CI [17.5, 35.8]) always involved parents in daily care, and 37.8% (95% CI [28.2, 48.7]) consistently provided management advice to families. Perceived negative parental attitudes were identified as the primary barrier to parental education (68.3%, 95% CI [57.6, 77.6]), alongside high workload (41.5%) and lack of professional training (30.5%).

Conclusion
Although healthcare professionals demonstrate highly favorable attitudes toward FCC, substantial gaps persist in theoretical knowledge, formal training, and routine clinical implementation. Standardized institutional protocols, structured models like Family Integrated Care (FICare), and targeted continuing education programs are urgently required to bridge these gaps in low-resource settings.

INTRODUCTION

Family-Centred Care (FCC) represents a fundamental paradigm shift in contemporary neonatal healthcare. Under this model, parents are recognized not as passive observers or visitors, but as essential care partners who contribute significantly to the physiological stability, neurocognitive development, and overall survival of their hospitalized infant (Lee, 2023). Empirical evidence demonstrates that parental integration into neonatal care reduces the duration of hospital stay, lowers neonatal stress levels, improves weight gain, enhances breastfeeding rates, and optimizes long-term neurodevelopmental outcomes (Boundy et al., 2016; O'Brien et al., 2018).

Despite international recommendations endorsing FCC, its systematic implementation in resource-limited settings—particularly across Sub-Saharan Africa—remains slow and fragmented (Ekwochi et al., 2022; Munjanja et al., 2021). The clinical management of premature infants poses complex biomedical and psychosocial challenges. In neonatal intensive care units (NICUs), nurses and physicians play a critical role in facilitating parental presence, providing emotional and developmental support, and guiding parenting education (Loutfy et al., 2024). However, previous studies highlight substantial variability in nurses' knowledge, attitudes, and execution of supportive care components, including skin-to-skin contact (SSC) or Kangaroo Mother Care (KMC) (Aita et al., 2024; Subhashini et al., 2023).

In the Democratic Republic of the Congo (DRC), particularly within the capital city-province of Kinshasa, the burden of prematurity is exceptionally high. Recent epidemiological estimates indicate a prematurity rate of 20.14% in Kinshasa, far exceeding global estimates reported by the World Health Organization (Schepers Gegelezo et al., 2023). This high rate is compounded by severe structural constraints, including overcrowded neonatal wards, inadequate essential medical equipment, high nurse-to-patient ratios, and limited opportunities for specialized continuing medical education (Atuba et al., 2023; Mabaga et al., 2022; Mfuana, 2020).

While the global literature establishes the clinical efficacy of FCC and Family Integrated Care (FICare) (O'Brien & Robson, 2022; Roué et al., 2020), there is a paucity of data regarding the institutional preparedness, knowledge base, and daily practices of neonatal healthcare providers in Kinshasa. To address these critical gaps, this study evaluated the knowledge, attitudes, practices, and perceived barriers among nurses and physicians regarding FCC, parental education, and supportive care for families of premature infants across selected hospital facilities in Kinshasa.

Specifically, this study addressed the following research questions:

1. What level of knowledge do neonatal nurses and physicians in Kinshasa possess regarding FCC and family supportive care?
2. What are the prevailing attitudes and daily practices of healthcare providers regarding parental involvement in neonatal care?
3. What organizational, professional, and parental barriers impede the routine implementation of FCC in these settings?

METHODS

Study Design and Setting

A descriptive, cross-sectional, multicentre study was conducted between September 3 and November 3, 2025, across four health facilities providing specialized neonatal care in Kinshasa, DRC:

1. Kalembe Lembe Pediatric Hospital (Lingwala) — a secondary pediatric referral facility;
2. OMECO Hospital (Matete) — a secondary health facility;
3. King Baudouin Hospital (Masina) — a secondary general facility; and
4. University Clinics of Kinshasa (Lemba) — a tertiary academic hospital.

Study Population and Eligibility Criteria

The target population comprised healthcare professionals (nurses and physicians) actively working in the neonatal departments of the four participating hospitals during the study period. Inclusion criteria required participants to be certified medical or nursing personnel directly involved in neonatal care, present during data collection, and willing to

provide written informed consent. Healthcare providers who declined participation or whose questionnaires contained >10% missing responses were excluded from the final analysis.

Sampling Strategy and Sample Size

A non-probability convenience sampling technique was employed. Because the primary objective was descriptive baseline assessment across participating centers, all eligible and available healthcare personnel working in the neonatal units during the 2-month study period were invited to participate. A total of 82 healthcare professionals met all eligibility criteria and completed the study protocol (N = 82).

Data Collection Tool and Procedure

Data were collected using a structured, electronic questionnaire designed after a thorough review of published literature and guidelines on FCC, parental education, and developmental supportive care (Lee, 2023; Roué et al., 2020; Subhashini et al., 2023). The instrument was evaluated for content validity and clarity by expert neonatologists and nurse researchers. Prior to formal administration, the questionnaire was pre-tested on a pilot sample of 10 healthcare workers who were not included in the final analysis. Refinements were made to improve clarity and logical flow based on pilot feedback.

The questionnaire captured four core domains:

1. Socio-professional characteristics (age, gender, profession, clinical experience, level of education, facility type);
2. Knowledge regarding FCC, KMC, and supportive care components;
3. Attitudes toward FCC and training needs; and
4. Clinical practices and perceived implementation barriers.

Data were gathered digitally using the KoboCollect mobile application to ensure data integrity and prevent logical entry errors.

Operational Definitions

- **Family-Centred Care (FCC):** A care delivery model in which parents and families are recognized as vital members of the healthcare team and active partners in daily care, communication, and decision-making.
- **Parental Education:** Informational, developmental, and practical guidance provided by healthcare personnel to equip parents with the skills necessary to care for their premature infant.
- **Psychological Support:** Professional communication and counseling aimed at mitigating emotional distress, anxiety, and depression experienced by parents during neonatal hospitalization.
- **Skin-to-Skin Contact (Kangaroo Mother Care - KMC):** Placed direct, skin-to-skin contact between the infant (wearing only a diaper and hat) and the parent's chest to foster thermal regulation, physiological stability, breastfeeding, and attachment.
- **Family Integrated Care (FICare):** An operationalized framework structured to educate and empower parents to provide the majority of non-medical routine care for their hospitalized infant.

Statistical Analysis

Data were exported from KoboCollect into Microsoft Excel 2016 for data verification and cleaning, then analyzed using IBM SPSS Statistics for Windows, Version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were computed in accordance with the study design. Continuous variables (e.g., age) were summarized using means and standard deviations (M ± SD) alongside minimum–maximum ranges. Categorical variables were summarized using absolute frequencies (n), percentages (%), and 95% confidence intervals (CIs) calculated via the Wilson score method. In alignment with the descriptive cross-sectional design, no comparative inferential statistical testing was performed.

Ethical Considerations

Ethical clearance was obtained from the Bioethics Committee of the Higher Institute of Medical Techniques of Kinshasa (ISTM-Kinshasa; Ref. No. 055/ESU/ISTM/DG/2022). Institutional permissions were secured from the medical directors of all participating

facilities. Written informed consent was obtained from each respondent prior to data collection. Participant anonymity and data confidentiality were strictly maintained by assigning alphanumeric identification codes.

RESULTS

Socio-Professional Profile of Respondents

A total of 82 healthcare professionals completed the study. As shown in **Table 1**, respondents ranged in age from 24 to 70 years, with a mean age of 36.4 ± 8.9 years; the majority were aged 30–39 years (56.1%). The sample was predominantly female (73.2%, 95% CI [62.6, 82.0]) and composed mainly of nurses (73.2%, 95% CI [62.6, 82.0]). More than half of respondents (59.8%, 95% CI [48.8, 69.9]) had <2 years of clinical experience in neonatology. Regarding educational attainment, 63.4% held a 3-year bachelor's degree (BAC+3), and 69.5% worked in secondary (non-university) hospital settings.

Table 1:
Socio-Professional Characteristics of Surveyed Neonatal Healthcare Professionals (N = 82)

Characteristic	n	%	95% CI
Age (years)			
<30	14	17.1	[10.5, 26.6]
30–39	46	56.1	[45.3, 66.4]
40–49	12	14.6	[8.5, 23.8]
≥50	10	12.2	[6.6, 21.2]
Gender			
Female	60	73.2	[62.6, 82.0]
Male	22	26.8	[18.0, 37.4]
Profession			
Nurse	60	73.2	[62.6, 82.0]
Physician	22	26.8	[18.0, 37.4]
Experience in Neonatology			
<2 years	49	59.8	[48.8, 69.9]
2–5 years	18	22.0	[14.5, 32.2]
≥6 years	15	18.3	[11.4, 27.9]
Level of Education			
BAC+3 (3-Year Bachelor)	52	63.4	[52.6, 73.0]
BAC+5 (5-Year Master/MD)	20	24.4	[16.3, 34.8]
Specialization / Master of Advanced Studies (DEA)	10	12.2	[6.6, 21.2]
Facility Type			
University Hospital (Tertiary)	25	30.5	[21.5, 41.2]
Non-University Hospital (Secondary)	57	69.5	[58.8, 78.5]

Note. CI = confidence interval. Mean age = 36.4 ± 8.9 years (range: 24–70 years).

Caregivers' Knowledge of Family-Centred Care

As detailed in **Table 2**, less than half of respondents (46.3%, 95% CI [35.6, 57.1]) affirmed knowing the meaning of FCC. However, when the 38 affirmative respondents elaborated on its operational definition (multiple responses allowed), only 7.9% (n = 3) referenced involving the family in care decisions. The most common understanding was adapting care to the social and specific needs of the family (13.2%, n = 5).

An overwhelming majority of respondents (90.2%, 95% CI [82.0, 95.1]) correctly acknowledged that family supportive care can reduce neonatal mortality. Regarding Kangaroo Mother Care / skin-to-skin contact, respondents recognized benefits to weight gain (75.6%) and neurocognitive development (51.2%), though only 8.5% identified infection reduction. Additionally, most participants believed parents should be involved in daily routine care (74.4%) and post-discharge follow-up (59.8%), but fewer supported parental involvement in medical decision-making (30.5%).

Table 2:
Caregivers' Knowledge Regarding Family-Centred Care and Kangaroo Mother Care (N = 82)

Knowledge Item	n	%	95% CI
Claims to know the meaning of FCC			
No	44	53.7	[43.0, 64.0]
Yes	38	46.3	[35.6, 57.1]
Reported components of FCC definition (*n = 38; multiple responses allowed*)			
Care adapted to family's social situation and specific needs	5	13.2	[5.8, 26.7]

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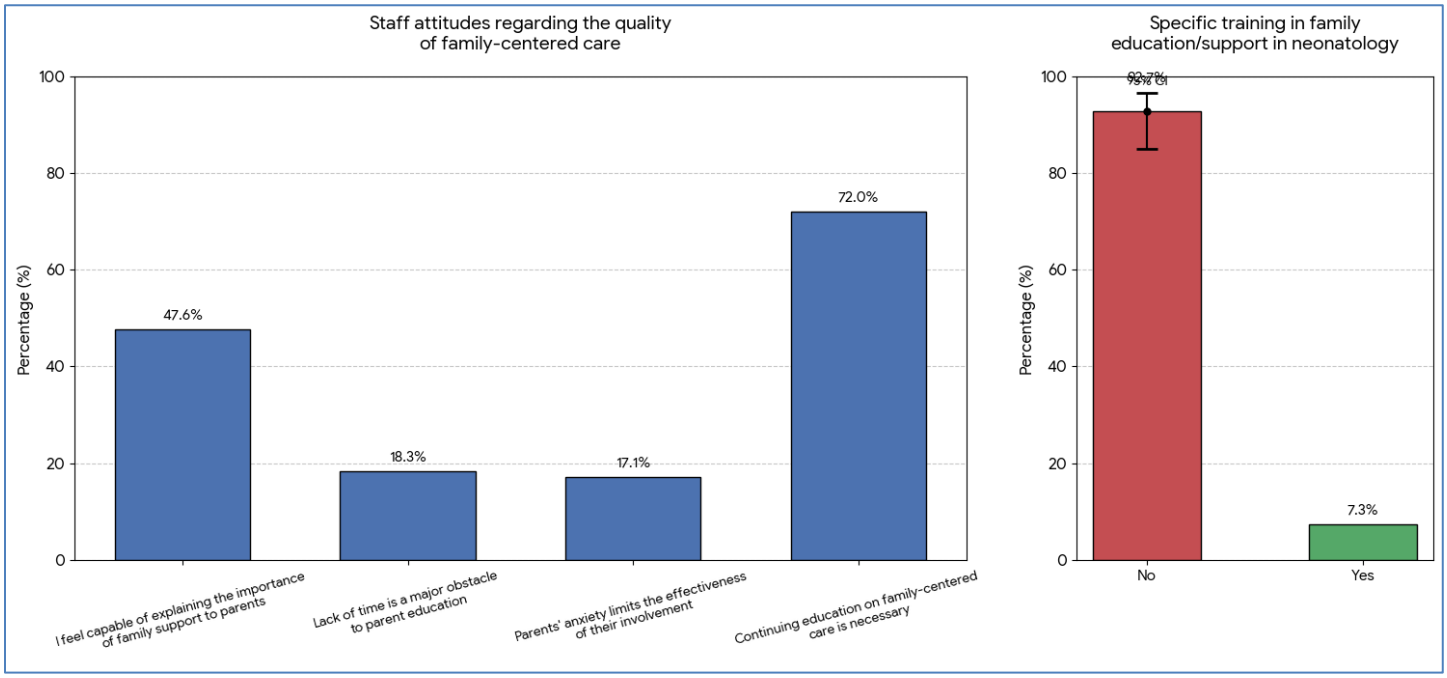
Informing family prior to treatment and providing health education	4	10.5	[4.1, 23.4]
Hygiene emphasis and overall family health context	3	7.9	[2.7, 20.8]
Involving family in care decisions	3	7.9	[2.7, 20.8]
Regular post-discharge follow-up for health issues	2	5.3	[1.5, 17.3]
Reassuring family and sharing basic status updates	2	5.3	[1.5, 17.3]
Holistic approach targeting child and family well-being	2	5.3	[1.5, 17.3]
Family supportive care reduces neonatal mortality			
False	4	4.9	[1.9, 12.0]
Unsure	4	4.9	[1.9, 12.0]
True	74	90.2	[82.0, 95.1]
Perceived benefits of Skin-to-Skin Contact / KMC (*multiple responses allowed*)			
Weight gain acceleration	62	75.6	[65.2, 83.9]
Neurocognitive development	42	51.2	[40.6, 61.8]
Infection reduction	7	8.5	[4.2, 16.5]
Domains for parent involvement in prematurity care (*multiple responses allowed*)			
Routine daily care	61	74.4	[64.0, 82.9]
Post-hospitalization follow-up	49	59.8	[48.8, 69.9]
Medical decision-making	25	30.5	[21.5, 41.2]

Note. FCC = Family-Centred Care; KMC = Kangaroo Mother Care; CI = confidence interval.

Staff Training and Attitudes Toward Family-Centred Care

As illustrated in **Figure 1**, 92.7% (95% CI [85.0, 96.6]) of healthcare professionals reported receiving no formal or continuing education in FCC or parental support. Nevertheless, 72.0% recognized that formal continuing education in FCC is necessary. Furthermore, 47.6% felt capable of explaining family support importance to parents, while 18.3% noted that lack of time was a major obstacle and 17.1% felt parental anxiety hindered involvement.

Figure 1:
Staff attitudes toward Family-Centred Care (left) and proportion of staff receiving formal training in family education/support in neonatology (right)



Note. (A) Feels capable of explaining family support to parents (47.6%) (B) Lack of time is a major obstacle to parent education (18.3%) (C) Parents' anxiety limits the effectiveness of involvement (17.1%) (D) Continuing education on family-centred care is necessary (72.0%)

Family-Centred Care Practices

Reported clinical practices are detailed in **Table 3**. Only 25.6% (95% CI [17.5, 35.8]) of respondents stated that they "*always*" involved parents in daily neonatal care, whereas the remainder involved parents only "*often*" (23.2%), "*rarely*" (23.2%), "*sometimes*" (24.4%), or "*never*" (3.7%). Additionally, 37.8% (95% CI [28.2, 48.7]) "*always*" provided advice on preterm infant management to families. The most

frequent form of supportive care provided was psychological support (89.0%), followed by hygiene/infection prevention education (57.3%), nutritional counseling (53.7%), and post-discharge follow-up guidance (35.4%).

Table 3:
Caregivers' Reported Family-Centred Care Practices (N = 82)

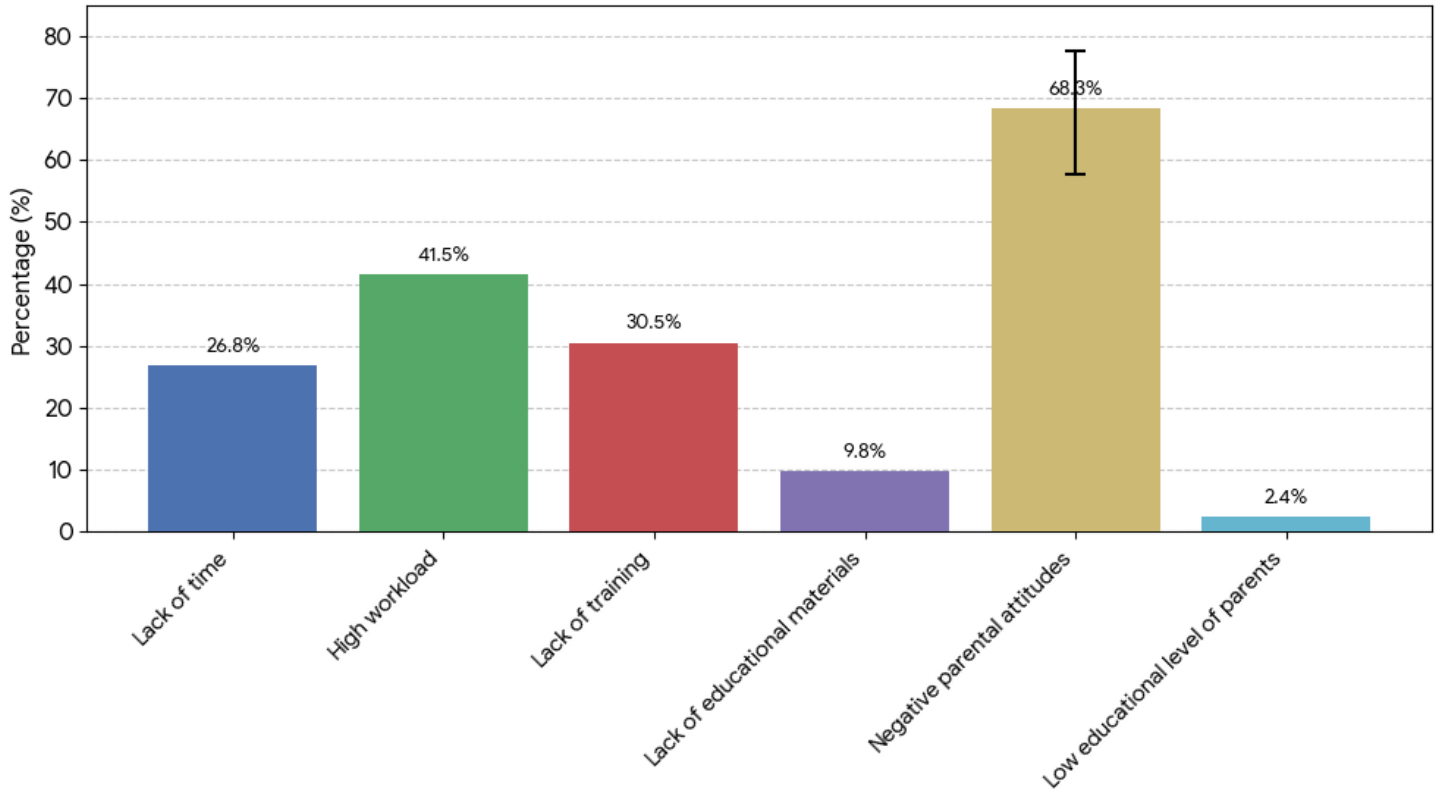
Practice Domain	n	%	95% CI
Frequency of involving parents in daily infant care			
Never	3	3.7	[1.3, 10.2]
Sometimes	20	24.4	[16.3, 34.8]
Rarely	19	23.2	[15.4, 33.5]
Often	19	23.2	[15.4, 33.5]
Always	21	25.6	[17.5, 35.8]
Frequency of providing care management advice to families			
Sometimes	19	23.2	[15.4, 33.5]
Rarely	14	17.1	[10.5, 26.6]
Often	18	22.0	[14.5, 32.2]
Always	31	37.8	[28.2, 48.7]
Types of family support provided (*multiple responses allowed*)			
Psychological support	73	89.0	[80.4, 93.9]
Hygiene education and infection prevention	47	57.3	[46.5, 67.4]
Nutritional and feeding counseling	44	53.7	[43.0, 64.0]
Post-hospitalization follow-up guidance	29	35.4	[25.9, 46.2]

Note. CI = confidence interval.

Perceived Barriers to Family Education and FCC Implementation

As illustrated in **Figure 2**, the primary barrier to parental education and FCC implementation reported by healthcare providers was negative parental attitudes (68.3%, 95% CI [57.6, 77.6]). Workload constraints (41.5%), lack of staff training (30.5%), lack of time (26.8%), lack of educational materials (9.8%), and low parental educational level (2.4%) were also identified as contributing barriers.

Figure 2:
Barriers to parental education and Family-Centred Care implementation perceived by neonatal healthcare professionals



DISCUSSION

The findings of this study reveal substantial gaps between the universal recognition of FCC's therapeutic benefits and its actual clinical implementation in neonatal departments in Kinshasa. Although 46.3% of healthcare providers stated they were familiar with FCC, less than 8% defined it in line with international paradigms that emphasize shared decision-making and active partnership (Lee, 2023; O'Brien & Robson, 2022). These results corroborate findings by Aita et al. (2024), who observed widespread heterogeneity in nurses' understanding of FCC, leading to fragmented clinical practices.

A primary factor contributing to this knowledge gap is the near-total absence of formal training. Over 92% of surveyed clinicians had never received structured training in FCC or family communication. Subhashini et al. (2023) similarly identified training deficits as a primary impediment to developmental supportive care in low-resource settings. Without structured pre-service and in-service training, clinicians often default to traditional, provider-centric models of care that position parents as passive observers (Ekwochi et al., 2022).

Despite these knowledge deficits, caregivers displayed highly favorable attitudes toward family involvement, with 90.2% recognizing its potential to reduce neonatal mortality. This aligns with findings from Loutfy et al. (2024), who reported that parental support reduces NICU-related stress and fosters physiological stability in vulnerable infants. However, favorable attitudes did not reliably translate into consistent clinical practices: only a quarter of participants reported "always" involving parents in routine infant care. This gap between belief and practice highlights the influence of structural constraints, including high workloads, understaffing, and a lack of standardized ward protocols (Munjanja et al., 2021; Weiss et al., 2020).

Crucially, 68.3% of participants cited perceived negative parental attitudes as a main barrier to implementing family education. This finding merits nuanced interpretation. In high-stress NICU environments, parental anxiety, fear of harming fragile infants, and emotional distress can manifest as withdrawal, hesitancy, or defensiveness (Benzies et al., 2020; Hägi-Pedersen et al., 2021). When healthcare providers lack formal training in compassionate communication and crisis counseling, such parental reactions may be misconstrued as uncooperativeness, further hindering effective caregiver-parent partnerships.

Furthermore, knowledge regarding Kangaroo Mother Care (KMC) was largely restricted to physical metrics, such as weight gain (75.6%), while physiological, immunologic, and neurodevelopmental benefits—such as infection reduction (8.5%)—were underappreciated. Given that KMC is a highly cost-effective, evidence-based intervention for reducing prematurity-related mortality in low-resource settings (Boundy et al., 2016; Feldman, 2021), addressing these knowledge deficits is essential.

To bridge these gaps, targeted institutional reforms are recommended. Adapting structured, evidence-based frameworks such as Family Integrated Care (FICare) (O'Brien et al., 2018; O'Brien & Robson, 2022) to local contexts could offer a clear, actionable pathway for empowering parents within NICUs. In addition, establishing standardized ward protocols and institutional guidelines (Sharma et al., 2022) can help set consistent expectations for parental involvement, supporting better outcomes for premature infants and their families in Kinshasa.

Strengths and Limitations

Strengths

This study addresses a critical and under-researched topic in the Democratic Republic of the Congo. By collecting data across four distinct secondary and tertiary healthcare facilities in Kinshasa, it captures perspectives from diverse practice environments. The use of standardized digital data collection via KoboCollect minimized data entry errors, and the reporting of 95% confidence intervals enhances statistical transparency.

Limitations

Several limitations should be considered when interpreting these findings:

1. **Sampling Strategy:** The use of non-probability convenience sampling limits the generalizability of findings beyond the participating hospitals.
2. **Self-Report Bias:** Data relied on self-reported questionnaires, which are susceptible to social desirability and recall biases.

3. **Lack of Direct Observation:** The absence of direct clinical observation prevents objective verification of reported nursing and medical practices.
4. **Study Design:** The cross-sectional design precludes causal inferences regarding the relationships between caregiver training, attitudes, and patient outcomes.

Implications for Practice, Policy, and Research

- **Clinical Practice:** Hospitals should establish formal, written protocols that clearly outline parental involvement in daily NICU routines, skin-to-skin contact, and clinical handovers.
- **Education and Training:** Mandatory continuing education modules focusing on FCC principles, practical KMC implementation, and parent-provider communication should be integrated into nursing and medical curricula.
- **Health Policy:** The Ministry of Public Health should consider integrating FCC and FICare frameworks into national neonatal health guidelines to standardize family-centred practices across the health system.
- **Future Research:** Longitudinal and observational implementation studies are needed to evaluate the impact of structured FCC training programs on clinical outcomes, including neonatal mortality, length of stay, and parental well-being in low-resource contexts.

CONCLUSION

While neonatal healthcare professionals in Kinshasa express strong support for family involvement, substantial gaps persist in their formal knowledge, training, and routine clinical application of Family-Centred Care. Key barriers include a lack of structured training, high clinical workloads, and challenges in staff-parent communication. Standardized institutional protocols, targeted continuing education, and formal frameworks such as Family Integrated Care (FICare) are needed to strengthen parent-provider partnerships and improve outcomes for premature infants in Kinshasa.

Use of Artificial Intelligence (AI) Declaration: The authors declare that no generative artificial intelligence (AI) tools were used to generate, modify, or manipulate the primary research data. The authors take full responsibility for the accuracy, integrity, and scientific content of the manuscript.

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Authors' Contributions

i. **Judith Schepers Gegelezo:** Conceptualization, Methodology, Software, Validation, Formal analysis, Investigation, Resources, Data curation, Writing – original draft, Writing – review & editing, Visualization, Project administration.
ii. **Pascal Atuba Mamenepi:** Conceptualization, Methodology, Validation, Formal analysis, Investigation, Resources, Writing – review & editing, Supervision.
iii. **Jérémie Kabeya Malembe:** Conceptualization, Methodology, Validation, Formal analysis, Investigation, Resources, Writing – review & editing.
iv. **Félicien Mukandu Basua:** Conceptualization, Methodology, Validation, Investigation, Resources, Writing – review & editing.
v. **Emmanuel Kitete Mulongo:** Conceptualization, Methodology, Validation, Investigation, Resources, Writing – review & editing, Supervision.
vi. **Jean-Paul Ngbolua Koto-Te-Nyiwa:** Conceptualization, Methodology, Validation, Investigation, Resources, Writing – review & editing, Supervision.
vii. **Félicien Tshimungu Kandolo:** Conceptualization, Methodology, Validation, Investigation, Resources, Writing – review & editing, Supervision, Project administration.
viii. All authors reviewed and approved the final manuscript for publication.

Data Availability Statement: The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

Ethical Approval: Ethical approval was granted by the Bioethics Committee of the Higher Institute of Medical Techniques of Kinshasa (Ref. No. 055/ESU/ISTM/DG/2022). All procedures performed were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Declaration of Helsinki and its later amendments.

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REFERENCES

Aita, M., De Clifford-Faugère, G., Laporte, D., Colson, S., & Feeley, N. (2024). Nurses' perceptions and practices of family-centered care and skin-to-skin contact in neonatal units: A mixed-methods study. *Journal of Neonatal Nursing*, *30*(2), 45–53. https://doi.org/10.1016/j.jnn.2023.08.004

Atuba, P. M., Pala, L. L., & Andjelani, A. N. (2023). Prevalence and risk factors in perinatal morbidity and mortality in the hospital environment of Kinshasa, DRC. In V. P. Veeramani (Ed.), *Advanced concepts in medicine and medical research* (Vol. 5, pp. 207–219). B P International. https://doi.org/10.9734/bpi/acmmr/v5/1840G

Benzies, K. M., Shah, V., Aziz, K., Isaranuwatchai, W., & Mrklas, K. (2020). Key components of early interventions to support parents of preterm infants: A scoping review. *Early Human Development*, *151*, Article 105122. https://doi.org/10.1016/j.earlhumdev.2020.105122

Boundy, E. O., Dastjerdi, R., Spiegelman, D., Fawzi, W., Missmer, S. A., Lieberman, E., & Chan, G. (2016). Kangaroo mother care and neonatal outcomes: A meta-analysis. *Pediatrics*, *137*(1), Article e20152238. https://doi.org/10.1542/peds.2015-2238

Ekwochi, U., Osuorah, C. D., Ndu, I., Ifediora, C., Amadi, A., & Korie, F. C. (2022). Barriers to parental involvement in neonatal care in low-resource settings: Experiences from sub-Saharan Africa. *African Journal of Nursing and Midwifery*, *24*(1), 112–128. https://doi.org/10.25159/2520-5293/9812

Feldman, R. (2021). What promotes resilience in preterm infants? The role of caregiving and neurobiological processes. *Current Opinion in Psychiatry*, *34*(6), 568–574. https://doi.org/10.1097/YCO.0000000000000742

Hägi-Pedersen, M.-B., Maroun, L. L., & Gundestrup, S. (2021). Parent–staff collaboration in neonatal care: A qualitative synthesis. *Journal of Clinical Nursing*, *30*(19–20), 3051–3063. https://doi.org/10.1111/jocn.15812

Kagina, B. M., Wiysonge, C. S., Machingaidze, S., Abdullahi, L. H., Adebayo, E., Uthman, O. A., & Hussey, G. D. (2014). The use of supplementary immunisation activities to improve uptake of current and future vaccines in low-income and middle-income countries: A systematic review protocol. *BMJ Open*, *4*(2), e004429. https://doi.org/10.1136/bmjopen-2013-004429

Lee, R. (2023). Family-centered care in neonatal practice: Principles, challenges and opportunities. *Journal of Neonatal Nursing*, *29*(1), 15–22. https://doi.org/10.1016/j.jnn.2022.06.003

Loutfy, S. A., Mohamed, S. S., Khalil, D. M., & Hassan, N. (2024). Perceived nursing support and parental stress in neonatal intensive care units: A cross-sectional study. *Journal of Pediatric Nursing*, *75*, 112–120. https://doi.org/10.1016/j.pedn.2023.12.015

Mabaga, J., Kanteng, G., Ngimbi, S. L., Beya, A. K., Talona, A. A., Obotela, L., Sangwa, F. K., Sunguza, J. Z., Lumande, A. K., Wembonyama, S. O., & Luboya, O. N. (2022). Connaissances, attitudes et pratiques des prestataires de soins concernant les urgences néonatales à Lubumbashi. *Revue de l'Infirmier Congolais*, *6*(1), 10–16. https://doi.org/10.62126/zqrx.2022612

Mfuana, M. (2020). *Une chance de vivre – Favoriser l'accès à des soins pour les nouveau-nés démunis*. Une chance de vivre. https://unechancedevivre.org/fr/objectifs-et-projets/

Munjanja, S., Madzimbamuto, F., & Moyo, L. (2021). Challenges in neonatal care delivery in sub-Saharan Africa: A review. *African Health Sciences*, *21*(4), 1732–1740. https://doi.org/10.4314/ahs.v21i4.28

O'Brien, K., & Robson, K. (2022). Implementing family-integrated care in neonatal units: Lessons learned and future directions. *Seminars in Fetal & Neonatal*

Medicine, *27*(4), Article 101112. https://doi.org/10.1016/j.siny.2022.101112

O'Brien, K., Robson, K., Bracht, M., Cruz, M., Lui, K., Alvaro, R., da Silva, O., Monterrosa, L., Narvey, M., Ng, E., & colleagues. (2018). Effectiveness of family integrated care in neonatal intensive care units on infant and parent outcomes: A multicentre, multinational, cluster-randomised controlled trial. *The Lancet Child & Adolescent Health*, *2*(4), 245–254. https://doi.org/10.1016/S2352-4642(18)30039-7

Roué, J.-M., Kuhn, P., Maestro, M. L., & colleagues. (2020). Implementation of family-centered care in neonatal intensive care units: A systematic review. *Frontiers in Pediatrics*, *8*, Article 130. https://doi.org/10.3389/fped.2020.00130

Schepers Gegelezo, J., Okenge Ngongo, L., Tshimungu Katshidikaya, F., Shongo Onasaka, L., Mayamba Kilela, J., & Masikini Ewale, F. (2023). Niveau de la prématurité dans la ville de Kinshasa. *International Journal of Progressive Sciences and Technologies*, *37*(2), 69–77. https://doi.org/10.52155/ijpsat.v37.2.5128

Sharma, D., Murki, S. K., & Pratap, T. (2022). Enhancing parental involvement in neonatal care through structured support models. *Journal of Maternal-Fetal & Neonatal Medicine*, *35*(7), 1356–1363. https://doi.org/10.1080/14767058.2020.1743662

Subhashini, L., Priya, R., & Kumar, S. (2023). Knowledge and practices of developmental supportive care among neonatal nurses: A cross-sectional study. *Journal of Neonatal Care*, *19*(1), 24–31.

Turner, M., Winefield, H., & Chur-Hansen, A. (2013). The Emotional Experiences and Supports for Parents With Babies in a Neonatal Nursery. *Advances in Neonatal Care,* *13*(6), 438-446. https://doi.org/10.1097/ANC.0000000000000030

Weiss, S. J., Goldlust, E., & Vasa, R. (2020). Improving family-centered care through organizational change: A review. *Journal of Pediatric Health Care*, *34*(5), 442–450. https://doi.org/10.1016/j.pedhc.2020.04.008