Family-Centered Care (FCC) and Family-Integrated Care (FIC): Global Trends and Local Provider Awareness in Fresno County, California

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Family-Centered Care (FCC) and Family-Integrated Care (FIC) have become increasingly recognized as essential approaches to neonatal intensive care unit (NICU) management globally. FCC emphasizes collaboration between healthcare providers and families to enhance infant outcomes, while FIC actively involves parents in daily infant care routines. This study examines trends in FCC and FIC over the past decade across multiple countries, including Canada, the United States, Australia, and China, with a focus on applicability in Fresno County, California. Twenty-five peer-reviewed studies from 2010 to 2025 were analyzed, highlighting improvements in infant growth, higher breastfeeding rates, reduced parental stress, and decreased hospital stays. To evaluate local awareness of FIC/FCC, a survey was conducted among 50 healthcare providers in the Central Valley, yielding 32 responses (64% response rate). Results indicated that 34% of respondents were very familiar with FIC/FCC concepts, and 59% considered family involvement extremely important. Technology played a significant role, with 69% of respondents utilizing tools like video calls and mobile apps to support family engagement. Barriers included family availability (78%), resource constraints (72%), and staff training needs (44%). Findings suggest that while FCC and FIC are widely supported globally, surveyed providers demonstrated varying levels of awareness and perceived barriers, and technology can mitigate resource and logistical challenges. Expanding education, digital tools, and awareness can improve outcomes for infants and families in the region.

Keywords: Family-Centered Care, Family-Integrated Care, Neonatal Intensive Care Unit, parental involvement, healthcare technology, Central Valley, California

Introduction

Family involvement in neonatal care is critical for infant health, parental well-being, and the overall functioning of NICUs. Family-Centered Care (FCC) promotes active collaboration between healthcare providers and families, emphasizing communication, shared decision-making, and psychological support[1].

FCC emerged as an approach designed to strengthen partnerships between healthcare providers and families with the goal to improve both infant outcomes and parental wellbeing[2]. According to Ortenstrand et al., 2010, early clinical research showed that implementing family-centered neonatal care models can significantly reduce infant length of stay while maintaining positive clinical outcomes[3]. Additionally, research examining family satisfaction in pediatric and neonatal intensive care environments indicates that FCC practices contribute to improved parental perceptions of care quality and communication with healthcare providers[4]. Yet another strength that has been reported in European studies associated with FCC involves parent–infant bonding and greater parental engagement in neonatal care activities[5].

Family-Integrated Care (FIC) extends FCC by embedding parents directly into daily care routines, fostering bonding and confidence while improving neonatal outcomes[6]. Recent studies have shown that FIC programs enhance parental participation and improve infant feeding outcomes in NICU settings[7]. Over the past decade, FCC and FIC have been implemented in various healthcare systems worldwide, including the United States, Canada, Australia, and China, often complemented by technological solutions such as mobile apps and telehealth.

This study explores how FCC and FIC are understood and practiced within healthcare settings in California's Central Valley. The project focuses on healthcare provider perspectives, the extent of family involvement in care, and factors that may influence how these approaches are applied in local settings. By analyzing survey responses from providers in the region, the study aims to describe current practices and pro-

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vide insight into how FCC and FIC are experienced in this environment.

The study aims to review global research on FCC and FIC practices in NICUs over the past decade, assess local adoption and provider familiarity in Fresno County, and identify barriers and facilitators of implementation of FCC/FIC in local settings.

The study focuses on the healthcare environment in the Central Valley and global NICU research published between 2010 and 2025. Survey respondents included physicians, pediatricians, nurses, and specialists in the region. Limitations include a modest sample size (n=32), and potential response bias owing to convenience sampling.

The study is grounded in the Social Support Theory[8]. emphasizing the interdependent relationship between infant outcomes and parental involvement. FCC and FIC operationalize this framework by promoting active participation and shared responsibility for neonatal care[9].

Table 1 Distribution of specialists who responded ($n = 32$)

Specialty	Number of Respondents	Percentage
Family Medicine	3	9.4%
Gastroenterologist	1	3.1%
General Pediatrician	6	18.8%
General Physician	14	43.8%
Geriatrics	1	3.1%
Nephrologist	1	3.1%
Pediatric Cardiology	1	3.1%
Pediatric Nurse	1	3.1%
Psychiatrist	1	3.1%
Pulmonologist	1	3.1%
Radiologist	2	6.3%
Total	32	100%

Methods

The study employed a combination of literature review and cross-sectional survey. A literature review analyzed global trends in FCC/FIC implementation, and a cross-sectional survey assessed local adoption and perspectives in the Central Valley of California. Fifty healthcare professionals were identified through publicly available hospital directories using convenience sampling from regional hospital websites (Clovis Regional Medical Center, Valley Children's Hospital, St. Agnes, Kaiser Permanente). Thirty-two responses were received (64%), including general physicians (43.8%), pediatricians (18.8%), family medicine practitioners (9.4%), and other specialists (See Table 1 for distribution). There were 18 non-respondents; non-respondents may differ systematically from respondents in workload or engagement with FCC/FIC practices, potentially introducing non-response bias.

Literature Review: A structured literature search was conducted during the period August 2024–December 2025 using two large databases, Google Scholar and PubMed. See Figure 1 PRISMA workflow. The search terms utilized were: ("family integrated care" OR "family-centered care" OR FICare OR FCC) AND (NICU OR neonatal OR preterm infant) AND (family involvement OR parental participation OR technology). Peer-reviewed studies between 2010 and 2025 were searched. Database searches identified 1,246 articles (Google Scholar n=812; PubMed n=434). After removing duplicates (n=312), 934 articles were screened by title and abstract. If the studies involved editorials, conference abstracts, non-NICU studies, or lacked measurable outcomes, they were excluded. A total of 846 articles were excluded. Then, out of the 88 studies remaining, 25 were included based on the global nature/scale of the study, completeness, and relevance to the current study. The key findings from these studies were then tabulated for comparison.

Local Survey: The local survey, administered via email, included nine multiple-choice questions regarding FIC/FCC familiarity, family participation, use of technology, and barriers to implementation (See Appendix A for Survey details). Key variables included provider familiarity with FIC/FCC (very familiar, slightly familiar, not familiar), perceived importance of family involvement (extremely important, somewhat important, neutral), frequency of family participation (always, sometimes, rarely), comfort with increasing family involvement (very comfortable, somewhat comfortable, neutral), use and support of technology in family care (yes/no; strong support, support, neutral), and barriers to implementation (family availability, resource constraints, staff training, space limitations). Quantitative survey data collected were analyzed descriptively using frequencies and percentages.

Survey links were emailed to participants with a brief introduction explaining the study purpose. The survey was administered using Google Forms and distributed via email to selected healthcare professionals. A total of two reminder emails were sent during the two-week data collection period to improve response rates. All survey questions were multiple-choice, and all 32 responses received were complete, with no missing data; therefore, no responses were excluded from analysis. The survey was conducted anonymously, and no identifying information such as names, email addresses, or IP addresses was collected. Responses were automatically recorded in Google Forms and exported to Microsoft Excel for organization and descriptive statistical analysis. There was no formal IRB review. This study involved an anonymous survey with voluntary participation, and did not collect identifiable personal information.

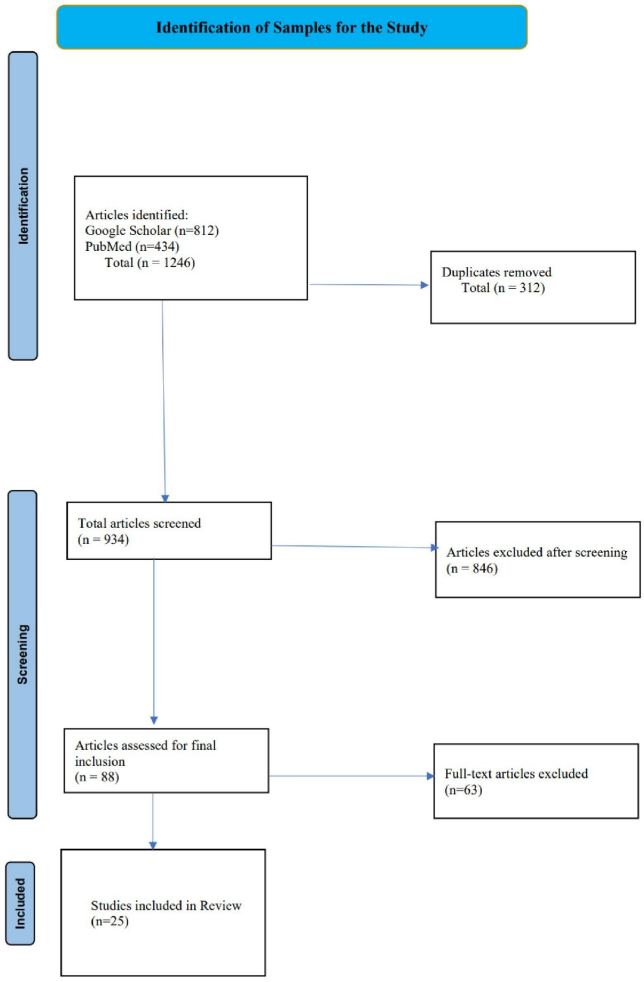

Fig. 1 PRISMA Flow Diagram

For comparison purposes, Table 2 lists the global vs. local outcome variables that are explored in the study.

Table 2 List of global vs. local outcome variables

Global Outcome Variables (Literature Review)	Local Survey Variables (Survey)
Infant weight gain	Reported barriers (resources, training, family availability, space)
Breastfeeding rates	Familiarity with FCC/FIC
Length of hospital stay	Comfort with family involvement
Parental stress levels	Perceived importance of family input
Communication outcomes	Family participation in daily decisions
Family engagement in care	Technology use in practice
Use of technology in care	Support for digital tools
Readmission rates	Perceived impact on communication

Results

Analysis of twenty-five global studies (2010–2025) revealed consistent benefits of FCC and FIC (See Table 3). Technology was included in all studies in Table 3. The main benefits are summarized below, together with the corresponding studies that reported them:

1. Improved infant growth and weight gain [6,7,9–13] .
2. Increased breastfeeding rates [10,11,14,15].
3. Reduced parental stress and anxiety [4,5,8,10–14,16–19].
4. Shorter hospital stays [1,3,20,21].

FCC = Family centered care, FIC = Family integrated care.

Survey findings indicated that 11 respondents (34%; 95% CI, 18% to 51%) were very familiar with FIC/FCC, 11 (34%; 95% CI, 18% to 51%) slightly familiar, and 10 (31%; 95% CI, 15% to 47%) not familiar. See Figure 2.

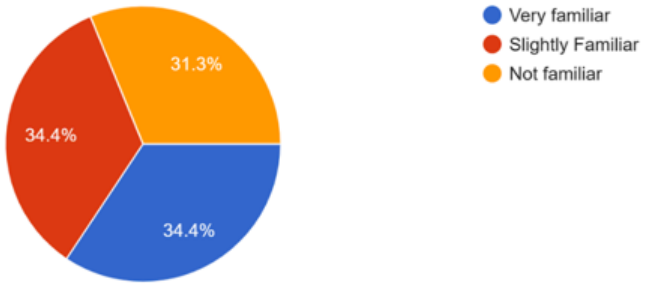

Fig. 2 Familiarity with FIC / FCC Concepts (n=32)

Nineteen respondents (59%; 95% CI, 39% to 73%) considered family involvement extremely important, and only two (6%; 95% CI, 1% to 14%) considered it somewhat important. Family participation in daily decision-making was reported as always by 9 (28%; 95% CI, 12% to 43%), sometimes by 16 (50%; 95% CI, 32% to 67%), and rarely by 7 (22%; 95% CI, 7% to 36%). See Figure 3.

Comfort with increasing family involvement was reported as very comfortable by 16 (50%; 95% CI, 33% to 67%), somewhat comfortable by 6 (19%; 95% CI, 4% to 34%), and neutral by 10 (31%; 95% CI, 15% to 47%). Technology use was reported by 22 respondents (69%; 95% CI, 52% to 84%), and 19 (59%; 95% CI, 42% to 76%) strongly supported the expansion of digital tools in FCC/FIC programs. Barriers included family availability (78%; 95% CI, 62% to 93%), lack of resources (72%; 95% CI, 58% to 88%), staff training needs (44%; 95% CI, 26% to 61%), and limited space (28%; 95% CI, 12% to 43%). See Table 4.

Table 3 Summary of literature on FCC and FIC in NICUs (2010–2025)

Study	Country	Sample Size	Design	Key Outcomes	Technology
O'Brien et al., 2013 [10]	Canada	42 infants	Cohort	Improved weight gain; higher breastfeeding rates	Yes
O'Brien et al., 2015 [11]	Canada & Australia	675 infants	Cluster RCT	Weight gain; reduced parental stress	Yes
Ding et al., 2019 [6]	International	19 studies	Meta-analysis	Weight gain; higher parent satisfaction	Yes
Franck et al., 2019 [14]	USA	225 infants	Quasi-experimental	Reduced parental stress; higher breastfeeding	Yes
Vetcho et al., 2020 [20]	International	48 studies	Integrative review	Improved parental satisfication	Yes
Murphy et al., 2021 [21]	Canada	718 infants	Cluster RCT	NICU stay reduced	Yes
North et al., 2022 [16]	International	5240 infants	Systematic review	Better growth and parental involvement	Yes
Waddington et al., 2021 [9]	International	15 studies	Literature Review	Improved feeding and parent mental health	Yes
Hriberšek et al., 2024 [22]	Global	4,836 publications	Bibliometric	Growth of FCC research globally	Yes
Loutfy et al., 2024 [8]	Egypt	223 parents	Quantitative	Lower parental stress scores	Yes
Lee, 2024 [23]	South Korea	10 studies	Review	Evidence-based FCC practice models	Yes
Arun Babu & Bhat, 2024 [17]	India	7 studies	Literature Review	Strong support for parental integration	Yes
Hodgson et al., 2025 [12]	International	20 studies	Systematic review	Improved infant and family outcomes	Yes
Moreno-Sanz et al., 2025 [24]	International	18 studies	Review	Future directions for FICare	Yes
Gooding et al., 2011 [2]	International	Numerous	Observational	Improved developmental outcomes	Yes
Ortenstrand et al., 2010 [3]	Sweden	366 infants	RCT	Reduced length of stay	Yes
O'Brien et al., 2018 [7]	Canada, Australia, & New Zealand	1786 infants	Cluster-RCT	Improved infant weight gain	Yes
van Veenendaal et al., 2022 [5]	Netherlands	296 mothers	Multicenter	Improved bonding; less maternal stress	Yes
Latour et al., 2024 [4]	International	16 articles	Mixed	Future directions on FCC	Yes
Çimke et al., 2024 [1]	International	2525 studies	Bibliometric	Expansion of FCC research	Yes
Hodgson et al., 2024 [25]	United States, Canada, Korea, Indonesia, Iran, Switzerland	3,801 parents across 16 studies	Systematic review	Improved parental satisfaction, communication, emotional support	Yes
Ranu et al., 2024 [15]	United States	8 parents and 13 team providers	Qualitative	Higher breastfeeding, and shared decision-making	Yes
Park & Im, 2025 [18]	South Korea	3 parents, 9 healthcare providers	Qualitative study	Stronger communication, increased overall familial engagement in care	Yes
Traylor & Ohning, 2024 [19]	United States	320 patient rounding events	Observational study	Improvement in teamwork and communication	Yes
Bellizzi et al., 2024 [13]	International	41 articles	Systematic review	Improved newborn outcomes, parental engagement	Yes

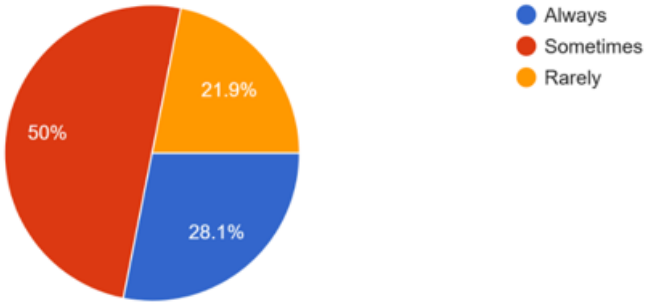

Fig. 3 Frequency of Family Participation in Daily Decision-Making (n=32)

(The complete survey questionnaire and results are presented in Appendix A.)

Table 4 Barriers to implementing FCC/FIC in Central Valley healthcare settings (n=32)

Barrier	Number of Respondents	Percentage
Family Availability	25	78%
Lack of Resources	23	72%
Staff Training Needs	14	44%
Limited Space	9	28%

Discussion

The global studies used in this research demonstrate strong benefits of FCC and FIC, including enhanced infant growth, higher breastfeeding rates, and reduced parental stress. More recent research conducted between 2024 and 2025 on FCC and FIC further supports these findings, adding greater rigor and contemporary relevance to the evidence base [12,17,24].

Locally, some of the relationships between key survey variables were examined in more detail. The providers who reported being "very familiar" with FCC/FIC were more likely to report being "very comfortable" with increased family involvement, suggesting a positive relationship between familiarity and confidence. Further, there were some noticeable differences across specialties; for instance, general physicians most frequently reported lack of resources and staff training as barriers, while family availability was identified across nearly all roles. In smaller specialties such as psychiatry and nephrology, family availability was often the primary barrier, while radiology respondents more commonly reported staff training needs. In addition, respondents who reported using technology in their practice were also more likely to support expanding digital tools.

Further, survey results show that while Central Valley providers value family involvement, awareness and perceived readiness vary due to resource, training, and space constraints. Technology is widely supported as a facilitator of family participation. These findings indicate that FCC and FIC principles can improve healthcare outcomes in rural and semi-urban settings when supported by digital tools and staff training. The study results support broader adoption of family-centered approaches beyond NICUs to pediatric and geriatric care [22,23].

All research objectives were addressed: global trends were reviewed, local adoption assessed, barriers identified, and the role of technology highlighted. Recommendations include implementing targeted staff training on FIC/FCC principles, increasing access to digital tools for remote family engagement, conducting follow-up research including family perspectives, and exploring expansion of FCC/FIC models to adult and geriatric care.

Based on the barriers identified among surveyed providers, more specific and actionable strategies can be proposed. To address family availability, healthcare systems could implement scheduled virtual visitation options, such as video calls during rounds or designated update times, allowing families to participate despite time or location constraints. To address staff training needs, institutions could develop structured FCC/FIC training modules and workshops to improve provider familiarity and confidence. For resource constraints, hospitals could allocate funding toward family engagement programs, including digital communication platforms or designated staff roles. Additionally, to address space limitations, facilities could consider flexible visitation policies or adapting care environments to better accommodate family presence. These targeted strategies directly address the barriers identified in the local survey.

Limitations of this study include a small sample size (n=32). Perhaps, future studies can incorporate larger sample sizes so the results derived from the current study can be verified and strengthened.

To conclude, the systematic review of recent literature in FCC and FIC shows that integrating families into patient care and leveraging technology can greatly improve patient health outcomes. When families are included, they can better understand the patient's condition and care plan. Further, using technology in healthcare also makes communication and monitoring easier. The Fresno County healthcare providers who participated in the survey showed limited familiarity with FCC/FIC concepts. However, they were willing to incorporating these approaches into their practice. Although survey participants reported certain barriers to implementation, these challenges can be addressed through appropriate measures, enabling the Fresno County patient care system to achieve improved patient outcomes comparable to those reported in the global literature.

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Appendix A. Survey

Email sent:

Hello, my name is Simran Rana, and I am a junior with a strong career interest in the medical field. Over the past year, I have been working on a research project focused on Family-Centered Care (FCC) and Family-Integrated Care (FIC), specifically exploring how the California Central Valley trends in FCC and FIC compare with the global trends.

As part of my study, I have created a brief survey for healthcare professionals in the region. I would greatly appreciate your time and input in completing this short survey. There are a total of 9 multiple choice questions and it should take about a minute of your time!

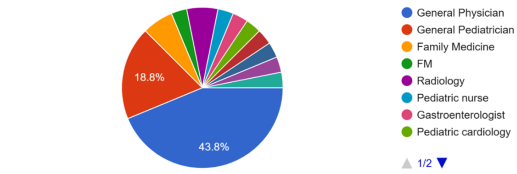
Thank you so much for your time and support!

Best Regards, Simran Rana

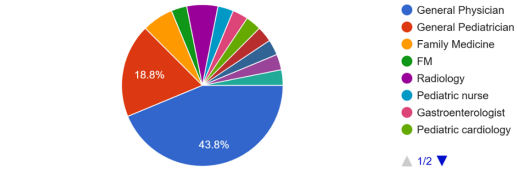
Survey Link

Survey Questions & Results

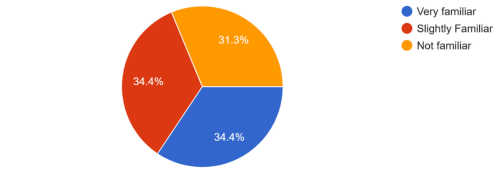
1. What is your specialty?
32 responses



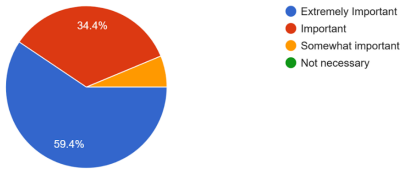
1. What is your specialty?
32 responses



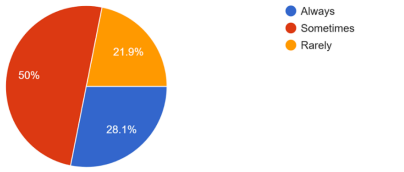
2. How familiar are you with the principles of Family-Centered Care (FCC) and Family Integrated Care (FIC)?
32 responses



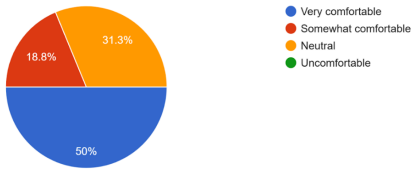
3. How important do you think it is to incorporate family's input in patient care planning?
32 responses



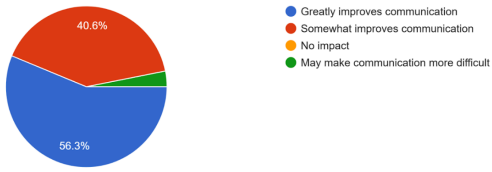
4. Do family members participate in daily decisions of patients within your practice?
32 responses



5. How comfortable would you feel with increased family involvement in daily patient care tasks?
32 responses

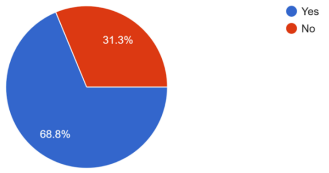


6. How do you think FCC/FIC models impact communication between healthcare teams and families?
32 responses



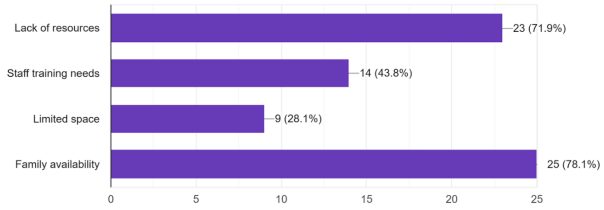
7. Does your field of practice use technology often to connect families with patients?

32 responses



8. What barriers do you see in implementing FCC/FIC in general healthcare settings? SELECT ALL THAT APPLY

32 responses



9. Would you support using digital tools (video calls, online portals, apps on mobile devices) to facilitate family involvement in FCC/FIC?

32 responses