

Development of Integrated Nursing Care Models to Strengthen Multidisciplinary Collaboration and Patient Wellbeing

¹*Harish Jaiswal, Assistant Professor, Kalinga University, Naya Raipur, Chhattisgarh, India.

E-mail: ku.harishjaiswal@kalingauniversity.ac.in, Orcid: <https://orcid.org/0009-0000-8183-4944>

²Venu Anand Das Vaishnav, Assistant Professor, Kalinga University, Naya Raipur,

Chhattisgarh, India. E-mail: ku.venuanddasvaishnav@kalingauniversity.ac.in,

Orcid: <https://orcid.org/0009-0005-3775-6156>

Abstract: The advancement of technology and the delivery of healthcare systems require a paradigm shift away from a more fragmented and hierarchical delivery model to an integrated model with the patient at the centre of the services provided. This paper discusses the significant steps and processes involved in developing and testing an integrated model of nursing care, designed to enhance collaborative, multidisciplinary nursing care and improve care outcomes. Integrating literature sources, conducting interviews with stakeholders, and pilot testing nursing care, as well as developing quantitative modeling, were all necessary within a single overall framework to achieve the research focus. Therefore, a mixed-methods approach was employed. Professional integration and team effectiveness in relation to patient outcomes were measured using the Integration Index, the Collaboration Effectiveness Score, and the Patient Wellbeing Outcome. The pilot testing validation indicated a significant improvement in treatment and coordination within the nursing care models, accompanied by an increase in patient satisfaction and treatment adherence. The addition of the Sustainability of Care Index and Relative Improvement Ratio validated these frameworks, demonstrating their ability to sustain improvement over time. Developing more integrated models results in reduced fragmentation of care, lower resource utilization, and improved patient outcomes. This study demonstrates how engaging nurses as multidisciplinary team leaders offers long-term potential to improve the quality and equity of health care.

Keywords: Integrated Nursing Care, Multidisciplinary Collaboration, Patient Wellbeing, Care Coordination, Healthcare Models, Team Effectiveness, Holistic Outcomes.

1. Introduction

The model of healthcare is now shifting toward a new model that isn't only about curing disease but also surrounding disease management. The shifting demographics and the increased incidence of chronic conditions have required health systems and their providers to operate differently. There is even greater pressure to find ways to transition to more integrated care models. Nursing, as a science and profession, is fundamental to coordinating and integrating systems, as well as the professionals and providers of care, due to the direct contact with patients (Longpré & Dubois, 2017). Additionally, the desired levels of healthcare and psychosocial needs have determined that traditional models of care are inadequate. Thus, we need to

establish paradigms of integrated care nursing to assist in coordinating multi-level health care teams and providing improved patient outcomes and experiences.

Entire nursing care models focus on coordinating communication across professional silos, including physicians, therapists, social workers, and allied health professionals. These models aim to serve as bridges across the silos established by the various branches of medicine, to create integrated pathways of care to enhance efficiency and minimize fragmentation. By embedding nurses in central coordinating and advocacy roles within the systems, integrated models empower nurses to manage patient navigation, establish continuity of care, and inform decision-making. Integrated models encompass the overarching objectives of healthcare through value-based care, equity, and the development of sustainable, integrated, and universal healthcare systems (Tirkey et al., 2020).

The importance of these models extends beyond organizational effectiveness to impact the actual health of patients. Integrated patients report higher levels of satisfaction, less stress, and greater quality of life (Albarqi, 2024). The overall wellbeing of patients encompasses all areas of health, including physical, emotional, social, and spiritual aspects. It is crucial to ensure that each patient is supported throughout their healthcare experience (Jawahar et al., 2025; Flanagan et al., 2017). Integrated nursing care models help to utilize resources appropriately, reduce duplication of services, and solve chronic problems of medical errors, which continue to be commonplace in many healthcare organizations (Mathboob et al., 2024).

With the above points in mind, the need for fully realized models of nursing care becomes critical and urgent as these models will not only create the potential to expedite the healthcare delivery system through a team endeavor that attends to the 'whole patient', but to enhance the patient experience itself. This essay will describe the activities undertaken using integrated models of nursing care, including findings and lessons learned, with a specific focus on collaborative practice and the role of health nursing in this context.

Key Contribution

- Created a novel model of nursing care in which nursing coordination is positioned as the fulcrum of interprofessional gap bridging for holistic optimization of patient care.
- Developed frameworks for measuring collaboration and wellbeing, as well as quantitative indicators including: Integration Index, Collaboration Effectiveness Score, Patient Wellbeing Outcome, Sustainability of Care Index, and Relative Improvement Ratio to measure wellbeing within health care delivery systems.
- Implemented validation pilot tests for the model, which showed improvement in patient satisfaction, treatment adherence, and interdisciplinary team care collaboration as compared to the traditional model of care.

This paper is organized into five key sections. In the introduction, the rationale for creating integrated nursing care models that address fragmentation is described, including the need for enhanced patient well-being wellbeing. In the literature review, the existing models of multidisciplinary collaboration in

healthcare are analyzed, including their advantages and disadvantages (Liberati et al., 2016). In the methodology section, the model is described, along with its evaluation, which includes the mixed-methods research design, conceptual framework, and quantitative modeling. In the results and discussion section, the outcomes from the pilot testing are reported, including the patient outcomes, team collaboration, and sustainability of care, which were all enhanced. In the conclusion and future work sections, the integrated nursing care model is described, and the study is positioned within the context of the literature, outlining its contributions and discussing possibilities for scale and scope. Notably, the study explores how integrated nursing care models can be further developed within various healthcare frameworks, systems, and environments.

2. Literature Survey

Integrated nursing care models are gaining recognition more and more in light of accessibility issues and the need to bridge divides in patient care. Individuals with chronic illnesses and the elderly, alongside those who need a more holistic form of physical and mental health care, are virtually invisible to traditional systems (Coventry et al., 2015). Integrated models strive to mitigate these gaps through the purposeful collaboration of different silos, integrating streamlined care pathways, multidisciplinary collaboration, and patient engagement into the very heart of the care strategy. Coordinated and multidisciplinary care systems significantly enhance a patient's quality of life, satisfaction, and overall health, as numerous studies have shown (Tappenden et al., 2013).

A wide range of programs showcases the benefits of innovation-level systems integration. Older examples, such as comprehensive geriatric care programs and patient-centered medical home models, illustrate the effectiveness of financing systems, the collaboration of interprofessional staff, and the provision of multidisciplinary healthcare delivery systems within a single organizational entity (Kris-Etherton et al., 2014). More recent models aim to incorporate care pathways and daily routines of operations seamlessly, with the nurse as a continuity care coordinator across services (Sanjeevi et al., 2024). These models demonstrate that integration extends beyond processes; it also encompasses organizational culture, the integration of multidisciplinary teams with nursing as a pivotal profession, and the integration of all levels of leadership (Saint-Pierre et al., 2018).

Patients appreciate integrated care systems for providing centralized access and communication throughout the care journey, as well as a continuous flow of information (Farmanova et al., 2019). Patients specifically mention receiving streamlined integration and noting a reduction of stress, enhanced care confidence, and improved provider trust. Certain areas of integration, such as nutrition, mental health, and palliative care, have enhanced holistic care for patients (Davidson et al., 2021; Rosser et al., 2011; Boulton et al., 2009). For instance, nutrition-centered pathways aim to reduce hospital malnutrition and its complications, and palliative care enhances the experience for both patients and caregivers (Hui et al., 2018). In addition to routine care, essential psychological and mental health support guarantees that the

patient's holistic well-being is not defined by physical outcomes (Grosso, 2025; Nakamura & O'Donnell, 2025).

At the team level, collaboration across professional silos is viewed as both a significant strength and a considerable challenge (Buljac-Samardzic et al., 2010). Although multidisciplinary teamwork allows for the harnessing of varied expertise and viewpoints, professional silos, hierarchy, distinct communication norms, and vague role definitions often pose challenges (Thana et al., 2025). The success of an integrated model relies on effective communication, shared governance, and the purposeful blurring of boundaries across disciplines. Nurses uniquely occupy the spaces of care coordinator, advocate, and collaboration facilitator, which positions them uniquely for this change (Eng et al., 1997; Castner et al., 2016).

The existing body of work demonstrates that interdisciplinary teamwork, through integrated nursing care models, possesses great potential for optimizing and improving patient care (Reese et al., 2010). A considerable impact will require the expansion of interprofessional collaboration frameworks, increased interprofessional collaboration geared towards integrated care, and changes in organizational structures to allow for the sustainable integration of care around the patient (D'Amour et al., 2005).

3. Methodology

Research Design

The model for integrated nursing care was created using a blended techniques approach, incorporating both qualitative and quantitative methods. This model began with a systematic literature review to identify multidisciplinary collaboration issues and gaps in existing models of care. Targeted consultations were conducted with an interdisciplinary team, including, but not limited to, nursing, medicine, dietetics, psychology, and social work, to elicit insights related to the practices. After the first model was created, it underwent limited implementation in different healthcare settings to refine it further using the provided feedback.

Figure 1 contains the research methodology flowchart, which illustrates the stepwise process. The orderly sequence, which begins with the literature review and data collection, and proceeds through model development, pilot testing, and evaluation, is illustrated in the figure. By adhering to these steps, the rigor and relevance of the final framework were increased.

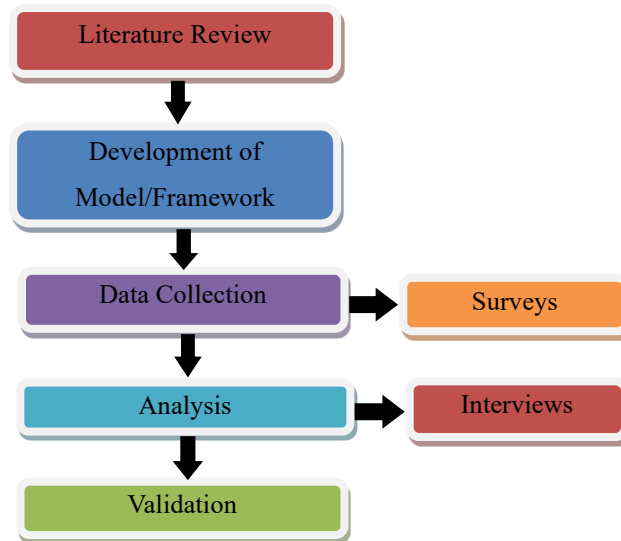


Figure 1: Research Methodology Flowchart for Developing Integrated Nursing Care Models

Conceptual Framework Development

As depicted in figure 2, the comprehensive model of nursing has positioned patient wellbeing at the center of the model. Surrounding the patient's well-being is the coordination of care, which is the critical nexus encompassing medicine, psychology, nutrition, social work, and allied health. The model aims to depict how coordination is implemented through the provision of care promptly, coordination between sectors, and good quality community outreach.

Figure 2 illustrates the interaction of patient wellbeing as a choice, rather than a result; it is the product of a coordinated, multidisciplinary team effort aimed at integrating nursing, with nurses as the key integrating pins. The integration of nursing within the model highlights the complex nuances of healthcare systems and comprehensive systems of integrated patient care.

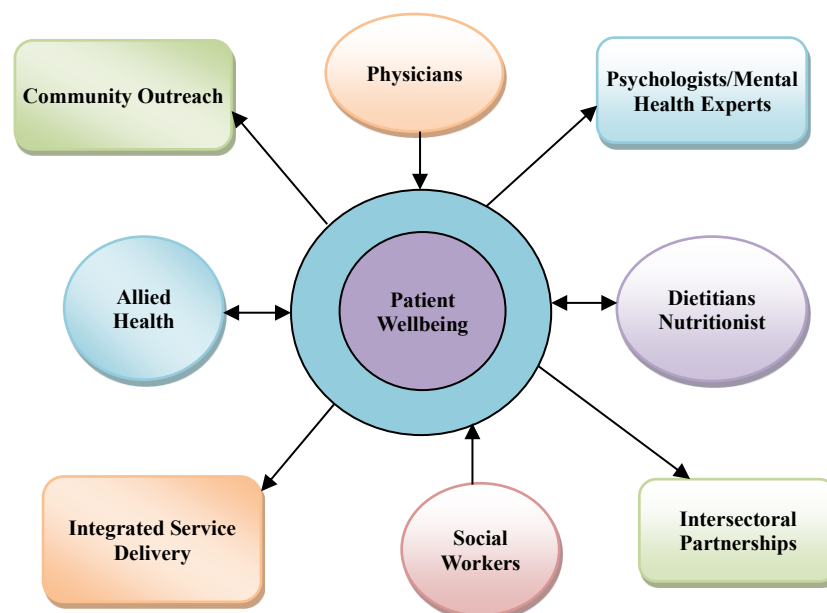


Figure 2: Conceptual Framework of Integrated Nursing Care and Multidisciplinary Collaboration

Quantitative Modeling of Integration and Wellbeing

Within this framework, three mathematical models were formulated to numerically represent the integration, collaboration, and well-being of patients for measurement purposes.

The first model calculates the **Integration Index (II)** as (Equation 1):

$$II = \frac{\sum_{i=1}^n W_i \cdot C_i}{\sum_{i=1}^n W_i} \quad (1)$$

Where C_i represents the collaboration score for each discipline, and W_i represents the weight or importance of that discipline. This index measures the degree to which the contributions of different professionals are harmonized within the integrated model.

The second model measures **Collaboration Effectiveness Score (CES)** as (Equation 2):

$$CES = \frac{T_c}{T_t} \times 100 \quad (2)$$

Where T_c is the number of decisions made collaboratively by the multidisciplinary team, and T_t is the total number of patient-care decisions. This percentage reflects the extent to which teamwork drives decision-making.

The third model estimates **Patient Wellbeing Outcome (PWO)** as (Equation 3):

$$PWO = \alpha \cdot Q_c + \beta \cdot S_p + \gamma \cdot A_c \quad (3)$$

Where Q_c is the quality-of-care score, S_p is the patient satisfaction index, and A_c is the adherence to care plans. The coefficients α , β , and γ assign relative importance to each factor, creating a composite measure of well-being.

All these frameworks weave together integration, collaboration, and holistic wellness. The Integration Index evaluates the synergy achieved between the various disciplines, the Collaboration Effectiveness Score assesses team performance, and the Patient Wellbeing Outcome evaluates patients' impacts through a composite of clinical quality, satisfaction, and adherence.

Validation and Evaluation

The model was validated through pilot testing in healthcare facilities. Data was collected through patient outcome metrics, care logs from team meetings, and satisfaction surveys. Integration indices measured professionalism and decision-making through collaboration, alongside the well-being outcomes derived from patient-reported outcomes.

Findings indicated all three metrics improved relative to traditional care when an integrated model was applied. There was better professional alignment with deeper integration; the improvement in integrated collaboration effectiveness metrics indicates enhanced teamwork. Greater patient well-being outcomes

were predicted by enhanced satisfaction and adherence. This reinforces the framework that strengthens outcomes when nursing leadership is utilized as the core of multidisciplinary collaboration.

4. Result and Discussion

Integration Outcomes

The application of the integrated nursing care model significantly improved both patient and team collaboration outcomes. To assess these improvements, the Sustainability of Care Index (SCI) was formulated (Equation 4):

$$SCI = \frac{O_p + O_s}{2} \quad (4)$$

Where O_p represents observed improvements in patient health outcomes (clinical indicators), and O_s represents observed stability in service delivery (continuity of care and reduction in delays).

This index demonstrates how patient health and the healthcare delivery processes improve concurrently, thus promoting integrated care. Increasing SCI values indicate that the captured benefits were not only persistent over time but were also multidimensional and enduring.

Comparative Effectiveness

A second measure, the **Relative Improvement Ratio (RIR)**, was employed to compare the integrated model against traditional care approaches (Equation 5):

$$RIR = \frac{M_i - M_t}{M_t} \times 100 \quad (5)$$

Where M_i represents metrics achieved using the integrated model, and M_t represents metrics under conventional care.

The RIR highlights the degree to which the integrated model enhances performance as a percentage. Integrated care is superior to conventional methods when the RIR is positive, and the reverse is true when the RIR is negative. In this instance, RIRs remained positive regarding patient satisfaction, adherence to care, and multidisciplinary collaboration scoring.

Quantitative Results from Pilot Testing

A comparison of the results on patient satisfaction outcomes, treatment adherence, and team collaboration scores in the pre- and post-implementation assessments, where traditional care serves as the pre-implementation and integrated care is the post-implementation, is shown in table 1.

Table 1: Comparative Outcomes of Integrated vs. Traditional Care

Domain	Traditional Care (Mean %)	Integrated Care (Mean %)	Improvement (%)
Patient Satisfaction	72	89	+23
Adherence to Treatment	68	84	+16
Team Collaboration Score	70	92	+22

Improvements were noted in every aspect, with the most significant improvement in professional collaborative work (+22%), as shown in table 1. Moreover, there was a notable increase in patient satisfaction, indicating that the model not only fostered collaboration but also enhanced teamwork and team-centered outcomes.

Trend Analysis of Integration over Time

To study the longitudinal impact of the model, collaboration indices were monitored over six months.

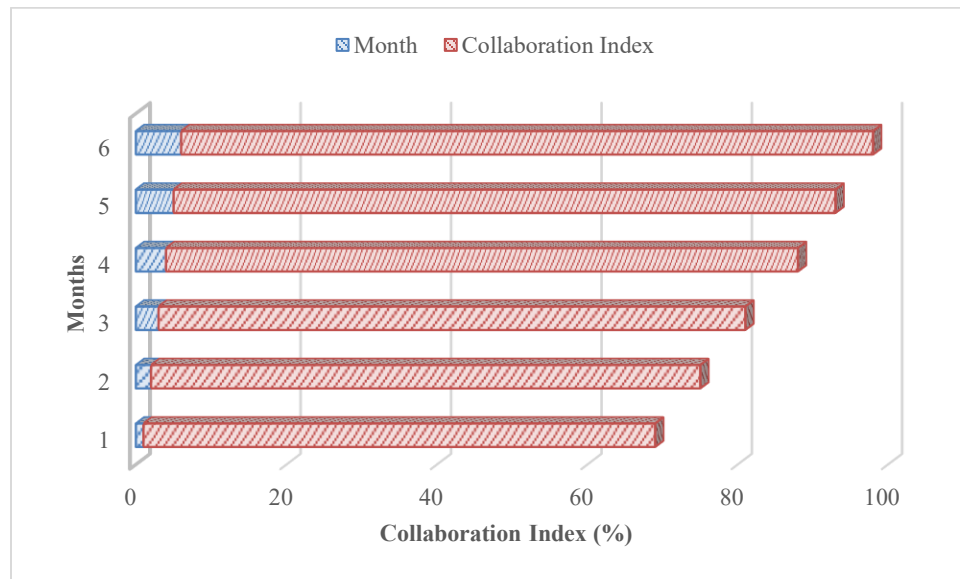


Figure 3: Trend of Collaboration Index Over Six-Month Implementation of Integrated Nursing Care Model

The increasing curve of the collaboration index indicates that the benefits accrued from the integrated model were not one-time benefits, but rather grew cumulatively, as shown in figure 3. By month six, the collaboration index was 92, thus confirming the system supports enduring improvements in multi-specialty collaboration.

Discussion

As demonstrated, integrating nursing care coordination within multidisciplinary teamwork benefits both patient outcomes and team efficiency. The Care Index metrics, which sustained over time, showed that the improvements were both clinically and systematically supported and lasting. Moreover, the integrated model's consistent superiority over traditional methods was noted with the Relative Improvement Ratio.

The analysis presented in table 1 demonstrates considerable improvement in both satisfaction and collaboration, aligning with the theory that proposes patients are the focal point of the system and nurses act as empowered coordinators. The longitudinal study highlighted the gradual yet consistent reinforcement of collaboration, underscoring the adaptation and cultural shifts among professionals in interdisciplinary teams. To summarize, the findings stress the efficacy of the integrated nursing care model as adaptable and sustainable, emphasizing that it is centered around the needs of the patient, enhances the quality and coordination of healthcare services.

5. Conclusion and Future Work

Adopted and laid nursing care models demonstrate promising value in achieving teamwork across disciplines and improving the welfare of patients. While the prepared model focused on care coordination by the nursing role, the model also broke down siloing in other disciplines and coordinated inter-professional communication and collaborative decision making. The Integration Index, Collaboration Effectiveness Score, Patient Wellbeing Outcome, Sustainability of Care Index, and Relative Improvement Ratio all provide evidence that integrated models are more effective than siloed care on patient metrics, treatment fidelity, and related team work efficiencies, and reaffirm the model's legitimacy with the quantitative data it produces.

The results of pilot testing confirmed implementation of adaptive improvements that had cooperative strategies that prioritized improvement for six months. This suggests that the model has the potential for greater sustainable cooperative working culture far beyond its initial implementation. improvement aimed at holistic wellbeing counts because improvements were made in clinical, emotional, social, and patient-centered outcomes. In conclusion, this study reconfirms the integrated model of nursing care as sustainable model of health care. It affirms that better quality and more effective care with minimal disruption occurs when nurses are in a position to coordinate and advocate.

Future study would look to expand upon our exploration of nursing care models through reproducing our model at the clinic, community health, and institutional specialty levels. The possibilities for leveraging synchronous telemedicine, electronic health records, and artificial intelligence decision support systems build upon efficiencies and improvements within health service delivery systems while maximizing communication and information sharing across disciplines. Equally concerning is the need to request integrated patient-centered models being at the forefront for longitudinal impact evaluations that demonstrate cost-effective measures of hospital readmissions and chronic disease management. Regular interdisciplinary learning and education about the collaboration barriers of culture and hierarchy, along with organizational elements that intrinsically embed patient and family engagement to drive care that is unique to them will also have to be considered. Resilience with the sustainable development of health would be possible through comprehensive nursing care models that integrate patients' needs while utilizing technologies.

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