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Sindy Rios-Yepes, Paula Cristofalo

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Evaluating the Implementation of the Liaison and Support System (LEA) at André Grégoire CHI: A Model for Integrating Obstetric Care in Vulnerable Populations

Author : Sindy Rios-Yepes, Paula Cristofalo

Introduction: The maternal mortality rate is a key health status indicator. Maternal health is largely impacted by social inequalities in health. Seine-Saint-Denis is the most unequal department in the Ile-de-France region. The André Grégoire Intercommunal Hospital Center (CHI) is a reference point in the field of obstetric care as well as in the identification and support of vulnerable pregnant women who live in this department. Within this context, the Maternity Unit created the midwife career representative system or Liaison and Support project (LEA) financed by the Regional Health Agency. The goal of this research paper is to assess the implementation of this LEA project in the André Grégoire CHI.

Methodology: We chose to use a qualitative study to assess the LEA project. We turned to an inductive qualitative approach using a constructivist paradigm. We used semi-structured interviews with open-ended questions. The patients who were selected had given birth in the André Grégoire CHI. We also plan to follow up with the patients after their hospitalization. We also conducted interviews with professionals in the Maternity Unit.

Results: A total of 36 interviews was conducted with 16 patients and 20 health care professionals. The age of the mothers ranged from 19 to 38. All the patients had health insurance. The patients who were interviewed acknowledged the quality of care they received in the Maternity Department. Social support is a positive condition in the treatment system of women. However, the COVID 19 crisis led to difficulties for the patients during the post-partum period. The Hospital Center is also recognized for its obstetric care by the midwives. The main challenges to implementing the LEA project were the lack of communication and the competition that we observed. The lack of human and financial resources also has a negative impact on the quality of work life. The LEA project has the potential to reduce the workload—including administrative—of the midwives. Finally, the city-hospital link still needs to be created.

Discussion: A managerial role is key if the LEA project is to succeed. The implementation of communication strategies in the Maternity Department is required. The merging of the LEA project and the Unit of Personalized support (UAP) is considered as a viable cooperation strategy. This merging would prevent redundancy. A communication campaign with independent midwives will also be necessary. A quantitative study is proposed in a second analysis. However, the financial situation of the CHI might prevent it from implementing this project.

Conclusion: The implementation of the midwife career representative system could improve the treatment system of patients, provided: the relay to the hospital is guaranteed and the communication with the city is effective. The proposed LEA project should ensure the managerial and the coordination of care aspects so that patients can enjoy a continuity of care after leaving the hospital.

Keywords: midwives, maternity care, midwifery, maternal health services, postpartum, postnatal care, maternal management care

Introduction

Maternal health is a significant public health concern, particularly in regions facing high social and economic inequalities. The maternal mortality ratio remains a key indicator of healthcare system performance, and in socially vulnerable regions, such as Seine-Saint-Denis, this ratio is disproportionately high (1). Social determinants, including poverty, language barriers, and limited access to healthcare, exacerbate maternal health challenges, leading to increased mortality and morbidity (2). The primary causes of infant mortality in the Île-de-France region from 2009 to 2013 included conditions occurring during the neonatal period, congenital malformations and chromosomal abnormalities, and sudden infant death syndrome (3). Seine-Saint-Denis has the highest rates in the region; for example, the mortality rate for congenital malformations was 1 per 1,000 LB compared to a regional rate of 0.6 per 1,000 LB (3). During the period from 2013 to 2015, Seine-Saint-Denis recorded a higher neonatal mortality rate (3.45‰) than the regional average (2.7‰) and the metropolitan France rate (2.4‰) (3). The post-neonatal mortality rate was also higher in Seine-Saint-Denis, with a rate of 1.3‰ from 2013 to 2015, compared to 1‰ for mainland France (3).

The André Grégoire CHI, a leading institution in obstetric care is implementing an experimental program, the Liaison and Support Project (LEA). This initiative includes two pathway liaison midwives (midwife referent) designated as primary contacts. The LEA program offers patients a link to a healthcare professional who assesses and recommends the type of support they may need. This approach provides a personalized care pathway, and the liaison midwife serves as a resource in cases of complications (such as prenatal depression) or new life events (such as separation) (4). This program aims to strengthen the connection and coordination between community healthcare providers and the hospital (5,6). The midwife referent is the connection point of various professionals, ensuring that expectant parents receive comprehensive medical care and an optimal pathway for birth and parenting preparation.

This study aims to evaluate the implementation and effectiveness of the LEA program in improving maternal health outcomes in vulnerable populations. Specific objectives include identifying the communication and coordination strategies employed between hospital staff and community health providers and evaluating the experiences of patients and healthcare professionals with the LEA program, focusing on care quality, continuity, and challenges.

Methodology

Study Design

Given the exploratory nature of the study, we adopted a qualitative research approach to evaluate the implementation of the LEA program. Quantitative data were limited due to the ongoing deployment of the program, making a qualitative approach most relevant for capturing the complex interactions among various stakeholders—both within and outside the maternity hospital—and the socio-health trajectories of the mothers involved.

This study employed a mixed-methods approach (7,8), integrating qualitative data collection with network and adaptive analysis (9,10) and communication theory frameworks (11–15). The study draws on Duncan Watts' network theory (9,16) to map the relationships between healthcare providers, patients, and external actors, and cognitive theory (12) to analyze how information is transmitted and processed within this network. Game theory was used to model the strategic interactions and decision-making behaviors of various actors within the LEA program, including midwives, patients, community-based healthcare providers, and social workers.

Qualitative Research Approach

An inductive qualitative approach was utilized within a constructivist framework. We conducted two types of complementary data collection methods: semi-structured interviews and non-participant observations. Semi-structured interviews with open-ended questions were conducted with patients and healthcare professionals to gain in-depth insights into the experiences and perceptions within the maternity unit.

Interviews with Patients

Participants included women who had delivered at the André Grégoire maternity CHI. Patients were identified by the Care midwife referent as having been supported by an ambulatory midwife after discharge. Only those speaking French, Spanish, or English were included, and all participation was voluntary and confidential. Exclusion criteria included women who had already a follow-up organized, non-French/Spanish/English speakers, and those unwilling to participate. We obtained permission for a follow-up phone call 15 days post-discharge, which was coordinated through an anonymized SMS sent in advance.

Interviews with Healthcare Professionals

Additional interviews were conducted with healthcare professionals engaged in the LEA program's design and implementation. Participation was voluntary, and confidentiality was maintained throughout. To deepen our analysis, we also engaged in shadowing healthcare professionals, primarily midwives, and attended staff meetings in the maternity unit.

Observational Data

Non-participant observations were carried out during clinical and administrative staff meetings to further contextualize and understand the program's operational and organizational dimensions.

Data Analysis

We conducted a thematic analysis to identify, analyze, and report themes across the data. Two coding frameworks were developed in Excel for data triangulation, allowing us to integrate all data sources, including interviews, observations, and relevant documentation. Transcriptions of patient interviews were initially coded according to maternity Unity-identified issues, with additional thematic analyses based on emerging predominant themes. The interviews explored themes related to care coordination, communication dynamics, resource challenges, and the patient experience within the system. Participant observation during hospital staff meetings and patient consultations enriched the qualitative data.

The interviews and observations were conducted between February and May 2021.

Reliability and Credibility

To enhance the reliability of our findings, audio recordings and transcriptions were systematically analyzed. Select quotations are included in the results section to support the credibility of the data interpretation and provide readers with a clear link to participant perspectives.

Results

We conducted 16 interviews with patients from the maternity unit. The age of the mothers ranged from 19 to 38 years. All patients had healthcare coverage, either through full reimbursement by a health insurance (Assurance Maladie) or universal health protection (PUMA).

Most participants (n=11) resided in Seine-Saint-Denis at the time of the study. However, two women had moved after discharge: one now lives with her partner in Val-de-Marne, and another relocated to her mother's residence in Paris post-delivery. Two additional families live in Chilly-Mazarin and Fontenay-sous-Bois, neighboring Seine-Saint-Denis.

In terms of nationality, 12 participants were French, while 4 had other nationalities, including Bangladeshi, Senegalese, Slovak, and Tibetan. Patient backgrounds were notably diverse, with two participants born in Armenia, two of Malian descent, and one originally from Romania. Additionally, two women were from French overseas territories (the Antilles and Martinique).

Most participants were either married or cohabitating with their partners. However, one participant, whom we refer to as Caroline for confidentiality, reported experiencing domestic violence, highlighting a vulnerable subgroup within the sample. Two of the interviews were conducted in English to accommodate linguistic diversity.

We conducted 20 interviews with healthcare professionals, including 10 hospital midwives, 4 private midwives, 2 physicians, 1 social worker, 1 pediatric nurse, and 2 external stakeholders from the André Grégoire CHI.

Interdependence and Cascading Effects of Resource Constraints

The study revealed that resource constraints within the LEA program set off cascading effects that impact multiple aspects of maternal care delivery (10) :

Resource Shortages as Catalysts for Systemic Bottlenecks: Due to limited staffing, particularly among midwives and administrative support, 60% (12 out of 20) of healthcare providers interviewed noted that high patient loads often delayed care handoffs, leading to missed or delayed follow-ups. This effect was particularly evident during peak periods when resources were stretched thin, making it challenging for providers to maintain continuity of care:

“When patient numbers increase, everything slows down. We can’t communicate effectively with community providers, and follow-ups get delayed.” (Midwife, LEA program)

Adaptive Strategies and Flexibility in Care Delivery: The LEA program shows adaptive behavior, with healthcare providers modifying their routines and processes in response to fluctuating patient needs and workloads. Midwives, for example, prioritize clinical care over administrative tasks when patient loads increase, attempting to maintain patient contact despite limited resources.

Adapting Roles to Meet Patient Demand: To respond to patient needs during high-demand periods, 10 out of 14 of midwives reported adjusting their workflows by reducing administrative tasks or relying on informal, ad hoc communication channels. These adaptive strategies, while beneficial in the short term, created inconsistencies in care coordination, as follow-up information for community-based providers was not always conveyed promptly:

“We try to adjust, but we end up sacrificing communication with external providers, which isn’t ideal for continuity.” (Midwife, CHI André Grégoire)

Self-Organization and Informal Communication Channels: Complexity theory suggests that complex systems often exhibit self-organization, where actors spontaneously coordinate in the absence of formal directives (9,10). Within the LEA, informal communication channels emerged as a self-organizing mechanism to bridge gaps when formal protocols were insufficient.

Informal Coordination with Community-Based Providers: Due to insufficient structured communication protocols, midwives and community providers often relied on informal communication (e.g., phone calls, text messages) to ensure continuity of care for high-risk patients. 7 out of 14 of midwives interviewed noted that these informal channels were crucial for sharing timely updates and addressing patient needs, particularly when standard procedures were delayed:

“Sometimes, a quick text or call is all we have to ensure the community midwife knows what’s happening. Formal processes take longer than we can afford.” (Midwife, LEA program)

While these informal practices facilitated continuity in the short term, they also introduced variability in communication quality and consistency, underscoring the need for standardized but flexible communication channels.

Network Structure and Role Centralization

The network analysis (9,17) revealed a centralization of roles around hospital-based midwives, positioning them as the primary coordinators within the LEA program. Midwives acted as central nodes, bridging communication across different healthcare and community support networks, from hospital-based care to post-discharge follow-up with external providers. This centrality, however, also created bottlenecks.

Central Node and Bottlenecks: Midwives’ roles as central nodes contributed to their dual responsibilities, handling both direct patient care and extensive administrative work, which at times created bottlenecks. 10 out of 17 (60%) healthcare providers interviewed indicated that the concentration of coordination responsibilities on midwives strained their ability to provide thorough follow-ups, especially as they transitioned patients to community-based care:

“We’re responsible for everything from discharge planning to coordinating with external providers. It’s a lot to keep up with, especially when patient volume is high.” (Midwife, LEA program)

Weak Connectivity with External Actors: The network density analysis showed low connectivity between hospital and community-based midwives. 8 out of 20 healthcare providers (40%) reported that handoffs to community-based providers were often poorly coordinated, leading to weak points in postnatal care continuity. This gap was particularly concerning for vulnerable patients who needed more structured and frequent follow-ups:

“Once patients leave the hospital, we don’t hear back from the community midwives as often as we should, which complicates care continuity.” (Obstetrician, CHI André Grégoire)

Communication Barriers: Cognitive Mismatches and Information Retention

Thagard’s communication framework (12) highlighted the presence of cognitive mismatches and retention issues in the patient-provider communication process. Communication challenges affected patients’ ability to understand and remember critical postnatal care instructions, especially among non-native French speakers and individuals in socio-economically vulnerable situations.

Language Barriers and Cognitive Load: 8 out of 16 of patients interviewed reported that language was a barrier to understanding discharge instructions. This cognitive mismatch, particularly among immigrant patients with limited French proficiency, impacted their comprehension and retention of key information. One patient, for example, reported confusion regarding the importance of follow-up appointments due to unfamiliar medical terminology:

“The midwife explained everything, but I didn’t understand all the words. I felt embarrassed to ask her to repeat it.” (Patient, 28 years old, limited French proficiency)

Overwhelmed by Information Volume: The study found that 7 out of 16 patients (44%) felt overwhelmed by the sheer amount of information provided at discharge. According to Thagard, cognitive load — particularly in stressful or unfamiliar settings like postpartum discharge — can reduce a patient’s ability to process and retain information, impacting their confidence in managing postnatal care:

“They gave me so many instructions at once, and I was exhausted. I ended up forgetting most of it by the time I got home.” (Patient, 30 years old)

Gaps in Network Bridges and Transition Points

The transition period from discharge to community follow-up emerged as a critical point of vulnerability, where fragmented communication led to delays in patient care.

Delay in Follow-Ups: 31% of patients (5 out of 16) reported that their first post-discharge follow-up visit was delayed, particularly during the COVID-19 pandemic when community visits were restricted. The lack of direct links or feedback channels between hospital and community providers created bottlenecks that left patients without support in critical early postpartum days:

“I didn’t receive any follow-up until two weeks after discharge. I was uncertain about what to expect and felt anxious without support.” (Patient, 33 years old)

Limited Social Worker Engagement: Despite the critical role of social workers in addressing socio-economic challenges, the network analysis revealed minimal connectivity between medical staff and social work services. Only 20% of healthcare providers (4 out of 20) reported consistent engagement with social workers. This underutilization represents a missed opportunity to leverage social workers as key actors in supporting vulnerable patients, especially during transitional periods.

Strategic Decision-Making and Role Conflicts

There are conflicts in role allocation and resource distribution often led to non-cooperative behavior among healthcare providers, particularly at transition points. This non-cooperative dynamic arose when hospital midwives felt overburdened by administrative tasks and thus were less motivated to coordinate with external actors.

Nash Equilibrium in Workload Distribution (17,18) : A Nash Equilibrium was observed when midwives allocated time primarily to tasks that aligned with their clinical priorities (such as patient care) over administrative duties. 60% (8 out of 14) of midwives interviewed noted that this division was a conscious choice to avoid overwhelming administrative work, even if it limited external communication:

“We prioritize direct care because it’s where we’re needed most. If we try to balance everything equally, it’s just too much.” (Midwife, LEA program)

Cooperation Among Hospital Staff vs. External Providers: The game theory framework showed limited cooperation between hospital and community-based providers, especially in cases requiring frequent follow-ups. 8 out of 20 healthcare professionals (40%) noted that competitive behaviors and unclear communication protocols impacted the willingness to collaborate, resulting in inconsistent patient handoffs and reduced follow-up quality.

Patient Outcomes: Mental Health and Breastfeeding Support

Despite the network and communication challenges, the LEA program showed positive effects on certain patient outcomes, particularly in postpartum mental health support and breastfeeding assistance.

Postpartum Mental Health Interventions: Through the LEA program, 38% of patients (6 out of 16) accessed mental health support for postpartum depression. By identifying these needs early, hospital-based midwives acted as effective central nodes, facilitating referrals to mental health services that helped patients manage symptoms:

“I was feeling really low, and the midwife noticed it during follow-up. She referred me to a counselor, and it was very helpful.” (Patient, 30 years old)

Breastfeeding Support: Another area of positive impact was breastfeeding support, with 5 out of 16 patients (31%) receiving guidance that helped them continue breastfeeding. This continuity of care underscores the benefits of having midwives as central nodes in the network, as they were able to connect patients with tailored support resources during post-discharge follow-ups.

Discussion

This evaluation of the Liaison and Support program (LEA) at the André Grégoire Intercommunal CHI offers a comprehensive understanding of the program's challenges, strengths, and areas for improvement. By incorporating different perspectives (9–11,13,14,16,17), the analysis reveals the multi-layered dynamics at play in providing care for vulnerable pregnant women.

This study examined how the LEA's network structure influences care coordination and continuity. Centralization around midwives was evident, positioning them as essential nodes within the network for handling both patient care and administrative responsibilities (17). While centralization provides consistency, it also creates bottlenecks that limit timely information sharing and continuity of care, especially during patient handoffs from hospital-based care to community providers. Limited connectivity between hospital midwives and community providers results in delayed or missed follow-up care, an issue of particular concern given the high social risk in Seine-Saint-Denis, where the poverty rate is twice the national average (28% compared to 14.1% in 2017) (1). Improved network connectivity—perhaps through a digital communication platform accessible to both hospital and community providers—could alleviate bottlenecks and improve care continuity, particularly for high-risk patients. Redistributing certain administrative duties or using AI tools to dedicated transition coordinators or administrative staff could reduce the burden on midwives and improve overall efficiency. Such decentralization would facilitate better coordination without overwhelming a single node, making the network more resilient and adaptable.

Our analysis revealed significant cognitive mismatches and information retention issues that hinder patient understanding of critical post-discharge instructions (11,12). Approximately 50% of patients reported difficulty comprehending medical information due to language barriers, with non-native French speakers struggling to retain postnatal care instructions. Simplifying communication by using visual aids, translated materials, and follow-up calls could help mitigate cognitive mismatches, improve patient understanding, and support better postnatal care adherence, particularly for high-risk groups. Minsky focuses on the emotions creation during the learning process (14).

This study provided insights into how resource constraints and role expectations (12,13) shape decision-making and cooperation within the LEA (10). Midwives often prioritize clinical duties over administrative follow-up tasks to manage their workload, reflecting a Nash Equilibrium (16,17) where

midwives optimize their time under resource constraints. However, this prioritization compromises cooperation with community providers, particularly during patient transitions. Introducing incentives for cooperation—such as professional recognition for effective communication or dedicated time allocations for inter-provider coordination—could shift the system toward a more cooperative model, enhancing continuity of care.

Our sheds light on how social and institutional constructs shape the expectations and behaviors within the LEA program (10). In this context, certain institutional expectations and constructs influence role performance and decision-making among healthcare providers (11–13). The institutional structure of the André Grégoire CHI positions midwives as central to care coordination, balancing clinical duties with significant administrative responsibilities. However, this institutional expectation frequently exceeds practical capacity, especially in caring for patients with complex social or medical needs. By clarifying and redistributing roles, the LEA program could create greater flexibility and realistic expectations within the institutional framework, reducing midwife overload and promoting more balanced task allocation.

Despite the critical role of social workers in supporting patients facing socio-economic challenges, the LEA program has not fully integrated social workers into the care pathway. This institutional gap limits the LEA's capacity to address social determinants of health. Formalizing the role of social workers within the LEA framework could ensure more comprehensive and proactive care, particularly for vulnerable patients.

Resource constraints set off cascading effects because of the approach of the hospital economic activity (19) that impact multiple aspects of care delivery within the LEA. When resources are stretched thin, delays in patient handoffs and follow-up care increase, particularly during peak demand periods. The cascading effects from limited resources demonstrate how interconnected each element of the LEA program is, affecting the overall quality of care and, potentially, maternal mortality outcomes (10). In response to structural gaps, midwives and community providers often self-organize, using informal channels like phone calls or text messages to ensure continuity of care. While these adaptive strategies temporarily bridge communication gaps, they also introduce variability and inconsistency in care. Establishing formal yet flexible communication protocols could enhance the system's adaptability and reduce reliance on informal, unstandardized communication.

Recommendations for System Improvement

The study's findings, viewed through these theoretical frameworks, suggest targeted recommendations to enhance the LEA program's effectiveness and address the structural, communicative, and strategic challenges identified:

- **Strengthen Provider Connectivity:** Implement a shared digital platform for real-time patient updates between hospital and community providers, reducing the over-reliance on midwives as the primary coordinators.
- **Simplify Patient Communication:** Provide culturally adapted and linguistically simplified resources such as visual aids, translated instructions, and structured follow-up calls to reduce cognitive load and improve post-discharge adherence.
- **Redistribute Administrative Responsibilities:** Assign specific administrative tasks to transition coordinators, allowing midwives to concentrate on clinical duties and improving network efficiency.
- **Formalize Social Work Integration:** Embed social workers within the LEA framework to address socio-economic determinants, providing a more comprehensive approach to maternal care.

- Incentivize Cooperation: Create incentives for inter-provider collaboration, potentially through recognition programs or dedicated coordination time, encouraging a more cooperative dynamic.
- Implement Feedback Mechanisms: Develop formal feedback loops between hospital and community providers to enhance the system's adaptive capacity and encourage continuous improvement.

This study is limited by its qualitative nature and the specific socio-economic context of Seine-Saint-Denis, which may not fully generalize to other settings. Future research could adopt a quantitative approach to validate these findings, possibly incorporating longitudinal data to evaluate the LEA program's long-term impact on maternal mortality rates. Further research into institutional and adaptive healthcare models may provide valuable insights for replicating and scaling the LEA model in similarly vulnerable regions.

Conclusions

The LEA program at the André Grégoire CHI has shown potential in supporting vulnerable populations but is hindered by challenges related to resource constraints, communication barriers, and unclear role definitions. Addressing these issues through targeted reforms could enhance the program's effectiveness and enable it to meet its objective of providing comprehensive and coordinated care for vulnerable pregnant women. A stronger, more resilient LEA program would contribute significantly to reducing maternal health disparities in the Seine-Saint-Denis region.

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