Optimizing Midwives' Uptake of a Provincial Perinatal Data System: Lines of Thinking

by Caroline Paquet, RM, BHSc, MSc; Damien Contandriopoulos, PhD; and Régis Blais, PhD

ABSTRACT

In Quebec, the perinatal data available is fragmentary, comes from a number of different databases that are not well integrated, and offers little information regarding the quality of care and services provided by midwives. In 2012, the Ministry of Health and Social Services (MSSS) asked midwives to contribute to the information system on users of local community services centers (I-CLSC). The I-CLSC system is, above all, an administrative monitoring tool; however, it makes it possible to document certain aspects of midwifery practice. Using literature from the fields of knowledge transfer and modification of clinical practices, this article aims to explore under which conditions and to what extent the I-CLSC system could help document midwifery practice. Given the context and the nature of the I-CLSC tool, the success of its uptake by midwives involves the simultaneous reinforcement of its acceptance by midwives, and the provision of support while they use it, so that the data collected is reliable and solid. Training and feedback activities constitute promising avenues in terms of attaining these goals. Literature suggests that, without adequate support, there is a high risk that data fed into the I-CLSC system by midwives will be unreliable. If that is the case, the individual time and effort invested in this system by midwives are unlikely to be cost-effective for either the midwives themselves or midwifery in general.

KEYWORDS

midwives, integrated health information system, knowledge transfer

This article has been peer reviewed.

INTRODUCTION

Since 1999, the Quebec public health system offers healthy pregnant women the option of having a midwife monitor them and help them give birth in a birthing centre, a hospital (since 2004) or at home (since 2006).[1] However, while the global trend is to computerize patient records and integrate them into systems of integrated clinical and administrative databases, no structured data on midwifery practice is currently being collected in Quebec. Several contextual and historical factors make it difficult to develop and implement this kind of information gathering system. In 2011, the Ministry of Health and Social Services (MSSS) implemented the information system on users of local community services centres (I-CLSC) in various health and social services centre (CSSS) in Quebec, and asked midwives working in those centres to contribute to it.[1] However, some of them seem reluctant to contribute to the system because they fear that this data will be used to implement changes to the care and services they provide. Inversely, others believe that this data could be used as leverage with policymakers in the Quebec health network in order to support, promote and advocate their practice. One of the main objectives of this discussion is to examine to what extent the perinatal data collected using the I-CLSC system can help document midwifery practice. A second objective is to suggest possible interventions in order to optimize the use of the I-CLSC system by midwives. This discussion is mostly based on models derived from knowledge transfer literature.

Perinatal data collection in Quebec

Unlike some other Canadian provinces, Quebec has no perinatal monitoring program.[2] In order to remedy the lack of a provincial perinatal monitoring system that would take into account the care and services provided by midwives, several of them have adopted, over the years, a number of different frameworks of collection of data that is not integrated into a common system. However, the exploratory analysis by Gagnon & Hébert (2010), using two of the most similar data collection frameworks, showed shortcomings in the nature, quality and reliability of the data collected.[3] To this day, the assessment of midwifery practice using pilot projects (1994-1995) prior to the legalization of the profession (1999) in Quebec is the only source of provincial data that could be used to create and disseminate knowledge on the quality of the care and services provided by midwives in Quebec.[4]

The perinatal data available in Quebec is fragmentary and comes from various, lightly integrated databases: the record of living births, deaths and stillbirths (Institut de la statistique du Québec), the record of medical procedures of the Régie de l'assurance maladie du Québec (RAMQ), the data maintenance and processing system for the study of hospital patients (MED-ÉCHO), and the information system on users of local community services centres (I-CLSC).[5,6,7] However, since midwives are not paid on a fee-for-service basis, the RAMQ record contains no data regarding procedures performed by midwives. Also, midwifery practice is not recorded in the MED-ÉCHO system, because, on the one hand, 98% of women monitored by a midwife give birth outside the hospital, and on the other, the remaining 2% who choose to give birth in a hospital setting under the supervision of a midwife are not usually accounted for administratively in terms of admissions.[8] The I-CLSC system, for its part, caters to caregivers working in a CSSS setting, to which midwives are administratively attached in Quebec.[5,6] That being said, the midwives' uptake of the system is not systematic, and data collection practices are not homogeneous because they rely on individual willingness to contribute. Obstacles identified informally included a certain amount of skepticism toward the relevance of the collected data, wariness toward the way the collected information might be used, and the time involved in inputting data.

The I-CLSC data collection system

The I-CLSC system (1988) was created specifically to support CSSS caregivers and managers in the monitoring, administration and optimization of services provision. It is made up of a main module (SIC plus), which allows the compilation of information about the population using the services and the procedures performed by the caregivers working in a CSSS setting, and of several secondary applications modules (vaccination, record loan, radiology exams and results, appointments, Impromptu report and SIC plus).[5] In April 2012, following the addition of pre- and postnatal follow-up functionalities, the MSSS invited midwives to contribute to the I-CLSC system by collecting daily information mostly related to the duration, the nature and the location of the consultations and procedures performed.[5] In December 2012, following the work of an advisory committee made up of one representative of the MSSS and two midwives, a set of intrapartum clinical variables and a few pre- and postnatal clinical variables were integrated into the I-CLSC system.[5]

The MSSS strongly encourages all midwives to systematically contribute to this new integrated information gathering effort for the I-CLSC system. The proposed objective is to get a picture of the nature and volume of the services provided by midwives (including the reasons why care was transferred to a physician and the number of times it happened), the deliveries performed under the supervision of a midwife, and the duration and mode of feeding of newborns.[5] However, accessibility to this data for research purposes is complex. Only anonymous data (that does not allow the identification of the patients or service provider) from the I-CLSC system appearing in standardized statutory reports, which is transferred monthly to the RAMQ via the provincial pooled database, is available to researchers and personnel from the MSSS, health and social services agencies, and the Institut national de santé publique du Québec.[7] The reports produced mainly aim at comparing CSSS centres at the regional and provincial level.[7] Given that only midwives will be collecting intrapartum clinical

data, it seems possible that the current mechanisms used would make it possible to identify and document the care and services provided by this professional group.

The I-CLSC system is, for the most part, an administrative follow-up tool that lacks the characteristics of a practice support tool. Comparisons between the I-CLSC system and the basic midwifery data required and identified by different midwifery organizations in Canada in order to support and monitor midwifery practice clearly illustrate this point.[9] Moreover, the nature of the data collected using the I-CLSC system is not sufficient to assess the quality of the care and services provided by midwives according to a "structure-process-result" approach.[10]

Until an alternative to the I-CLSC data gathering system is developed, which would satisfy the needs of midwives in Quebec and Canada, midwives must consider the impact of their contribution (or lack thereof) to the I-CLSC system. As this discussion has highlighted, the I-CLSC system lacks the characteristics of a clinical practice support tool. At the same time, its current implementation in the midwifery field of practice still constitutes an opportunity, which can be seen as a first step toward the development of a more complete and more suitable system. In this context, we see three options. The first one would see the midwives refusing to contribute to the I-CLSC system while waiting for the creation of a better platform. This option relies on a critique of the relevance of collecting mostly administrative information for each daily meeting, consultation and procedure. Also, the time needed to contribute to the I-CLSC system on a daily basis might cut into the services provided to patients. The second option is to support a selective uptake of the I-CLSC system by midwives which focuses on those aspects of practice that they deem the most relevant. Overall, midwives do not seem to have a problem with the possibility presented by the I-CLSC system of collecting perinatal clinical data pertaining to deliveries performed under the supervision of a midwife. The final option is to support midwives during the implementation of all aspects of the I-CLSC system. From a governance structure standpoint, this seems to be the most desirable approach. In this case, the main challenge has to do with feasibility. In order to have added value, an information system must be able to rely on initial data that is both reliable and valid. So, if the feasibility and the validity of the information gathering initiative depend on the good will of professionals who are not particularly convinced that the data brings added value, and who are not well supported in their use of the interface, it is logical to think that the data collected will be fragmented, biased and not particularly reliable. In this context, our appreciation of the evolution of the sociosanitary system in Quebec, of the development of midwifery, of the opportunity presented by the implementation of the I-CLSC system, and of feasibility considerations leads us to believe that the second option is currently the most appropriate. The following paragraphs will cover three elements that we believe are important for facilitating and supporting a selective uptake of the I-CLSC system by midwives. In actuality, the caveat regarding the practical feasibility of the third option and its acceptance by midwives also applies to the second option, but to a lesser extent in the case of a selective uptake. Ensuring the success of the implementation of the I-CLSC system, even a selective one, then involves the simultaneous reinforcement of its acceptability by users and the offer of support regarding the use they will make of the system.

The efficiency of training workshops increases when they centre around targeted objectives determined in advance

Supporting the I-CLSC system implementation

Our analysis of the conditions needed to successfully implement the uptake of the I-CLSC system by midwives relies mostly on the data published in the fields of knowledge transfer and modification of clinical practice.

Acceptability

Given the context within which the I-CLSC system is being implemented and its very nature, the first factor that we feel is fundamental is the uptake of the I-CLSC system by the users. Several analyses suggest that the uptake of an innovation is made considerably easier when users see that the end point of the innovation conforms to their values and aligns with their preferences.[11-21] By the same token, studies on audit and feedback strategies in the field of modification of clinical practices[22-24] suggest that professionals are very hesitant to take part in data gathering if they feel that it will

be used as a tool to hierarchically control their practice. It is important to reiterate that some midwives might still feel wary because of the controversies that followed the first studies on their practice.[4] Given that context, the issue of acceptability is probably the most fundamental determinant of success for the implementation of the I-CLSC system.

The main mechanism of action in this case is the reinforcement of convergence between the objectives of the I-CLSC system implementation and the basic values of the profession. For example, if it is possible to document in what way the collected data can improve the care provided to women or support the development of midwifery, it is clear that user acceptance will be reinforced. Inversely, if the only result perceived by the users is the reinforcement of administrative monitoring capacities, it is unlikely that this will garner much enthusiasm. Studies in psychology have also shown that a given job could be perceived very differently and be performed with more or less goodwill depending on how the person doing the job perceived its utility and relevance.[25,26] From a broader standpoint, the basic idea is to give meaning to the effort necessary to systematically and reliably enter the required information in the I-CLSC system.[27,28] What is needed here, therefore, is both a communication approach aiming at structuring the perceptions of users,[27, 29, 30] as well as a feedback strategy that will let them see for themselves how the I-CLSC system can help them reach the ends that are important to them. It is important to remember that, unlike an actual computerized clinical record system, whose maintenance is part and parcel of clinical work, the I-CLSC system relies on ex post data entry. Consequently, users have to invest both time and effort in order to keep the system running. If midwives fail to perceive any benefits, then the distribution of costs (for midwives) and dividends (for system managers) lacks balance.

Training and feedback

The second factor we feel is essential for the implementation of the I-CLSC system is the deployment of training and feedback activities, so that midwives can enter data in the I-CLSC system homogeneously and systematically, and that the knowledge generated is a faithful representation of their practice. The added value that the I-CLSC system can offer midwives is the availability of reliable data concerning components of their practice. Also, when knowledge is generated in order to satisfy the needs and interests of managers, it is more likely to influence decision making, whether the data is reliable or not.[15,29] So, once midwives start contributing to a data gathering system, it is important that the picture painted by this data be valid, and that the source data be reliable. According to the knowledge transfer literature, the best approach to adopt in order to support midwives with regards to data production is the integrated combination of a set of converging interventions.[22,31-36] However, the implementation of an integrated strategy such as this is both complex and costly. On the other hand, the nature of the context (relatively limited number of midwives, convergence of midwives' values, simple and specific intervention, existence of efficient communications channels, etc.) suggests that even a more focused knowledge transfer strategy might bring significant results.[22,31,32,35] In our view, training workshops combined with feedback would be the most promising strategy to implement in order to establish new practices. Despite its popularity, the passive dissemination of information (guides, conferences), when used on its own, has not been very efficient in terms of modification of practice.[32-34,36] The efficiency of training workshops increases when they centre around targeted objectives determined in advance, are adapted to the needs of the target population, are interactive, are presented to small groups by good communicators or leaders in the field, and are followed by positive reinforcement activities.[31,34] Along with this training, exploratory statistical analyses and/or targeted validations (comparing midwives' records to I-CLSC data) would help identify and pinpoint deficiencies, and provide midwives with feedback. Feedback (written or verbal) is relatively effective, especially when it is provided repeatedly, within a reasonable amount of time, encourages midwives' participation, and does not involve hierarchical control.[24] It would also act as an incentive for users, and increase the individual will to contribute to the I-CLSC system, in that it would give midwives access to preliminary data on their practice for the targeted components.

CONCLUSION

Despite its inherent limits, the uptake of the I-CLSC system by midwives in Quebec constitutes an opportunity to document some of the components of their practice, more specifically those that pertain to the intrapartum period. Ultimately, the objective remains the development and implementation of an information system that would make it possible to document and support midwives'

clinical practice, and to contribute to the quality of care (structure, process, results). In the meantime, the uptake of the I-CLSC system by midwives must be homogeneous, and the collected information must be reliable and solid so as to prevent, among other things, administrative decisions structuring the provision of services being based on incomplete or faulty information. As we have explained, in order to support midwives' contribution to the I-CLSC system, it is necessary to solidify midwives' acceptance of it. Also, midwives must remember that without the provision of adequate support toward the implementation of a data gathering system, literature suggests that there is a high risk that the collected information will not be reliable or solid. If that is the case, the individual time and effort invested by midwives in order to contribute to a data gathering system might not be very cost-effective for either the midwives or the profession itself. The implementation and assessment of interventions, including training and feedback to facilitate midwives' systematic and homogeneous uptake of the I-CLSC system, constitute learning opportunities that will pave the way to the future.

REFERENCES

1. Beauchemin M., Gagnon R. L'accouchement en centre hospitalier avec une sage-femme au Québec. CJMRP.2009;8(3) : 12-19.
2. Massey KA, Magee LA, Dale S, Claydon J, Morris T, Von Dadelszen P. A current landscape of provincial perinatal data collection in Canada. J Obstet Gynaecol Can. 2009;31(3):236-46.
3. Hébert E, Gagnon R. The « maison de naissances » space of promotion of the normal in the maternity experience.Statistics overwiew of 2 maisons de naissances 2000. Paper presented at the 10th annual conference of the Canadian Association of Midwives; 2010, Oct 25-26, Québec, CA.
4. Blais R, Joubert P.Evaluation of the midwifery pilot projects in Quebec: an overview. Can J Public Health. 1999;91(1):I. I-4. 20.
5. Ministère de la Santé et des Services sociaux (MSSS). I-CLSC/SIC-SRD Guide d'implantation fenêtre périnatalité et bébé. Québec : MSSS; 2012.
6. Piedbœuf B, Montreuil S. Les outils québécois de collecte d'information en périnatalité. Santé, Société et Solidarité. 2004;3(1):171-80.
7. Ministère de la Santé et des Services sociaux (MSSS). Cadre normatif du système d'information sur la clientèle et les services des CLSC (I-CLSC). Québec : MSSS; April 2009.
8. Ordre des sages-femmes du Québec (OSFQ). Statistiques. Maia Express (Internet) Winter 2012. (cited 2013 March 27); (8 pages) Available from:http://www.osfq.org/wp-content/uploads/2012/12/Maia-decembre-2012.pdf
9. Darling L, Hutton, E.K, O'Brien, B., Paquet,C, Robinson, K., Vedam, S, et al. Canadian Minimum Midwifery Dataset Steering Committee. Goals, objectives and guiding principles. 2011. (unpublished material).
10. Donabedian A. The quality of care. JAMA. 1988;260(12):1743-8.
11. Bacharach SB, Bamberger P, Mundell B. Strategic and tactical logics of decision justification: power and decision criteria in organizations. Hum Relat. 1995;48(5):467-88.
12. Beyer JM, Trice HM. The utilization process: A conceptual framework and synthesis of empirical findings. Adm S Q. 1982:591-622.
13. Weiss C. The many meanings of research utilization. Public Adm Review. 1979:426-31.
14. Cialdini RB. Harnessing the science of persuasion. Harvard Bus Rev. 2001;79(9):72-81.
15. Brunsson N. The Irrationality of Action and Action Rationality: Decisions, Ideologies and Organizational Actions. J Manag Stud. 1982;19(1):29-44.
16. Greenhalgh T, Robert G, Macfarlane F, Bate P, Kyriakidou O. Diffusion of innovations in service organizations: systematic review and recommendations. Milbank Q. 2004;82(4):581-629.
17. Rogers EM, Shoemaker FF. Communication of Innovations: A cross-cultural approach. New York: Free-Press;1971.
18. Roger EM. Diffusion of innovations. New York: Free Press;1995.
19. Havelock RG. Planning for innovation through dissemination and utilization of knowledge: Centre for Research on Utilization of Scientific Knowledge, Institute for Social Research, University of Michigan; 1969.
20. Greenhalgh T, Robert G, Bate P, Kyriakidou O, Macfarlane F, Peacock R. How to spread good ideas. A systematic review of the literature on diffusion, dissemination and sustainability of innovations in health service delivery and organisation. London: Report for the National Co-ordinating Centre for NHS service Delivery and Organisation R & D; 2004.
21. Polanyi, M. Personal Knowledge. Chicago: The University of Chicago Press; 1974; p18-65.
22. Oxman A, Thomson M, Davis D, Haynes R. No magic bullets: a systematic review of 102 trials of interventions to improve professional practice. CMAJ. 1995;153(10):1423-31.
23. Boaz A, Baeza J, Fraser A. Effective implementation of research into practice: an overview of systematic reviews of the health literature. BMC research notes. 2011;4(1):212.
24. Robertson R, Jochelson K. Interventions that change clinician behaviour: mapping the literature. King's Fund, London; 2006.
25. Pfeffer J, Salancik G. The External Control of Organizations: A resource Dependence Perspective. Stanford: Stanford University Press; 2003.
26. Pallak MS, Sogin SR, Van Zante A. Bad decisions: Effect of volition, locus of causality, and negative consequences on attitude change. J Pers SocPsychol. 1974;30(2):217-27.
27. Weick KE. Sensemaking in organizations.Thousand Oaks: Sage Publications; 1995.
28. Davis JH, Schoorman FD, Donaldson L. Toward a stewardship theory of management. Acad Manag Rev. 1997;22(1):20-47.
29. Majone G. Evidence, argument, and persuasion in the policy process. New Haven: Yale University Press; 1989.
30. Milbrath LW. Lobbying as a communication process. Public Opin Q. 1960;24(1):32-53.
31. Prior M, Guerin M, Grimmer-Somers K. The effectiveness of clinical guideline implementation strategies–a synthesis of systematic review findings. J Eval Clin Pract. 2008;14(5):888-97.
32. Oxman A, Flottorp S, Silagy C, Haines A. An overview of strategies to promote implementation of evidence based health care. In Silagy C., Haines, A. eds .Evidence Based Practice in primary Health care. London: BJM books: 2001.
33. Ivers, N., Jamtvedt G, Young J, Odgaard-Jensen, J., French, SD., O'brien M, et al. Audit and feedback: effects on professional practice and health care outcomes. Cochrane Database Syst Rev. 2012;6. CD000259.

34. Grimshaw JM, Shirran L, Thomas R, Mowatt G, Fraser C, Bero L, et al. Changing provider behavior: an overview of systematic reviews of interventions. Med Care. 2001.
35. Grimshaw JM, Eccles MP, Walker AE, Thomas RE. Changing physicians' behavior: what works and thoughts on getting more things to work. J Contin Educ Health Prof. 2002;22(4):237-43.
36. Thomas L, Cullum N, McColl E, Rousseau N, Soutter J, Steen N. Guidelines in professions allied to medicine. Cochrane Database Syst Rev. 1999;1. CD000349

AUTHOR BIOGRAPHIES

Caroline Paquet, SF, BHSc, MSc, *is a professor of midwifery at the undergraduate level. She has practiced as a midwife in Ontario, Nunavik and Quebec, and contributed to the creation of a birthing centre in Nicolet (Quebec). She chairs the Statistics Committee, and is a member of the Morbidity and Perinatal Mortality Study and Investigation Committee of the Ordre des sages-femmes du Québec. She is currently doing a doctorate in public health (with a focus on health management) at the Université de Montréal.*

Damien Contandriopoulos, PhD, *is a professor at the School of Nursing, a co-officer of the politics and ethics branch of the Université de Montréal Public Health Research Institute (IRSPUM), and a co-director of the knowledge transfer platform of the Quebec Nursing Intervention Research Network (RRISIQ). His research focuses mainly on the development of policies, the governance of sociosanitary systems and knowledge transfer.*

Régis Blais, PhD, *is full professor in the Department of Health Administration and researcher at the Université de Montréal Public Health Research Institute (IRSPUM). His research focuses on professional practices, the optimal use of health services (including medication), and patient safety.*

...suite à la page 13

Press; 2003.
26. Pallak MS, Sogin SR, Van Zante A. Bad decisions: Effect of volition, locus of causality, and negative consequences on attitude change. J Pers SocPsychol. 1974;30(2):217-27.
27. Weick KE. Sensemaking in organizations.Thousand Oaks: Sage Publications; 1995.
28. Davis JH, Schoorman FD, Donaldson L. Toward a stewardship theory of management. Acad Manag Rev. 1997;22(1):20-47.
29. Majone G. Evidence, argument, and persuasion in the policy process. New Haven: Yale University Press; 1989.
30. Milbrath LW. Lobbying as a communication process. Public Opin Q. 1960;24(1):32-53.
31. Prior M, Guerin M, Grimmer-Somers K. The effectiveness of clinical guideline implementation strategies–a synthesis of systematic review findings. J Eval Clin Pract. 2008;14(5):888-97.
32. Oxman A, Flottorp S, Silagy C, Haines A. An overview of strategies to promote implementation of evidence based health care. In Silagy C., Haines, A. eds .Evidence Based Practice in primary Health care. London: BJM books: 2001.
33. Ivers, N., Jamtvedt G, Young J, Odgaard-Jensen, J., French, SD., O'brien M, et al. Audit and feedback: effects on professional practice and health care outcomes. Cochrane Database Syst Rev. 2012;6. CD000259.
34. Grimshaw JM, Shirran L, Thomas R, Mowatt G, Fraser C, Bero L, et al. Changing provider behavior: an overview of systematic reviews of interventions. Med Care. 2001.
35. Grimshaw JM, Eccles MP, Walker AE, Thomas RE. Changing physicians' behavior: what works and thoughts on getting more things to work. J Contin Educ Health Prof. 2002;22(4):237-43.
36. Thomas L, Cullum N, McColl E, Rousseau N, Soutter J, Steen N. Guidelines in professions allied to medicine. Cochrane Database Syst Rev. 1999;1. CD000349

BIOGRAPHIES D'AUTEURS

Caroline Paquet, SF, BScS, MSc, *est professeure au baccalauréat en pratique sage-femme. Elle a travaillé à titre de sage-femme en Ontario, au Nunavik et au Québec et a participé à l'implantation de la maison de naissance à Nicolet (Québec). Elle est présidente du Comité statistique et membre du comité d'étude et d'enquête sur les mortalités et morbidités périnatales de l'Ordre des sages-femmes du Québec. Elle poursuit présentement des études doctorales en santé publique (option organisation des soins) à l'Université de Montréal.*

Damien Contandriopoulos, PhD, *est professeur à la Faculté des sciences infirmières, coresponsable de l'axe politique et éthique de l'Institut de Recherche en Santé publique de l'Université de Montréal (IRPSUM) et codirecteur de la plateforme transfert de connaissance du Réseau de recherche en interventions en sciences infirmières du Québec (RRISIQ). Ses recherches portent principalement sur l'élaboration des politiques, sur la gouverne du système sociosanitaire et sur le transfert de connaissances.*

Régis Blais, PhD, *est professeur titulaire au Département d'administration de la santé et chercheur à l'Institut de Recherche en Santé publique de l'Université de Montréal (IRPSUM). Ses travaux de recherche portent sur les pratiques professionnelles, l'usage optimal des services de santé, dont les médicaments, et la sécurité des patients.*