Conducting a National Survey of Women's Perinatal Experiences in Canada

Sampling Challenges

Beverley Chalmers, DSc(Med), PhD^{1,2}

Susie Dzakpasu, MHS^{1,3}

Maureen Heaman, RN, PhD^{4,5}

Janusz Kaczorowski, PhD^{4,6}

Hajnal Molnar Szakacs, MD, MSc³

ABSTRACT

In 1999, the Canadian Perinatal Surveillance System of Health Canada decided to undertake a national survey of Canadian women's experiences of their pregnancy, birth and postpartum care. The challenges encountered in selecting a representative sampling frame and developing a sound methodology for conducting a survey of Canadian women at six months after birth are addressed. We considered the advantages and disadvantages of six different sampling options. A sample based on the Census emerged as the optimal approach for providing the most reliable and representative sample.

MeSH terms: Health care surveys; women's health

RÉSUMÉ

En 1999, les responsables du Système de surveillance périnatale de Santé Canada ont décidé d'entreprendre une enquête nationale sur l'expérience des Canadiennes relativement à leur grossesse, à leur accouchement et aux soins postnatals qu'elles ont reçus. Nous présentons ici les problèmes rencontrés à propos du choix d'une base d'échantillonnage représentative et de l'élaboration d'une méthode valable pour mener une enquête auprès de Canadiennes six mois après leur accouchement. Nous avons tenu compte des avantages et des inconvénients de six formules d'échantillonnage, et celle fondée sur le recensement nous a semblé la meilleure pour obtenir l'échantillon le plus fiable et le plus représentatif.

1. Maternity Experiences Study Group Co-Chair

2. Dept. of Community Health and Epidemiology, Queen's University, Kingston, ON

3. Public Health Agency of Canada, Ottawa, ON

4. Maternity Experiences Study Group Member

5. Faculty of Nursing, University of Manitoba, Winnipeg, MB

6. Dept. of Family Medicine, McMaster University, Hamilton, ON

For the Maternity Experiences Study Group of the Canadian Perinatal Surveillance System, Public Health Agency of Canada.

Correspondence and reprint requests: Dr. Beverley Chalmers, P.O. Box 21091, RPO Princess, Kingston, ON K7L 5P5, Fax: 613-353-2298, E-mail: bevc@lincsat.com

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The Canadian Perinatal Surveillance System (CPSS) is a national health surveillance program undertaken by the Public Health Agency of Canada (PHAC).¹ In 1999, the Maternity Experiences Study Group (MESG) of the CPSS was established to conduct a national survey of Canadian women's experiences, attitudes and practices surrounding pre-conception, pregnancy, birth and the early months of parenthood.

Discussion of the challenges faced in selecting an appropriate sampling frame and developing sound methodology for the survey implementation might assist others attempting a similar study.²

Sampling considerations

The MESG's objective was to ensure sufficient and representative sample size to a) allow for provincial and territorial level analyses and b) conduct subgroup analyses for teenage mothers, recent immigrants to Canada and Aboriginal women. These subgroups were targeted because they are believed to be at increased risk of adverse pregnancy outcomes.³⁻⁵

In addition, we wanted to interview women at about six months after birth, as recommended by Brown and Lumley,⁶ to explore postpartum issues and to assess adherence to recommendations to exclusively breastfeed for six months.⁷

We also wanted to include women with variable language skills and educational levels, with different types of health care providers, and those having home births. We gave preference to face-to-face or telephone interviews rather than mail or internet questionnaires to minimize non-response. A pilot study using both interview methods revealed that women were satisfied with either method.⁸

Other considerations included cost, timeliness of data dissemination, data access and control of the study and its findings.

Potential sampling frames

Obtaining a representative sample across a country containing 10 provinces and 3 territories of wide-ranging size and enormous geographical distribution, and representing over 200 ethnic groups and 100 languages, was challenging. Six sampling options were considered.

1. Vital Statistics

Registration of births is mandatory in Canada.⁹ Regional birth registries are col-

TABLE I

Sampling Frame Options by Ideal Sample Requirements

Ideal Sample Requirements	Vital Statistics	Hospitals	Public Health	Commercial Lists	Clinicians	Census
Aboriginal mothers	No	No	No	No	No	Yes
Immigrant mothers	Yes	No	No	No	No	Yes
Teenage mothers	Yes	No	No	No	No	Yes
Provincial/territorial representation	Yes	Yes	Yes	Yes	Yes	Yes
Babies six months old at time of interview	9-12 months	Yes	Yes	Yes	Yes	6-9 months
Representative / unbiased sample	Yes	Yes	Yes	No	Uncertain	Yes

lated by Statistics Canada, taking as much as two to three years to include late registrations. Due to ethical and privacy concerns, the PHAC could not be provided with names and contact information from birth registrations. This meant that Statistics Canada and/or the provincial and territorial vital statistics registrars would have to contact women on behalf of the PHAC and could share these women's survey responses only with the latter's permission.

As coverage of births in the vital statistics system is virtually complete, the likelihood for a comprehensive sampling frame was high. Additionally, targeted sampling of teenage and immigrant mothers would have been possible.

Despite these strengths, there were limitations to this approach. For example, delays in collating birth registrations meant that the age of babies at the time of interviews would have been 9-12 months; payment for birth registration in some jurisdictions may have introduced bias in some population subgroups; and the participation of some jurisdictions was uncertain.

2. Census 2006

In exceptional circumstances, when a survey is deemed as providing knowledge that contributes to the well-being of Canadians, permission can be sought from the Chief Statistician of Canada to conduct it as a post-Censal survey. Participation in the Census is mandatory. Due to ethical and privacy concerns, the PHAC could not be provided with contact information from the Census necessitating a request to women to share their survey responses with PHAC.

This method allowed for the identification of all recently born babies in Canada at the time of the Census and provided the most reliable and representative sampling method. Using Census information also allowed for the recruitment of mothers whose babies would be 6-9 months old

and, potentially, for targeted sampling of our three subgroups.

3. Hospital Recruitment

Consideration was given to identifying newly delivered mothers in hospitals and requesting permission to interview them when their babies were 4-6 months old. This would have entailed obtaining a random sample of some 400 hospitals, seeking approval from their ethics committees, and relying on hospital staff to recruit mothers.

Interviews could have been conducted soon after delivery using this method. It would, however, have involved a challenging two-stage recruitment process of hospitals and then women that would likely have increased non-response. As some of the smaller provinces and territories have only one major delivery hospital, failure to gain collaboration from such a hospital would have meant exclusion of most mothers from that jurisdiction. Identification of the three subgroups would have been challenging and out-of-hospital births would have been excluded.

4. Public Health Units

Recruitment of mothers by public health nurses, when they contact mothers shortly after birth, was considered. Standardization of recruitment would have been difficult, as post-birth telephone calls and home visits are implemented to varying degrees across Canada. Additionally, this method would have required agreement from each public health unit and involved thousands of public health nurses in recruitment. Identification of the three subgroups would have been difficult if not impossible.

5. Commercial Lists

Consideration was given to purchasing commercial lists of new mothers. Examination of available lists indicated that coverage included, at best, about 70-80% of new mothers. It was also con-

sidered imprudent for a government agency to lend support, albeit indirectly, to a specific commercial entity by using their mailing list. Lists might also have reflected commercial bias and excluded women of less representative language groups or remote geographical locations. Identification of subgroups would have been impossible.

6. Clinicians

As skilled attendants care for most women in Canada during pregnancy and birth, identifying mothers through their caregivers was considered. This would have entailed recruiting a random sample of caregivers, who would be requested to recruit mothers. A review of studies utilizing this approach showed varying recruitment outcomes for both health care providers and subsequent patient recruitment.¹⁰⁻¹⁵

This method would have allowed for interviews to be conducted within a few months of delivery but the two-stage recruitment process would likely have increased non-response and recruitment error. Identification of the three subgroups would have been difficult.

Other considerations

Costs were not a discriminating factor as each method considered required a similar budget, in the region of \$2 million.

A short time to data availability was a 'want' rather than a 'must have', with scientific excellence taking precedence over timing of the study. Therefore costs and time to data availability were not key considerations.

Table I summarizes sampling options ranked by their optimum ability to meet the sampling requirements.

Selecting a sampling frame

Table I shows that the Census was the preferable approach. However, because the census is only conducted every five years,

this option was not available at the start of the study. Therefore our first approach was to collaborate with Statistics Canada and vital statistics birth registrars. Although this necessitated a delay in the timing of postpartum interviews, the ability to identify at least teenage and immigrant subgroups gave this method an advantage and offered the most potential for a representative sample. Additionally, there was an advantage to working with one organization (Statistics Canada), compared to liaising with hundreds of hospitals or public health units. Not all jurisdictions were able to collaborate, however, which led us to reconsider our approach.

Consideration was then given to recruiting new mothers through hospitals or using the census approach, as the proximity of the census now made this feasible. We used a Kepner-Tregoe decision and potential problem analysis to assist us in choosing our approach.¹⁶ This allowed for numerical values to be assigned to both desired study objectives as well as to the ability of possible designs to meet these objectives. We rated the scientific validity of the study, the ability to obtain an Aboriginal subgroup, and to secure provincial and territorial representation as the most significant variables to consider. The likelihood of successful completion of the study and the availability of fall-back methods if these became necessary were also weighted highly. The two designs considered resulted in similar Kepner-Tregoe evaluations, indicating that both approaches, while presenting differing pros and cons, would have similar outcomes in terms of overall success.

The Kepner-Tregoe potential problem analysis, which examines what could potentially go wrong with either of the proposed designs, clearly indicated that the Census was the optimal method because the risk of losing a large number of births in some jurisdictions was higher using hospital recruitment if any of the larger hospitals declined to participate. In addition, as the timing of the Census is externally determined, we had a limited window of opportunity to utilize this approach, while hospital recruitment could serve as a fall-back method.

CONCLUSION

The Census emerged as the optimal approach to sampling. Implementing the study using a post-censal survey commenced in 2004. Data collection was scheduled for October 2006, data analysis for 2007 and data publication for early 2008.

By exposing the issues that required consideration in the implementation of this survey, we hope to forestall difficulties for others attempting similar surveys.

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