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BC Healthy Connections Project

# British Columbia Healthy Connections Project:
## Scientific Evaluation of *Nurse-Family Partnership in Canada*

Nicole Catherine, MSc, PhD

For the BC Healthy Connections Project Scientific Team

January 13th, 2021

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***We celebrate***
***the First Peoples***
***on whose traditional territories***
***we are all privileged to live and work.***

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# Outline

- What is the BC Healthy Connections Project?
- Our progress to date
  - Participant characteristics upon trial entry
  - Retention protocol
  - Prenatal substance use findings
- Next steps and implications
- Acknowledgements
- Discussion

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# What is the BC Healthy Connections Project?

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# BC Healthy Connections Project

- Canadian randomized controlled trial evaluating Nurse-Family Partnership (NFP) (2011–2022)
- 739 young mothers and 737 children across British Columbia (BC)

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# Why a Canadian NFP Evaluation?

- Differing findings across US, Netherlands and England trials
- Need to evaluate NFP in Canada before widespread implementation
  - Outcomes may differ across contexts
  - Differing existing health and social services

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# Why a Canadian NFP Evaluation?

- ❑ Adapt NFP and test its local feasibility and acceptability
  - ✓ Successful McMaster-Hamilton pilot using Canadian curriculum, led by Susan Jack and Harriet MacMillan (2008)

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# Why a Canadian NFP Evaluation?

- ❑ Adapt NFP and test its local feasibility and acceptability
  - ✓ Successful McMaster-Hamilton pilot using Canadian curriculum, led by Susan Jack and Harriet MacMillan (2008)
- ❑ Evaluate NFP in a large-scale randomized controlled trial
  - ✓ **BC Healthy Connections Project**

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# BC Healthy Connections Project

- Trial launched (2011-2022)
- Embedded within BC's public and child health systems
- Reciprocal and sustained research-policy-practice collaborations

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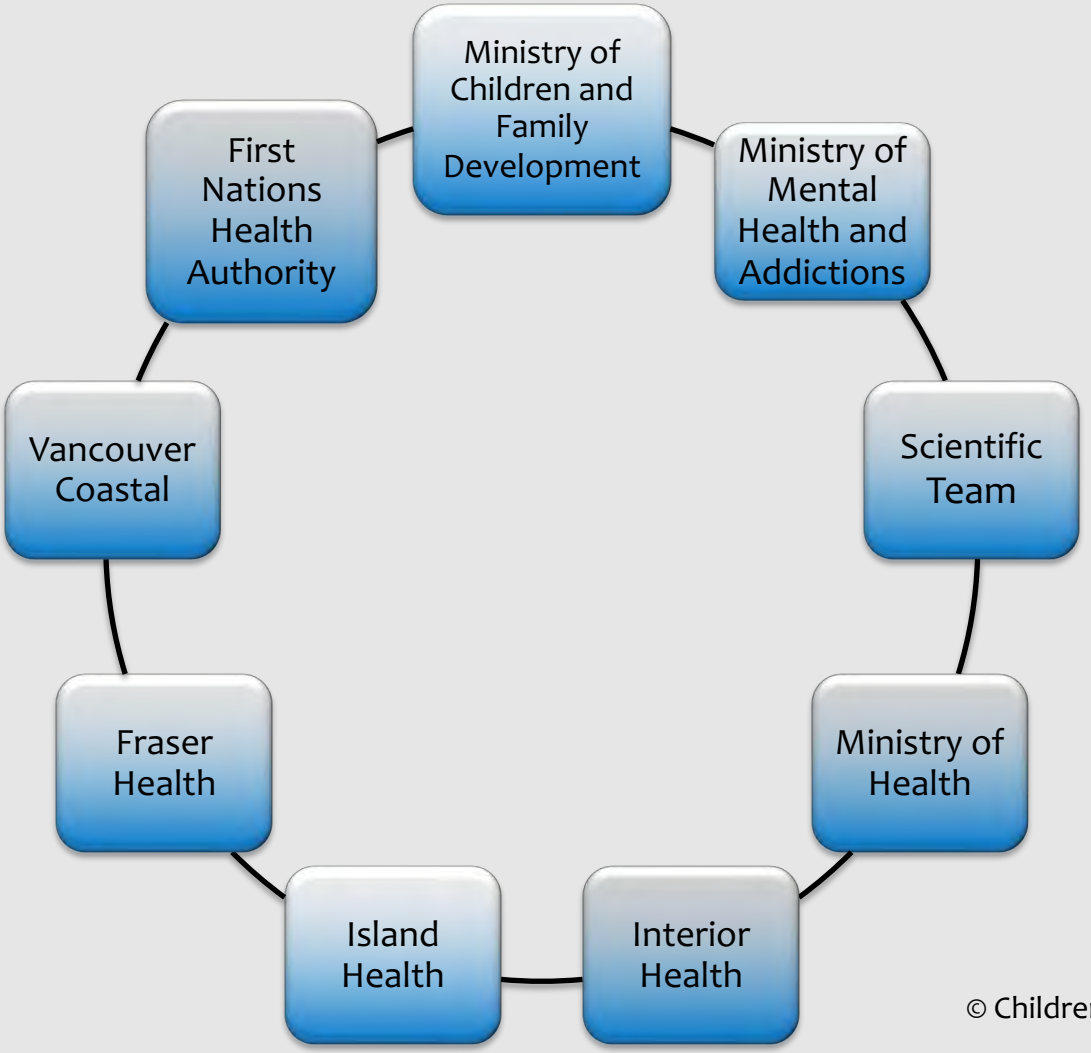
# Research-Policy-Practice Collaborations




- Simon Fraser University
- McMaster University
- University of British Columbia
- University of Victoria
- Public Health Agency of Canada

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# BC Healthy Connections Project

- Governance structure guides our work

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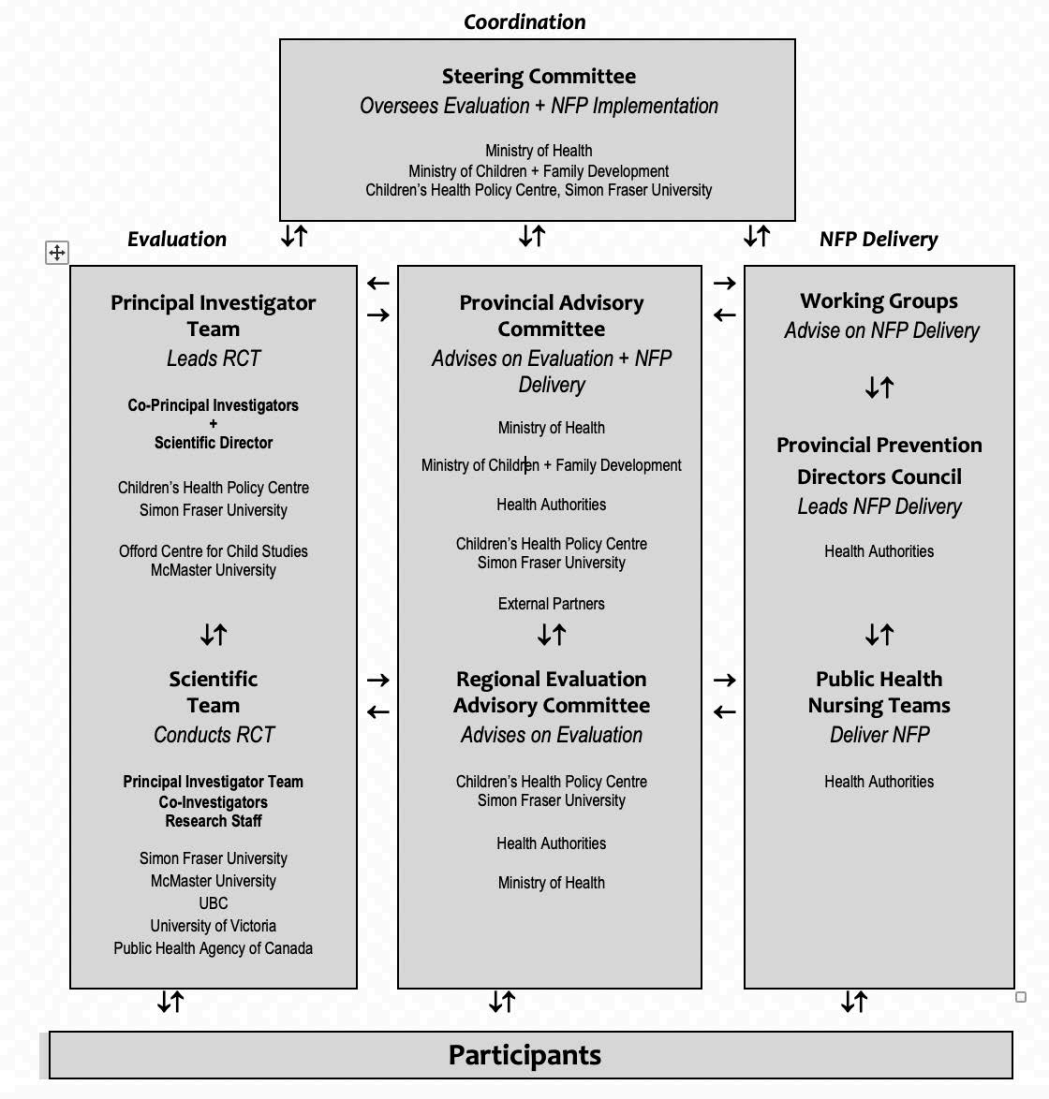


(Figure adapted from Waddell, Catherine, Sheehan et al., 2016)

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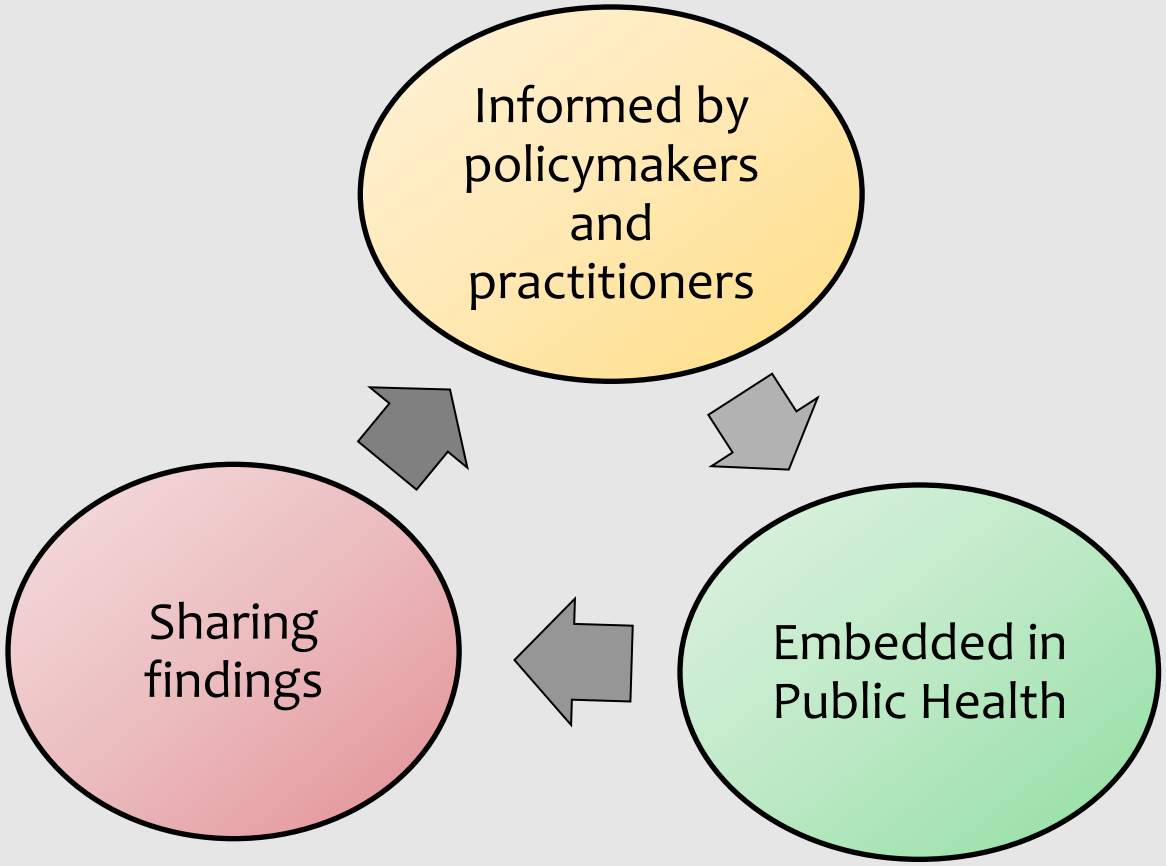
# BC Healthy Connections Project

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# Eligibility Criteria

| **Inclusion:** Eligible if *all* criteria met at time of baseline interview |
|---|
| 1. Aged 24 years or younger |
| 2. Preparing to parent for the first time |
| 3. Less than 28 weeks gestation |
| 4. Able to provide informed consent including conversational competence in English |
| 5. Experiencing socioeconomic disadvantage |
| **Exclusion:** Ineligible if *any* criteria met at time of baseline interview |
| 1. Planning to have the child adopted |
| 2. Planning to leave catchment area for three months or longer |

(Table adapted from Catherine, Gonzalez, Boyle et al., 2016)

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# Eligibility Criteria

Socioeconomic disadvantage criteria

- Age 19 years or younger
- Age 20–24 years and met 2 of 3 indicators
  - Being single
  - Having low education
  - Having limited income defined as:
    - Receiving income assistance
    - Finding it difficult to live on total income regarding food or rent
    - Experiencing homelessness

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# Eligibility Criteria

Participants living in First Nations communities

- Developed in consultation with First Nations leaders and respecting the study's research ethics approvals
  - Eligible if living "off reserve" at time of baseline interview
  - Requesting permission from the Chief of the local First Nation if a participant moved to the community and wished to continue in the study
  - Every request to a Chief was approved

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# Main Outcome Indicators

| Domain | Primary Indicator | Secondary Indicators |
|---|---|---|
| Pregnancy | | Prenatal tobacco and alcohol use<br>• *Maternal Self-Report* |
| Child Health | **Childhood injuries** (birth → 2 years)<br>*Ministry of Health data on community/outpatient, emergency and hospital healthcare encounters* | Child cognitive and language development at age 2 years<br>• *Bayley Scales of Infant and Toddler Development III*<br>• *MacArthur-Bates Communicative Development Inventories: Words and Sentences*<br><br>Child mental health at age 2 years<br>• *Child Behavior Check List* |
| Maternal Health | | Subsequent pregnancies (2 years postpartum)<br>• *Maternal Self-Report* |

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# Other Outcome Indicators

- Child
  - Physical health and wellness
- Maternal
  - Mental health, self-efficacy, parenting, exposure to violence
- Family
  - Income, social supports, housing, service use

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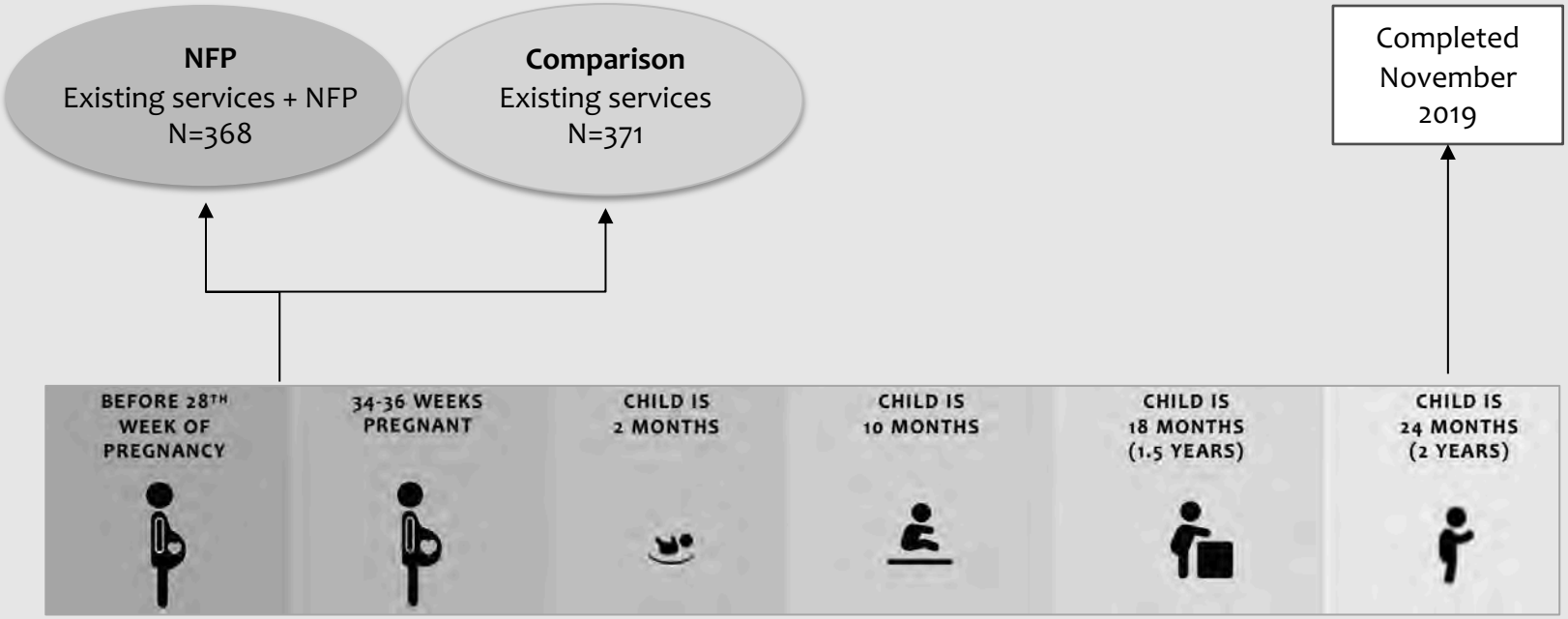
# Participant Interview Schedule

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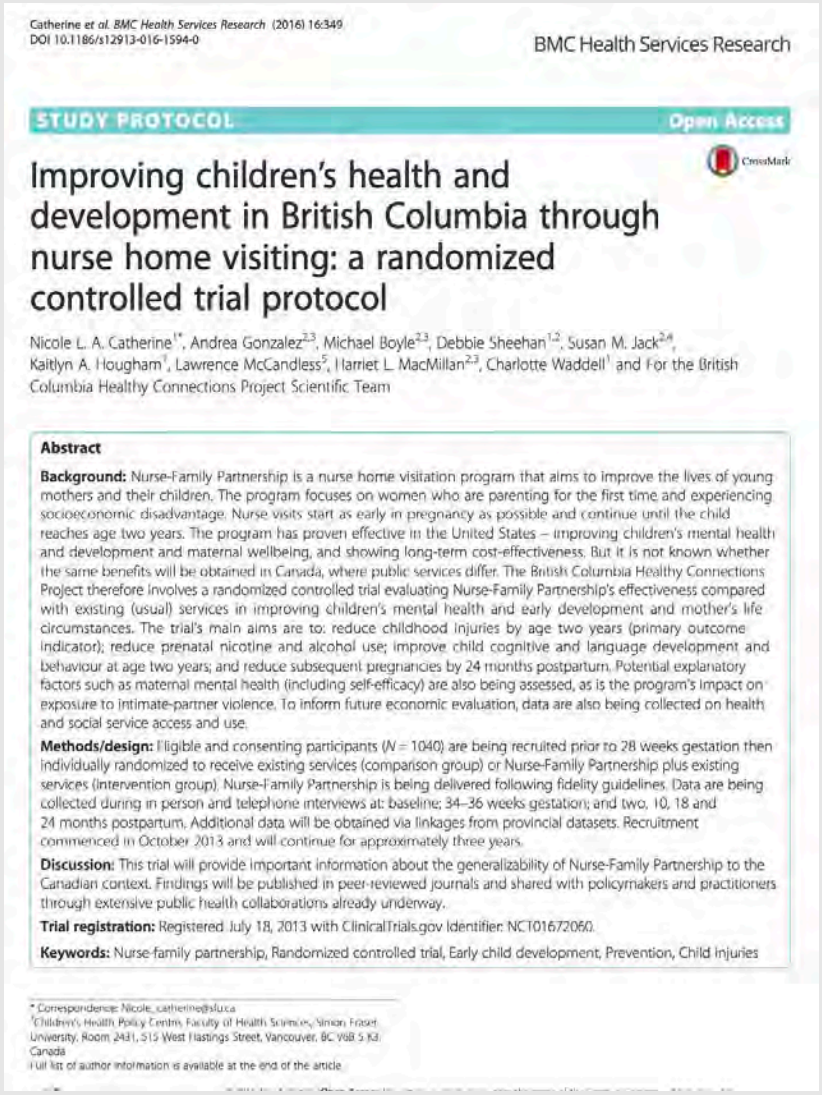
## Study Protocol Published:

*BMC Health Services Research (2016)*



Catherine *et al. BMC Health Services Research* (2016) 16:349
DOI 10.1186/s12913-016-1594-0

BMC Health Services Research

STUDY PROTOCOL Open Access

# Improving children's health and development in British Columbia through nurse home visiting: a randomized controlled trial protocol

Nicole L. A. Catherine[1*], Andrea Gonzalez[2,3], Michael Boyle[2,3], Debbie Sheehan[1,2], Susan M. Jack[2,4], Kaitlyn A. Hougham[1], Lawrence McCandless[5], Harriet L. MacMillan[2,3], Charlotte Waddell[1] and For the British Columbia Healthy Connections Project Scientific Team

**Abstract**

**Background:** Nurse-Family Partnership is a nurse home visitation program that aims to improve the lives of young mothers and their children. The program focuses on women who are parenting for the first time and experiencing socioeconomic disadvantage. Nurse visits start as early in pregnancy as possible and continue until the child reaches age two years. The program has proven effective in the United States – improving children's mental health and development and maternal wellbeing, and showing long-term cost-effectiveness. But it is not known whether the same benefits will be obtained in Canada, where public services differ. The British Columbia Healthy Connections Project therefore involves a randomized controlled trial evaluating Nurse-Family Partnership's effectiveness compared with existing (usual) services in improving children's mental health and early development and mother's life circumstances. The trial's main aims are to: reduce childhood injuries by age two years (primary outcome indicator); reduce prenatal nicotine and alcohol use; improve child cognitive and language development and behaviour at age two years; and reduce subsequent pregnancies by 24 months postpartum. Potential explanatory factors such as maternal mental health (including self-efficacy) are also being assessed, as is the program's impact on exposure to intimate-partner violence. To inform future economic evaluation, data are also being collected on health and social service access and use.

**Methods/design:** Eligible and consenting participants ($N = 1040$) are being recruited prior to 28 weeks gestation then individually randomized to receive existing services (comparison group) or Nurse-Family Partnership plus existing services (intervention group). Nurse-Family Partnership is being delivered following fidelity guidelines. Data are being collected during in person and telephone interviews at: baseline; 34–36 weeks gestation; and two, 10, 18 and 24 months postpartum. Additional data will be obtained via linkages from provincial datasets. Recruitment commenced in October 2013 and will continue for approximately three years.

**Discussion:** This trial will provide important information about the generalizability of Nurse-Family Partnership to the Canadian context. Findings will be published in peer-reviewed journals and shared with policymakers and practitioners through extensive public health collaborations already underway.

**Trial registration:** Registered July 18, 2013 with ClinicalTrials.gov Identifier: NCT01672060.

**Keywords:** Nurse-family partnership, Randomized controlled trial, Early child development, Prevention, Child injuries

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Full list of author information is available at the end of the article

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# Adjunctive Studies

- NFP Process Evaluation
  - Qualitative interviews and focus groups with NFP nurses and program managers
  - Informing BC-specific program improvements
    - Led by Susan Jack, funded by Public Health Agency of Canada
- Biological Evaluation
  - Biomarkers from 380 children and mothers
    - Led by Andrea Gonzalez, funded by Canadian Institutes of Health Research

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# Progress to Date

I. Participant characteristics upon trial entry
II. Retention protocol
III. Prenatal substance use findings

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# Participant Characteristics upon Trial Entry

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# Participant Characteristics upon Trial Entry

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# Baseline Data

- Describing our 739 participants when they first entered the study in early pregnancy
  - Before random group allocation
  - A robust sample size, yet this represents only a small proportion (<< 50%) of eligible participants across BC
- Many measures depict risks, as a stepping stone to understanding needs and addressing them

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# Cultural Background

- 27% Indigenous
- 57% "White"
- Other categories included mixed heritage, Filipina, Latin-American, South Asian, "Black" and Chinese

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*The sample does not fully reflect BC's diversity, likely due to eligibility criteria requiring English-language competence, yet Indigenous girls and young women are over-represented.*

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# Indicators of Socioeconomic Disadvantage

- 49% between 14–19 years
- 91% Single
- 52% Having limited education
- 84% Having low income

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# Health and Social Adversities

| Adversities | N = 739 |
|---|---|
| Unstable Housing | 52% |
| Psychological Distress | 32% |
| Anxiety or Depression | 47% |
| Prenatal Substance Use | 24% |
| Cannabis | 21% |
| Cigarettes | 27% |
| Alcohol | 2% |
| Street drugs | 1.5% |
| Physical Health Challenges | 20% |
| History of Childhood Maltreatment | 56% |
| Intimate Partner Violence recently | 51% |

(Table adapted from Catherine, Lever, Sheehan et al., 2019)

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# Receiving Services, or Not?

| | Percentage |
|---|---|
| **Health Services (past month)** | |
| Primary Health Care | 77% |
| Prenatal Classes | 28% |
| **Social Services (past month)** | |
| BC Income Assistance | 29% |
| BC Medical Services Plan Assistance | 35% |

(Table adapted from Catherine, Lever, Sheehan et al., 2019)

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# Coping with Multiple Adversities

- Indicators based on trial eligibility criteria and BC public health prenatal registry screening criteria
  - Young age; low income; limited education; exposure to maltreatment as a child; housing instability; mental health challenges with anxiety or depression and/or substance use; and/or intimate partner violence

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| Participants Affected | Indicators of Adversities |
|---|---|
| 100% | 1 |
| 98% | 2 |
| 90% | 3 |
| 76% | 4 |
| 52% | 5 |
| 34% | 6 |
| 13% | 7 |
| 5% | 8 |

(Table adapted from Catherine, Lever, Sheehan et al., 2019)

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# Interpretations

- Our data show unacceptable rates of socioeconomic disadvantage for BC girls and young women who are preparing to parent for the first time
- BC Health Authorities have reached the population NFP was designed to benefit
  - But with only < 50% of possible population enrolled, many more need to be reached

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# Interpretations

- Most forms of disadvantage we have depicted are preventable
  - In addition to NFP, more adequate programs and services are needed to ensure that all young British Columbians are flourishing on an equal footing, starting early in life

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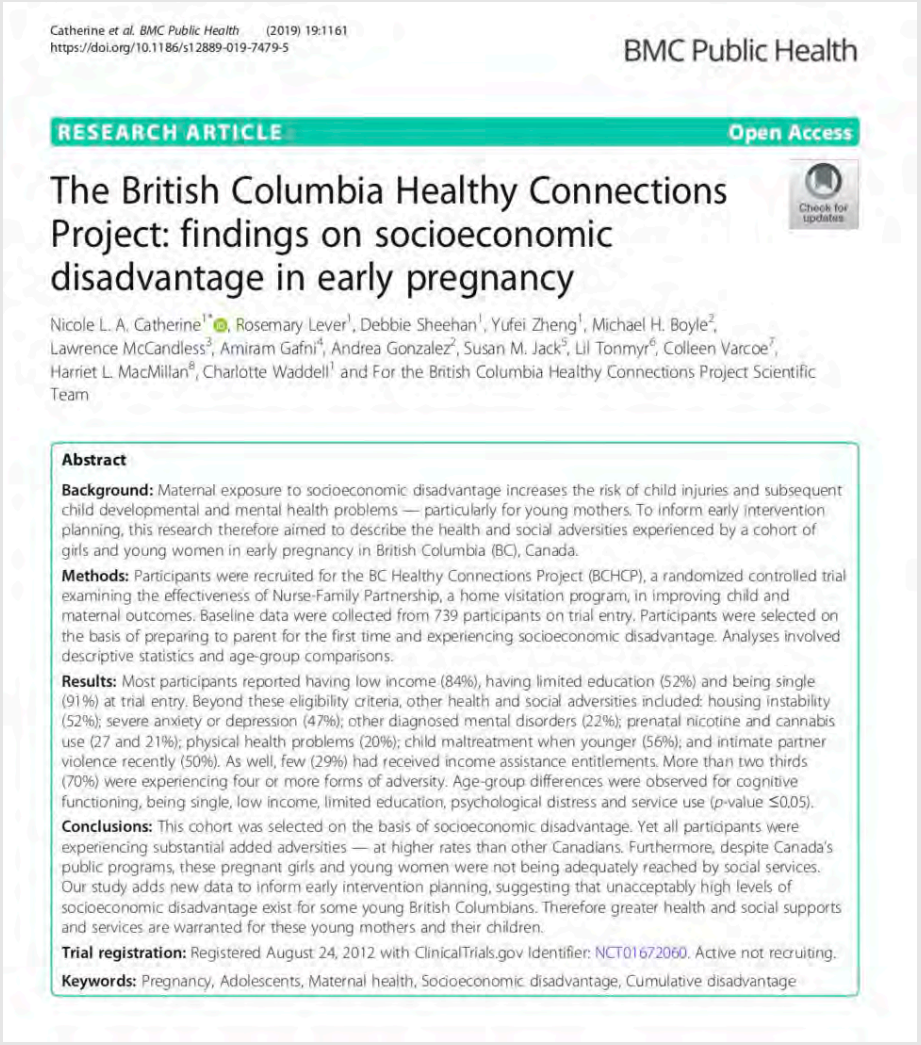
**Published:**
*BMC Public Health (2019)*



Catherine et al. BMC Public Health (2019) 19:1161
https://doi.org/10.1186/s12889-019-7479-5

BMC Public Health

RESEARCH ARTICLE Open Access

# The British Columbia Healthy Connections Project: findings on socioeconomic disadvantage in early pregnancy

Nicole L. A. Catherine[1*], Rosemary Lever[1], Debbie Sheehan[1], Yufei Zheng[1], Michael H. Boyle[2], Lawrence McCandless[3], Amiram Gafni[4], Andrea Gonzalez[2], Susan M. Jack[5], Lil Tonmyr[6], Colleen Varcoe[7], Harriet L. MacMillan[8], Charlotte Waddell[1] and For the British Columbia Healthy Connections Project Scientific Team

**Abstract**

**Background:** Maternal exposure to socioeconomic disadvantage increases the risk of child injuries and subsequent child developmental and mental health problems — particularly for young mothers. To inform early intervention planning, this research therefore aimed to describe the health and social adversities experienced by a cohort of girls and young women in early pregnancy in British Columbia (BC), Canada.

**Methods:** Participants were recruited for the BC Healthy Connections Project (BCHCP), a randomized controlled trial examining the effectiveness of Nurse-Family Partnership, a home visitation program, in improving child and maternal outcomes. Baseline data were collected from 739 participants on trial entry. Participants were selected on the basis of preparing to parent for the first time and experiencing socioeconomic disadvantage. Analyses involved descriptive statistics and age-group comparisons.

**Results:** Most participants reported having low income (84%), having limited education (52%) and being single (91%) at trial entry. Beyond these eligibility criteria, other health and social adversities included: housing instability (52%); severe anxiety or depression (47%); other diagnosed mental disorders (22%); prenatal nicotine and cannabis use (27 and 21%); physical health problems (20%); child maltreatment when younger (56%); and intimate partner violence recently (50%). As well, few (29%) had received income assistance entitlements. More than two thirds (70%) were experiencing four or more forms of adversity. Age-group differences were observed for cognitive functioning, being single, low income, limited education, psychological distress and service use ($p$-value ≤0.05).

**Conclusions:** This cohort was selected on the basis of socioeconomic disadvantage. Yet all participants were experiencing substantial added adversities — at higher rates than other Canadians. Furthermore, despite Canada's public programs, these pregnant girls and young women were not being adequately reached by social services. Our study adds new data to inform early intervention planning, suggesting that unacceptably high levels of socioeconomic disadvantage exist for some young British Columbians. Therefore greater health and social supports and services are warranted for these young mothers and their children.

**Trial registration:** Registered August 24, 2012 with ClinicalTrials.gov Identifier: NCT01672060. Active not recruiting.

**Keywords:** Pregnancy, Adolescents, Maternal health, Socioeconomic disadvantage, Cumulative disadvantage

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# Indigenous Participants

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# Indigenous Participants

- Collaborating with the BC First Nations Health Authority
- Baseline data on the 200 Indigenous participants
- Self-identified as Indigenous (First Nations, Aboriginal, Indigenous, Métis or Inuit)

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# Indigenous Participants

- Findings were framed to showcase strengths
  - High representation of Indigenous participants: 27% versus 6% in the population despite no specialized referral pathways
  - Seeking support during pregnancy

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# Indigenous Participants

- Findings were framed to showcase strengths
  - High representation of Indigenous participants: 27% versus 6% in the population despite no specialized referral pathways
  - Seeking support during pregnancy
  - Participating in research as contributing to the common good
    - Long-term research study (2.5 years) involving their first child
    - Possibility of frequent nurse-home visits

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# Indigenous Participants

- Findings were framed to showcase strengths
  - 75% sought out primary healthcare
  - 38% attended prenatal classes
  - 34% were receiving income assistance

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# Indigenous Participants

- Most were experiencing adversities associated with legacies of colonialism
  - This did not deter participants from seeking prenatal care

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# Indigenous Participants

Indicators of socioeconomic disadvantage

- 91% Single
- 67% Having limited education
- 93% Having low income

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# Indigenous Participants

| Adversities | N = 200 |
|---|---|
| Unstable Housing | 63% |
| Psychological Distress | 29% |
| Anxiety or Depression | 49% |
| Prenatal Substance Use | 50% |
| Cannabis | 31% |
| Cigarettes | 29% |
| Alcohol | 8% |
| Street drugs | 1.5% |
| Physical Health Challenges | 23% |
| History of Childhood Maltreatment | 59% |
| Intimate Partner Violence recently | 51% |

(Manuscript in preparation)

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# Interpretations

- These are new BC data on Indigenous families
- Need for investments in culturally-appropriate interventions that address social determinants of health
  - Support child health and well-being

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# Interpretations

- Advocating for Indigenous mothers and their children
- Defying negative stereotypes

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# Research-Policy Collaboration

- In collaboration with BC First Nations Health Authority co-authors
  - Manuscript submission to *International Indigenous Policy Journal*

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# Retention Protocol

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# Retention Protocol

- BCHCP = Case example for developing planned theory- and evidence-informed retention protocol

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# Retention Protocol

- Attrition presents serious threats to validity of trial results
  - Participant retention is crucial and requires adequate planning and resources
- Challenges are magnified for populations experiencing disadvantage
- Researchers often fail to identify and address barriers to participation
  - Labelling as "hard-to-reach"

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# Retention Protocol

- Systematic reporting of planned, theory-informed retention strategies is lacking in long-term health research
- In contrast to standardized protocols required for registering and reporting
  - RCTs = CONSORT
  - Systematic reviews = PRISMA, PROSPERO

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# Retention Protocol

1. Literature review
2. Ecological model of research participation
3. BCHCP Retention Framework
4. Barriers
5. Strategies
6. Recommendations to guide health researchers

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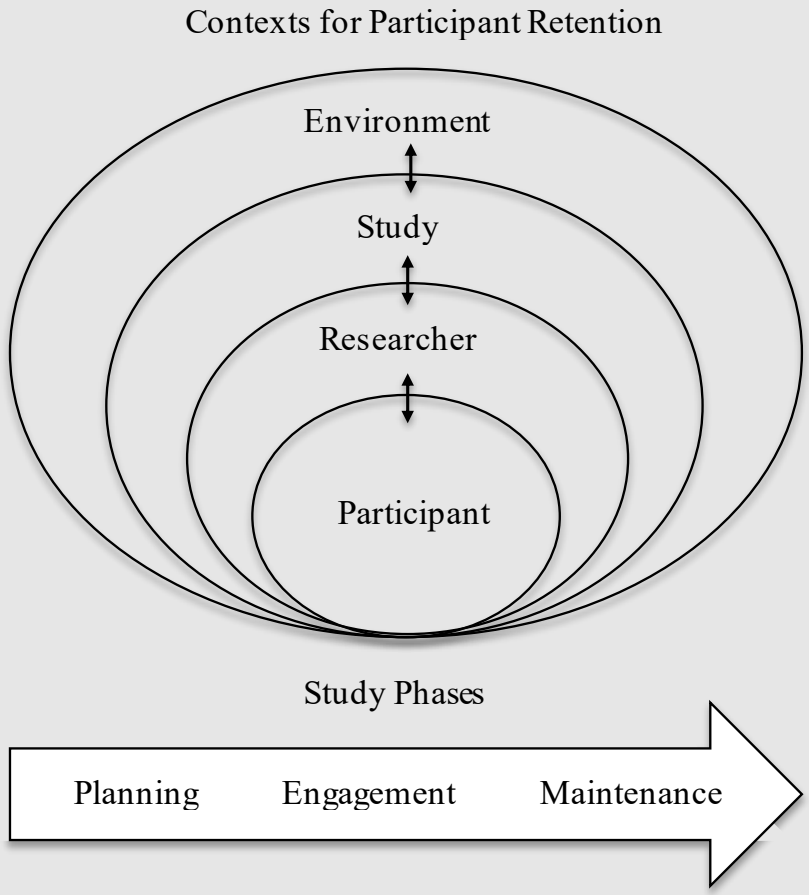


Figure from Catherine, Lever, Marcellus et al., 2020

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Staff training, retention and support

Data capturing and monitoring

Interview completion rates

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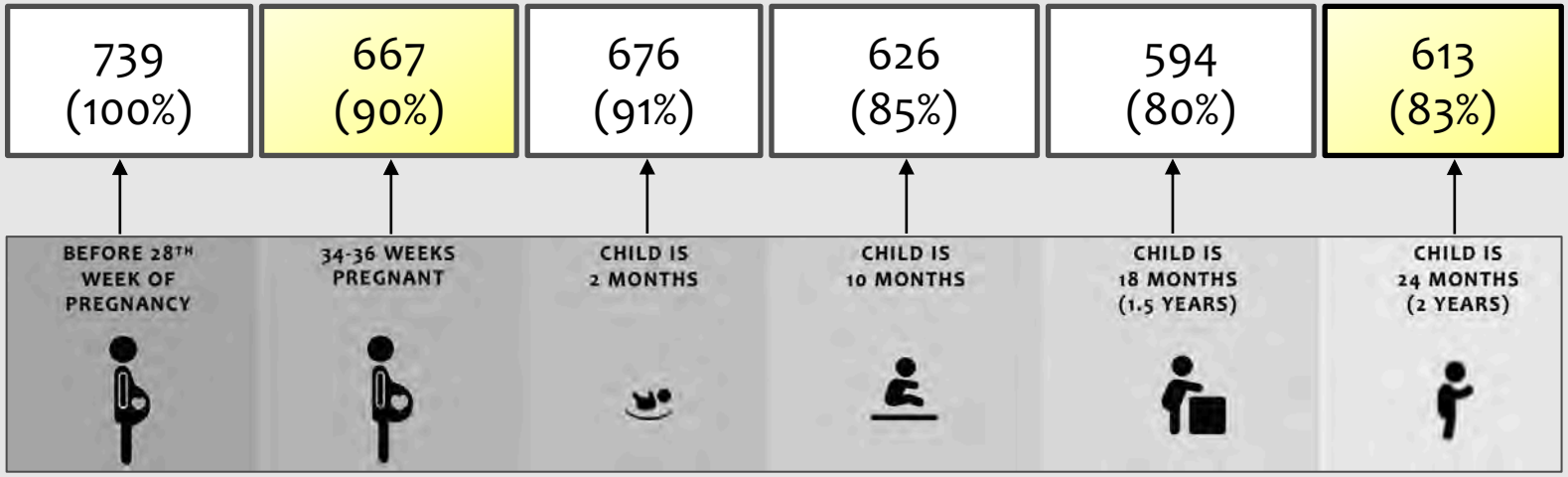
4,000 interviews




99% retention = Administrative data linkage on child injuries

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# "Why Did You Participate?"

*"I appreciate that the workers never gave up in having me involved."*

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# Retention Protocol

Recommendations:

- Standardized retention protocols should be encouraged in research to promote consistency across diverse studies
- Improved retention planning may inform a shift for researchers, policymakers and practitioners from viewing disadvantaged populations as "hard-to-reach" to viewing them as "need-to-reach"

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# Implications

- Informing retention in programs and services
- Reaching all children to reduce disparities
  - Disproportionately affected by global disasters

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**Published:**

*Trials (2020)*

Catherine *et al. Trials* (2020) 21:393
https://doi.org/10.1186/s13063-020-04328-9

Trials

RESEARCH Open Access

# Retaining participants in community-based health research: a case example on standardized planning and reporting

Nicole L. A. Catherine[1*], Rosemary Lever[1], Lenora Marcellus[2], Corinne Tallon[3], Debbie Sheehan[1,4], Harriet MacMillan[5], Andrea Gonzalez[4], Susan M. Jack[4,5] and Charlotte Waddell[1]

**Abstract**

**Background:** Effective strategies for participant retention are critical in health research to ensure validity, generalizability and efficient use of resources. Yet standardized guidelines for planning and reporting on retention efforts have been lacking. As with randomized controlled trial (RCT) and systematic review (SR) protocols, *retention protocols* are an opportunity to improve transparency and rigor. An RCT being conducted in British Columbia (BC), Canada provides a case example for developing a priori retention frameworks for use in protocol planning and reporting.

**Methods:** The BC Healthy Connections Project RCT is examining the effectiveness of a nurse home-visiting program in improving child and maternal outcomes compared with existing services. Participants ($N = 739$) were girls and young women preparing to parent for the first time and experiencing socioeconomic disadvantage. Quantitative data were collected upon trial entry during pregnancy and during five follow-up interviews until participants' children reached age 2 years. A framework was developed to guide retention of this study population throughout the RCT. We reviewed relevant literature and mapped essential retention activities across the study planning, recruitment and maintenance phases. Interview completion rates were tracked.

**Results:** Results from 3302 follow-up interviews (in-person/telephone) conducted over 4 years indicate high completion rates: 90% ($n = 667$) at 34 weeks gestation; and 91% ($n = 676$), 85% ($n = 626$), 80% ($n = 594$) and 83% ($n = 613$) at 2, 10, 18 and 24 months postpartum, respectively. Almost all participants (99%, $n = 732$) provided ongoing consent to access administrative health data. These results provide preliminary data on the success of the framework.

**Conclusions:** Our retention results are encouraging given that participants were experiencing considerable socioeconomic disadvantage. Standardized retention planning and reporting may therefore be feasible for health research in general, using the framework we have developed. Use of standardized retention protocols should be encouraged in research to promote consistency across diverse studies, as now happens with RCT and SR protocols. Beyond this, successful retention approaches may help inform health policy-makers and practitioners who also need to better reach, engage and retain underserved populations.

**Trial registration:** ClinicalTrials.gov, NCT01672060. Registered on 24 August 2012.

**Keywords:** Retention, Attrition, Randomized controlled trial, Adolescents, Pregnancy, Socioeconomic disadvantage

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# Reducing Prenatal Substance Use

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# Cost of Substance Use in Canada

$40 billion/year

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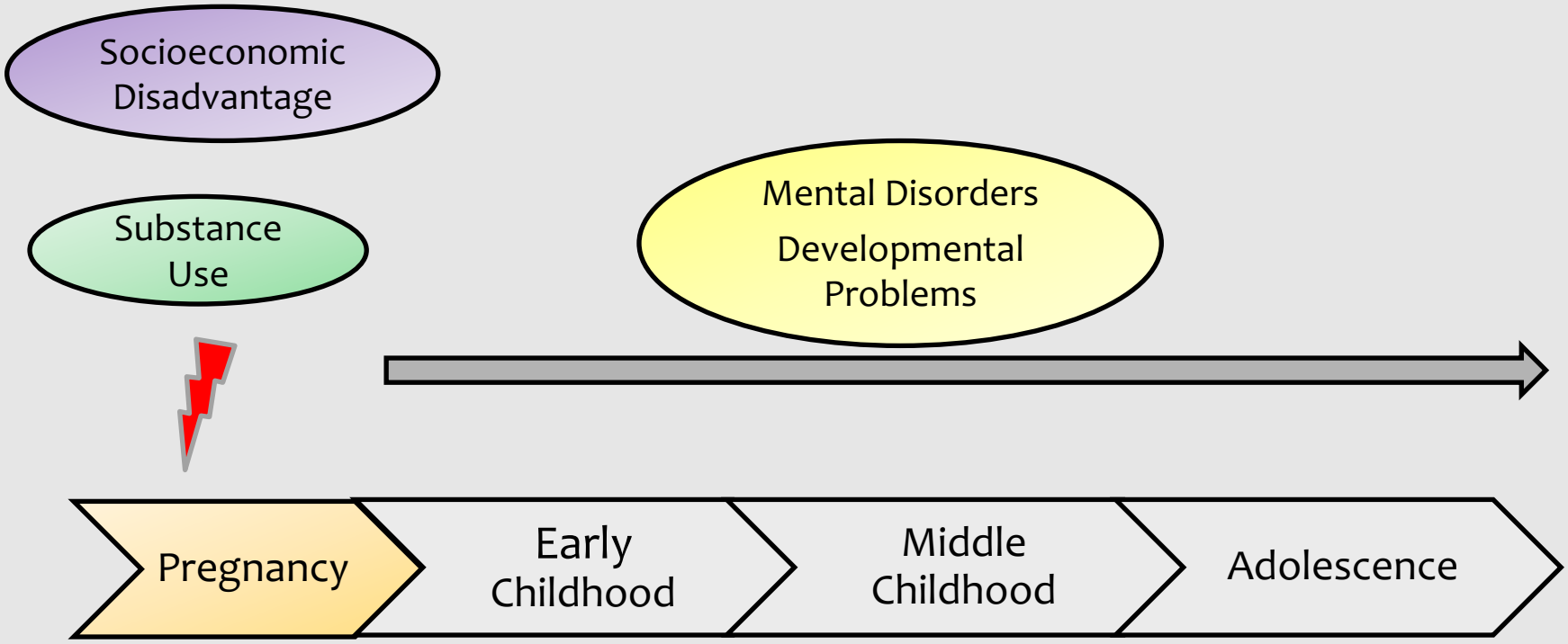


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# Main Outcome Indicators

| Domain | Primary Indicator | Secondary Indicators |
|---|---|---|
| Pregnancy | | Prenatal tobacco and alcohol use (cannabis and street drugs) |
| Child Health Age 2 | Childhood injuries | Child cognitive and language development<br><br>Child mental health |
| Maternal Health | | Subsequent pregnancies |

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# Prenatal Analyses

- Analyses were by intention-to-treat (90% retention)
- Examined change in substance use from baseline to 34-36 weeks
  - Difference in before-after changes

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# Reductions by Late Pregnancy

| | Baseline (<28 weeks) | | Change by week 34-36 | |
|---|---|---|---|---|
| **Substance** | **NFP** | **Existing Services** | **NFP** | **Existing Services** |
| Cigarette (past two days) | 25.4% | 27.8% | ↓ 5.8% | ↓ 2.5% |
| Alcohol (past month) | 6.3% | 5.1% | ↓ 2.6% | ↓ 1.9% |
| Cigarette Count, Smoker (past two days) | 8.4 | 6.8 | ↓ 2.5* | ↓ 0.8 |
| Cannabis (past month) | 25.3% | 25.9% | ↓ 8.5%* | ↓ 4.7% |
| Street Drugs (past month) | 2.5% | 1.1% | ↓ 2.5% | ↓ 0.5% |

(Table adapted from Catherine, Boyle, Zheng et al., 2020)

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# Interpretations | Cigarettes

- For smokers, NFP resulted in modest yet significant decreases in cigarettes
  - Any reductions may benefit the developing fetus as low levels are shown to be harmful

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# Interpretations | Cannabis

- NFP also reduced prenatal cannabis use, an emerging public health problem
- Increasing prenatal use in Canada, especially in those experiencing disadvantage
  - Adversely impacts fetus and child cognitive and behavioural development
  - Potency is increasing
  - Public perceptions: harmless or even beneficial in pregnancy

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# Interpretations | Cannabis

- Harm reduction efforts need to be intensified
- NFP may have a role in these efforts, particularly for disadvantaged populations

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# Interpretations | Alcohol and Street Drugs

- No evidence of benefit
  - Too infrequent, public health efforts may have been successful for alcohol

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# Integrated Knowledge Translation

- Active, reciprocal engagement throughout the research process
  - Provincial Advisory Committee
  - Ensuring findings are relevant to knowledge users, including policymakers
- One-page scientific update
  - Informed by BCHCP Steering Committee
  - Local, national and international audience

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# Implications

- In British Columbia, NFP may reduce harms for BCHCP children starting prenatally
- Major cost-savings associated with addressing avoidable adversities and reducing prenatal substance use
- More still needs to be done
  - High rates of baseline socioeconomic disadvantage
  - High rates of baseline prenatal cigarette and cannabis use (26%)

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**Published:**

*Canadian Medical Association Journal Open (2020)*

cmajOPEN

Research

# Nurse home visiting and prenatal substance use in a socioeconomically disadvantaged population in British Columbia: analysis of prenatal secondary outcomes in an ongoing randomized controlled trial

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Abstract

**Background:** Nurse-Family Partnership (NFP) involves public health nurses providing frequent home visits from early pregnancy until children reach age 2 years, focusing on first-time parents experiencing socioeconomic disadvantage. Our aim was to evaluate NFP's effectiveness in improving child and maternal health.

**Methods:** We conducted an analysis of prenatal secondary outcomes in an ongoing randomized controlled trial in British Columbia; the data used in this analysis were collected from January 2014 to May 2017. Participants were pregnant girls and women aged 14-24 years who were preparing to parent for the first time and experiencing socioeconomic disadvantage. They were randomly allocated 1:1 to the intervention (NFP plus existing services) or control group (existing services). Prespecified prenatal secondary outcome indicators were changes in use of nicotine cigarettes and alcohol use by 34–36-weeks' gestation. We also report on prespecified exploratory cannabis and street drug use measures. We used mixed-effect models for longitudinal and clustered data to estimate intervention effects. Analyses were by intention to treat.

**Results:** The median gestational age at baseline for the 739 participants (368 participants in the intervention group, 371 in the comparison group) was 20 weeks, 6 days. By 34–36-weeks' gestation, NFP significantly reduced cigarette counts (over the past 2 d) (difference in changes [DIC] of count −1.6, 95% confidence interval [CI] −6.4 to −1.3) in those who smoked. NFP also significantly reduced rates of prenatal cannabis use (DIC −6.4, 95% CI −17.0 to −1.7), but not rates of street drug or "any" substance use. While we observed decreased rates of cigarette and alcohol use in both groups (DIC of proportions −2.8, 95% CI −15.3 to 0.6; DIC −0.5, 95% CI −8.7 to 1.8, respectively), these changes were not statistically significant.

**Interpretation:** We found no evidence that NFP was effective in reducing rates of prenatal cigarette and alcohol use; however, it led to reduced prenatal cannabis use, and in smokers it led to modest reductions in cigarette use. NFP may therefore hold promise for reducing some types of prenatal substance use in disadvantaged populations. **Trial registration:** ClinicalTrials.gov, no. NCT01672060.

Prenatal exposures to nicotine cigarettes (hereafter cigarettes), alcohol, cannabis, cocaine and opioids put children at risk for adverse outcomes including preterm birth, low birth weight, motor abnormalities, and mental health and cognitive problems.[1–9] Rates of prenatal substance use in Canada remain concerning, particularly for cigarettes (23%),[10] alcohol (10%)[11] and cannabis (7%).[12] Accordingly, efforts to prevent prenatal substance use are

**Competing interests:** None declared.

This article has been peer reviewed.

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*CMAJ Open* 2020. DOI:10.9778/cmajo.20200063

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# Next Steps

- Analyzing child and maternal outcomes (2021-2022)
- Core aim is prevention of child maltreatment
  - Underlies later developmental and mental health problems

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# Next Steps

| Domain | Primary Indicator | Secondary Indicators |
|---|---|---|
| Pregnancy | | Prenatal tobacco and alcohol use<br>• *Maternal Self-Report* |
| Child Health | **Childhood injuries** (birth → 2 years)<br>*Ministry of Health data on community/outpatient, emergency and hospital healthcare encounters* | Child cognitive and language development at age 2 years<br>• *Bayley Scales of Infant and Toddler Development III*<br>• *MacArthur-Bates Communicative Development Inventories: Words and Sentences*<br><br>Child mental health at age 2 years<br>• *Child Behavior Check List* |
| Maternal Health | | Subsequent pregnancies (2 years postpartum)<br>• *Maternal Self-Report* |

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# Childhood Injuries

- Physician/healthcare encounters for external injuries and ingestions by age two years:
  - Outpatient and community encounters
  - Hospitalizations
  - Emergency room visits

  - Injury region or nature: head, leg, fracture
  - Cause: fall, poisoning, intentional
  - Injury severity

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# Next Steps

| Domain | Primary Indicator | Secondary Indicators |
|---|---|---|
| Pregnancy | | Prenatal tobacco and alcohol use<br>• *Maternal Self-Report* |
| Child Health | Childhood injuries (birth → 2 years)<br>*Ministry of Health data on community/outpatient, emergency and hospital healthcare encounters* | Child cognitive and language development at age 2 years<br>• *Bayley Scales of Infant and Toddler Development III*<br>• *MacArthur-Bates Communicative Development Inventories: Words and Sentences*<br><br>Child mental health at age 2 years<br>• *Child Behavior Check List* |
| Maternal Health | | Subsequent pregnancies (2 years postpartum)<br>• *Maternal Self-Report* |

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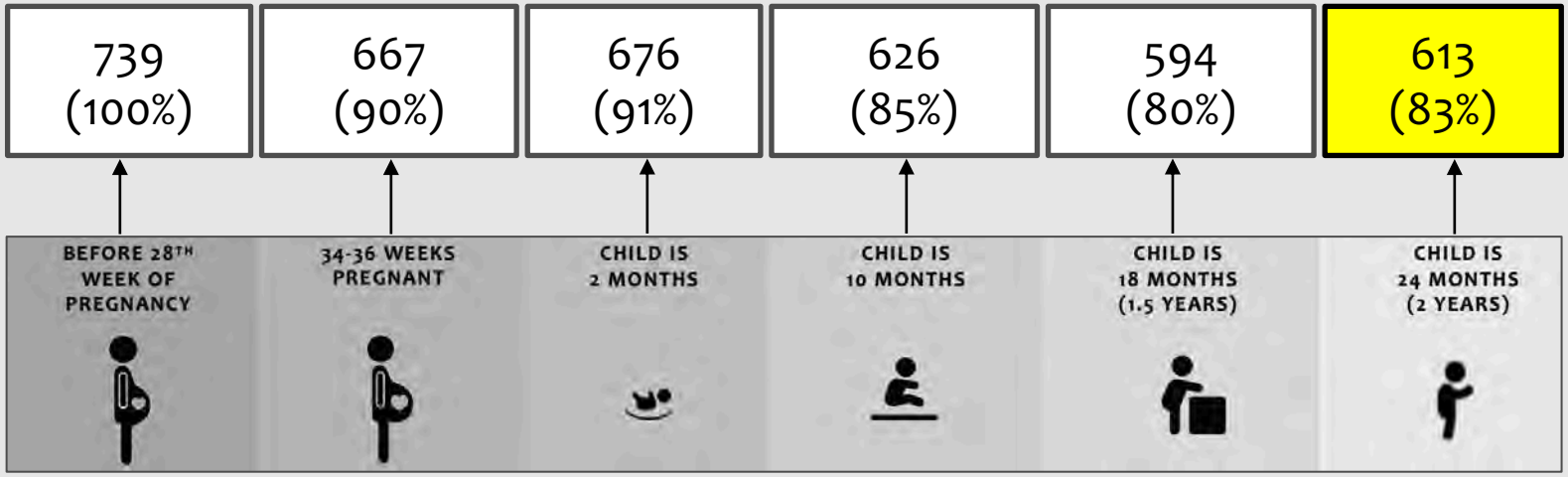
# High Retention




99% retention = Administrative data linkage for child injuries

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# Next Steps

- Collaborating with the BC First Nations Health Authority

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# Next Steps

- Preparing reports on the 200 Indigenous mothers and 199 children
- Focusing on strengths as well as adversities
- Using neutral rather than deficit-focused narratives
- Not comparing to non-Indigenous participants

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# Next Steps

- Implementing NFP through Health Authorities as an enhanced public health service
- Seeking funding to follow families longer term
  - Across childhood and adolescence
  - Program cost-effectiveness analysis

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# Honouring Our Participants

Participants told us they feel their voices are being heard — often for the first time. They also said they feel they are making a difference by being in this study.

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# Thanking Our Team and Funders


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David Olds, Harry Shannon

## Funding

BC Ministry of Health and BC Ministry of Children and Family Development

Fraser, Interior, Island and Vancouver Coastal Health Authorities

Canada Research Chairs Program and Mowafaghian and Stern Foundations

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# Thank you!

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