

The British Columbia Healthy Connections Project (BCHCP): A scientific evaluation of Nurse-Family Partnership in Canada

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Healthy Mothers and Healthy Babies Conference

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We would like to recognize the
Musqueam, Tsleil-Waututh, and
Squamish Nations whose
traditional lands we are meeting
upon today.

Learning Objectives

1. Identify the rigorous scientific methodology of a BC-wide public health intervention involving a randomized controlled trial design
2. Recognize the innovative aspects of the BCHCP, in particular how formal policy, academic, provider, and community collaboration was built into this provincial initiative
3. Explore how unacceptable pockets of deep socioeconomic disadvantage exist for BC girls and young women who are preparing to parent for the first time

What is Nurse-Family Partnership?



What is Nurse-Family Partnership or NFP?

- An intensive public health nurse home-visiting program
 - Starts in early pregnancy, continues until children reach age 2
 - Aims to improve children's lives by supporting young, first-time mothers who are coping with socioeconomic disadvantage
- Significant benefits shown in 3 US randomized controlled trials (RCTs) with long-term follow-up
 - **Reduced** → child maltreatment, child behaviour problems, youth crime, child and maternal mortality
 - **Improved** → parenting, child cognitive development, child mental health, maternal life circumstances

(Olds, various)

What is Nurse-Family Partnership or NFP?

- Based on theory and 14 core model elements
- Nurse/Supervisor: weekly reflection
- Ratio: 1 full-time nurse to 20 clients
- 3 goals of NFP worldwide:
 - Improve pregnancy outcomes
 - Improve child health and development
 - Improve parents' economic self-sufficiency

5 Client-Centered Principles of NFP

1. The client is the expert on her own life.
2. Follow the client's heart's desire.
3. Only a small change is necessary.
4. Focus on strengths.
5. Focus on solutions.

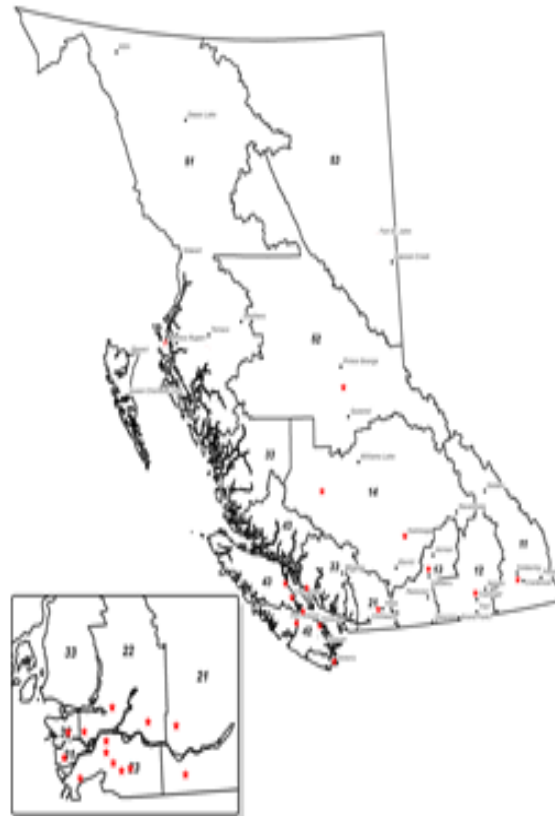


BC NFP Sites



- 5 Health Authorities
- 52 sites
- Over 1100 women and their children have enrolled
- 75 NFP nurses and supervisors are supporting women, children and families across B.C.

BC NFP Sites



Health Authority	NFP Program Sites as of May 2017	
Fraser	Abbotsford	Langley
	Agassiz-Hemlock	Maple Ridge
	Burnaby	Mission
	Chilliwack	New Westminster
	Coquitlam	South Surrey
	Delta	White Rock
	Hope	Surrey
		Katzie First Nation
Interior	Cariboo-Chilcoot	Kimberley
	Castlegar	Nelson/Salmo
	Central Okanagan	Penticton
	Cranbrook	Trail
	Kamloops	Vernon
		Karomsas Oliver
Northern	Prince George	
Vancouver Coastal	North Vancouver	Vancouver (City Centre, DTES, Midtown, NE, South)
	Powell River	Westside
	Richmond	West Vancouver-Bowen Island
	Squamish	
	Sunshine Coast	
Island	Campbell River	Lake Cowichan
	Cowichan	Nanaimo
	Greater Victoria	Saanich
	Ladysmith	Sooke

A Prevention Program that May Pay For Itself

- Based on benefits shown in US randomized controlled trials (RCTs), economic analyses suggest that NFP may save more than it costs:
 - In the US, NFP families used fewer added services over 10–15 years across multiple public sectors, e.g., healthcare, child protection, special education, justice, income assistance → “saving” \$2–6 for every \$1 spent
 - Estimates will vary by country and cost analysis methods → if effective, is NFP worthwhile regardless of costs?

(Karoly, 2005; Washington State Institute for Public Policy, 2017)

What is the BC Healthy Connections Project?



What is the BC Healthy Connections Project?

- First Canadian RCT evaluating NFP (2011–2021)
 - 739 young mothers and their children across BC are enrolled
 - Information sources include research interviews, observational data and BC Ministry of Health child injury data
- Trial is embedded within BC's public health system, involving close policy-practice-research collaborations
 - BC Ministry of Health; BC Ministry of Children and Family Development; BC Ministry of Mental Health and Addictions; Fraser, Interior, Island, Northern and Vancouver Coastal Health Authorities
 - SFU, McMaster University, UBC, University of Victoria, Public Health Agency of Canada (PHAC)

Why a Canadian NFP Evaluation?

- New evaluations are needed outside the US due to differing baseline health and social services
 - Netherlands and England → NFP RCT findings have varied
- Adapt NFP and test its local feasibility and acceptability
 - Successful McMaster-Hamilton pilot
- Evaluate NFP in a large-scale RCT
 - ✓ **BC Healthy Connections Project**

(Mejdoubi, et al., 2015; Robling, et al., 2015; Jack, 2012; Catherine, et al., 2016)

Eligibility Criteria

Inclusion: Eligible if all criteria met at time of baseline interview

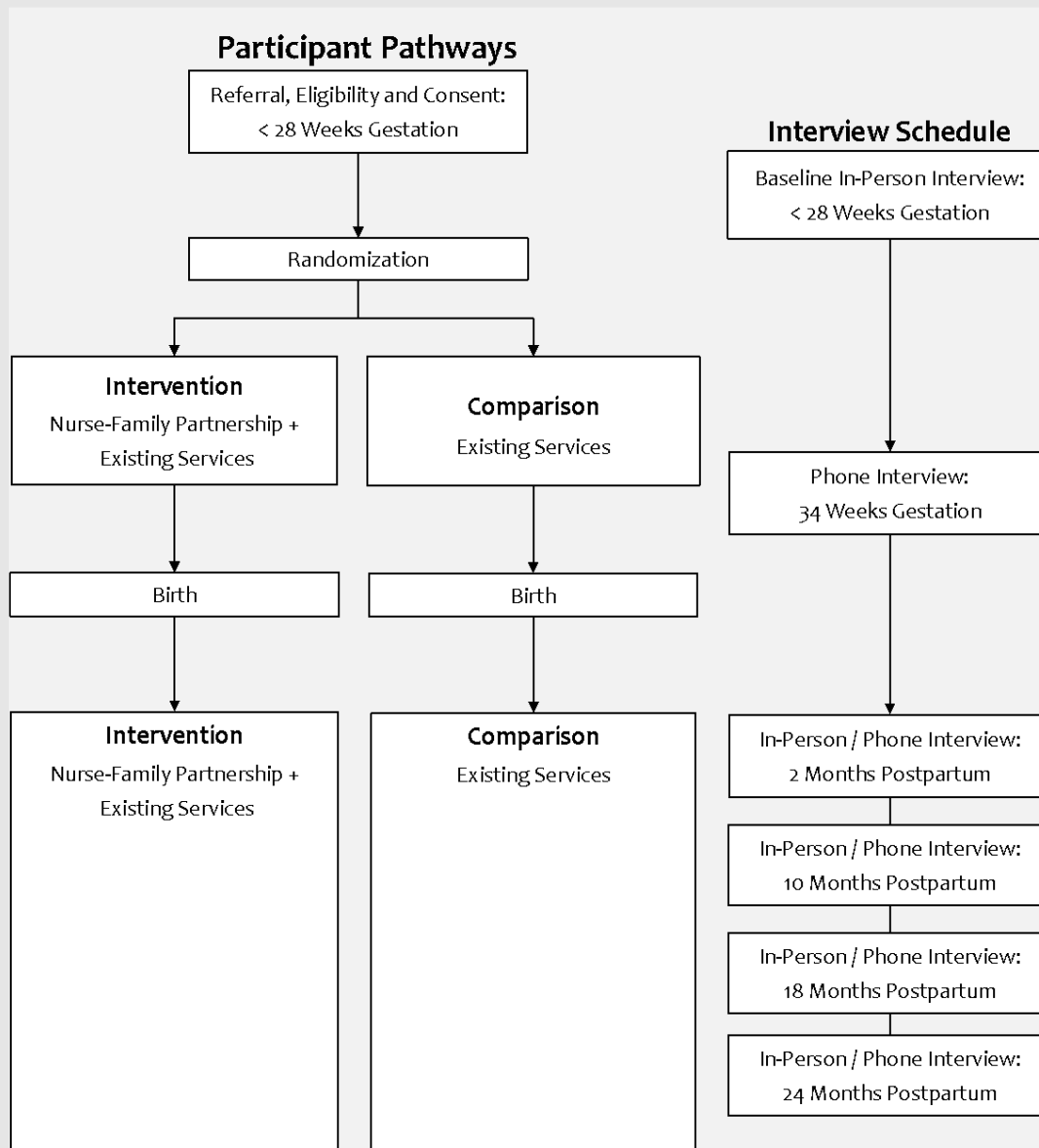
1. Aged 24 years or younger
2. Preparing to parent for the first time
3. Less than 28 weeks gestation
4. Able to provide informed consent including conversational competence in English
5. Experiencing socioeconomic disadvantage*

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

* Factors associated with greater risk of children experiencing injuries include young maternal age and socioeconomic disadvantage; therefore those aged 19 years or younger deemed automatically eligible; those aged 20–24 years deemed eligible if met 2 of the following 3 socioeconomic criteria: low income, less than grade 12, single parenting.

Participant Pathways and Interview Schedule



Main Outcome Indicators

Domain	Primary Indicator	Secondary Indicators
Pregnancy		Prenatal tobacco and alcohol use <i>Maternal Self Report</i>
Child Health	Childhood injuries (birth → 2 years) <i>Ministry of Health data on community/outpatient, emergency and hospital healthcare encounters</i>	Child cognitive development (at 2 years) <i>Bayley Scales of Infant and Toddler Development III</i> Child behaviour (at 2 years) <i>Child Behavior Check List</i>
Maternal Health		Subsequent pregnancies (at 2 years postpartum) <i>Maternal Self Report</i>

(See Catherine, et al., 2016 for RCT Study Protocol)

Timelines

- RCT recruitment closed December 2016 with 739 mothers enrolled → 744 babies have now been born
 - Data collection is ongoing through 2019–2020
 - Allowing all participants to complete the 2.5-year study
 - Allowing BC Ministry of Health to provide child injury data
- Health Authorities are continuing to implement NFP within the overall suite of public health services for eligible girls and young women
- RCT outcome reports will follow in 2020–2021

Adjunctive Studies



Adjunctive Studies

Process Evaluation

- Collecting qualitative data and analyzing NFP nursing reports to identifying factors affecting delivery in BC
 - Led by Susan Jack, funded by PHAC

Healthy Foundation Study

- Gathering child and maternal biological samples (e.g., cortisol) to measure chronic stress exposure and health outcomes
 - Led by Andrea Gonzalez, funded by funded by Canadian Institutes of Health Research

BC Healthy Connections Project Baseline Data



BC Healthy Connections Project Baseline Data

- Initial data describing our 739 participants when they first entered the study in early pregnancy
 - Before being randomized to control group (existing services) or intervention group (NFP plus existing services)
 - A robust sample size, yet this sample represents only a small proportion (< 50%) of eligible girls and young women across BC
 - Northern Health did not participate in the RCT
- Many measures depict risks, as a stepping stone to understanding the needs and better addressing them, in keeping with NFP's goals

Participants in Each Health Authority

	Participants Enrolled	Proportion of Total
Fraser Health	406	55%
Interior Health	122	17%
Island Health	127	17%
Vancouver Coastal Health	84	11%
Total Sample	739	100%

Preparing to Parent at a Young Age

- 49% were aged 14–19 years and 51% were 20–24 years
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Young age is associated with challenges for mothers. Children of young mothers are also at increased risk of injuries, developmental delays and behaviour problems.

Living on a Low Income

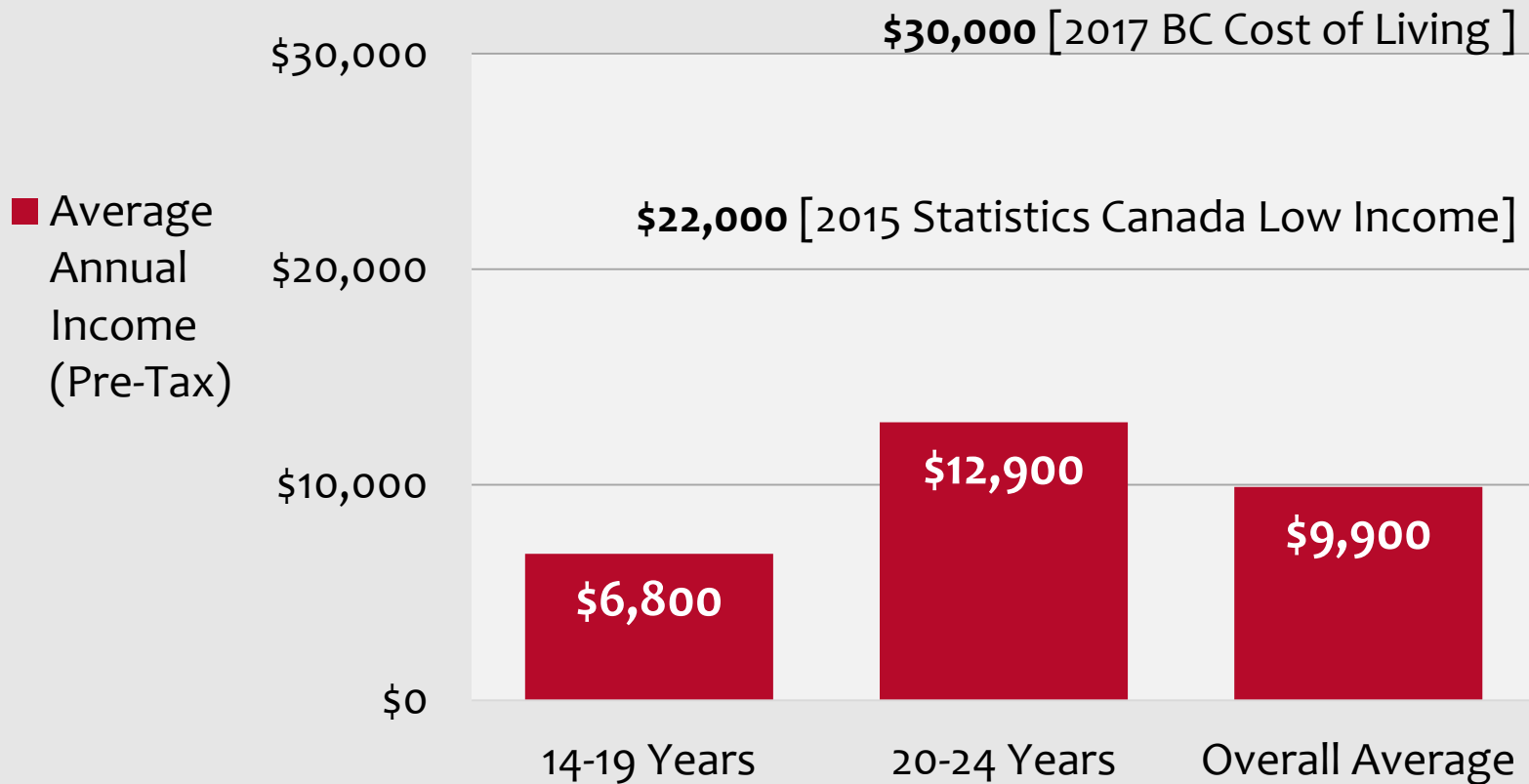
- Average annual income → less than \$20,000 for 83%
 - Income from all sources, excluding funds received from family or friends (pre-tax)
- 2015 Statistics Canada low-income threshold → \$22,000
 - Threshold is for single people living in larger cities (pre-tax)
- 2017 BC minimum cost-of-living estimates → \$30,000
 - Estimates averaged across RCT sites

Almost all were living on much less than they needed.

Living on a Low Income

Average Annual Income (Pre-Tax)	Percentage
Less than \$5,000	42%
\$5,000 – \$9,999	16%
\$10,000 – \$19,999	25%
\$20,000 – \$29,999	10%
\$30,000 or more	6%

Living on a Low Income



Having a Limited Education

- Not having grade 12 or the equivalent
 - 53% → whole sample
 - 69% → 14–19 years
 - 38% → 20–24 years

Most participants were coping with having a limited education, and even those still in school had had their education interrupted by pregnancy.

Having Limited Social Supports

- Preparing to parent without a partner
 - “Partner” defined as being “married” or living together consecutively for a year or more
 - 91% → whole sample
 - 87% → 14–19 years
 - 95% → 20–24 years

Most participants were preparing to be single parents.

Being Homeless

- 47% reported being homeless at some time in their lives
- 3% reported being homeless currently
- 34% reported having to move frequently
 - 3 or more times in the past year

Participants reported high rates of lifetime homelessness and of housing instability in the recent past.

Being Homeless

Homelessness	
Homeless at any time in their lives	47%
Currently homeless	3%
Unstable Housing	
Having to move 3 or more times in the past year	34%
Current Housing	
House, apartment or condominium	94%
Group home or shelter or foster home	2%
Single-room occupancy hotel	< 1%

Differing Cultural Backgrounds

- Self-identified by Statistics Canada categories
 - Indigenous → 27% or 200 of 739
 - Over-represented compared to general population
 - Participants were living “off reserve” at baseline
 - “White” → 57% or 418 of 739
 - Other categories included mixed heritage, Filipina, Latin-American, South Asian, “Black” and Chinese

The sample does not fully reflect BC's diversity, likely due to eligibility criteria requiring English-language competence.

Coping with Mental Health Challenges

- 74% reported coping with mental or physical health problems that affected their daily activities
- 47% reported coping with severe anxiety or depression
- 13% reported diagnosed mental disorders
- 11% reported diagnosed developmental conditions, e.g., fetal alcohol or learning disorders

Nearly half of the participants were coping with severe mental health challenges.

Coping with Mental Health Challenges

- 24% reported prenatal substance use (past month)
 - Cannabis 21%
 - Alcohol 2%
 - Other street drugs 1%
- 27% reported recent nicotine/cigarette use (past 2 days)
- 40% reported second-hand smoke exposure (past week)

Rates of substance use were concerning given that participants were young and pregnant.

Coping with Physical Health Challenges

- 74% reported coping with mental or physical health problems that affected their daily activities
- Many participants reported specific physical problems
 - 20% anemia; 19% asthma or allergies; 15% migraines; 8% injuries that have left a disability; other conditions including Hepatitis C or HIV, epilepsy, cardiovascular disease, diabetes and arthritis

Physical health problems posed added challenges.

Coping with a History of Maltreatment as a Child

- 56% reported experiencing child maltreatment when they were children themselves, at ages 16 years or younger → including moderate-to-severe neglect, physical abuse, emotional abuse and/or sexual abuse—
-

More than half of participants reported coping with exposure to maltreatment when they were children.

Coping with Intimate Partner Violence

- 50% reported experiencing intimate partner violence within the past year → including physical, emotional, sexual and/or combined abuse

Half of participants reported coping with recent intimate partner violence.

Receiving Services, Or Not?

- Health services (past month; self report)
 - 77% had received primary healthcare services (of any type)
 - 28% had received prenatal classes
- Social services (past month; self report)
 - 29% had received income assistance (of any type)
 - 35% had received BC Medical Services Plan Premium Assistance
 - 18% were enrolled in BC Pharmacare

Despite most being on low income and having serious health conditions, most were not receiving core social services.

Coping with Multiple Forms of Disadvantage

- Indicators were selected based on RCT eligibility criteria and BC public health prenatal registry screening criteria
 - Young age; low income; limited education; single parenting; housing instability; mental health challenges with anxiety or depression; mental health challenges with substance use; and intimate partner violence

Almost all participants were coping with multiple forms of disadvantage.

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

Next Steps

- Preparing baseline reports and academic publications
- Scheduling presentations
 - Health Authorities; relevant BC Ministries including Health, Children and Family Development and Mental Health and Addictions; other community groups and agencies
- Talking with First Nations Health Authority about potential reports specific to Indigenous participants

Implications

- Our baseline data show unacceptable pockets of deep 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 more need to be reached
- Many forms of disadvantage are preventable so 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

“Yet the stories of these girls and young women — as told through our data — are stories of strength and hope. In participating, they have also expressed a willingness to contribute to the greater good. Collectively, we must respond to these expressions of strength and hope by better meeting their needs — and meeting the needs of all those who are coping with similar challenges.”

(BC Healthy Connections Project Scientific Team, 2017)

Acknowledgements

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Thank You



Please see childhealthpolicy.ca for more information.