Reaching Underserved Children and Families: Lessons from the British Columbia Healthy Connections Project

A Research Report



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

Citing This Report

Catherine NLA, Hjertaas K, Cullen A, Zheng Y, Amhaz H, Lever R, Gray-Grant D, & Waddell C. (2021). Reaching Underserved Children and Families: Lessons from the British Columbia Healthy Connections Project. Vancouver, BC: Children's Health Policy Centre, Faculty of Health Sciences, Simon Fraser University.

Acknowledgements

We acknowledge the children and families who generously gave their time to the British Columbia Healthy Connections Project (BCHCP). The BC Representative for Children and Youth funded this report. We also appreciate the feedback provided by the BCHCP Steering Committee. As well, we are grateful to the BC Ministry of Health, who is funding the BCHCP with support from the BC Ministries of Children and Family Development and Mental Health and Addictions – and with support from Fraser, Interior, Island and Vancouver Coastal Health Authorities.

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Executive Summary

It is crucial to reach and support children and families who are coping with multiple adversities — yet many are defined by researchers and providers as "hard-to-reach" and therefore are underserved. The British Columbia Healthy Connections Project (BCHCP) entails a randomized controlled trial evaluating Nurse-Family Partnership (NFP), an intensive home-visiting program for disadvantaged, young, first-time mothers and their children. The study team needed to sustain engagement with nearly 1,500 children and mothers for the two-and-a-half years of their participation. So we learned many lessons. The BCHCP is also a "real world" trial, embedded within BC's public health system. Our findings may therefore have policy salience.

We found that a robust engagement protocol helped families to participate in the six research interviews that we planned. Participants taught us to make frequent contacts — ranging from an average of 6.5 to 14.3 attempts, including on evenings and weekends. More outreach was needed for those experiencing more adversities. Yet participants also told us that they appreciated us persevering so that they could be included. Texting was the most effective approach for reaching the families. As well, it paid off to invest in training and supporting study team members — enabling them to create rapport and sustain long-term relationships. These strategies led to us achieving our goal. More than 80% of families completed the study interviews.

We acknowledge that our findings and their implications may pose challenges for policymakers. Initial costs could be high, for example, involving resources for: training outreach staff and supporting digital inclusion by providing families with cellphones and data plans. Offering evening and weekend appointments may pose particular challenges. Yet we believe that the benefits would be substantial, permitting more equitable inclusion of children and families who are coping with multiple adversities and who can greatly benefit from enhanced programs. We also believe that addressing service barriers for populations in need is feasible. For example, during the COVID-19 pandemic, BC and other jurisdictions provided cellphones and data plans to populations in need – enabling greater remote/virtual service access. So enriched supports for families in need can be, and have been, implemented in BC and elsewhere.

There is a collective ethical imperative to better reach and serve disadvantaged children and families.

Beyond feasibility issues, there is a collective ethical imperative to better reach and serve disadvantaged children and families. Delivering programs with an intensity that is proportionate to need will in turn help address avoidable adversities, such as socioeconomic disadvantage — and will help ensure healthy development and wellbeing for all children. These goals are also in keeping with collective aims to honour children's rights by ensuring that they receive needed services.

I. Background

1.1 Importance of Reaching Underserved Children and Families

Family socioeconomic disadvantage is a serious problem in British Columbia (BC) and Canada. Its seriousness arises in part from its association with child mental health and developmental difficulties and child maltreatment.¹⁻³ Poverty rates, as defined by market basket measures that estimate the cost of modest, basic standards of living, have been decreasing in Canada.⁴ Even so, approximately half a million children under age 18 years (8.2%) still live below the poverty line – with higher rates for children living with single mothers or adolescent parents.⁴⁻⁵ Income inequality also persists, with Canada ranking poorly relative to other high-income countries.⁶ These disparities and their consequences then tend to persist across the life course – at great cost to individuals and to society.⁷⁻⁹

Exacerbating these issues, disadvantaged children and families often face barriers to receiving health and social services.¹⁰⁻¹¹ In addition to service shortfalls, these barriers include non-flexible hours, high program costs, limited transportation and language options, long wait times, ineffective programming and cultural insensitivities.¹²⁻¹⁵ Certain populations – notably Indigenous children and families – are also disproportionately affected as a result of overt and entrenched inequalities and racism in service provision.¹⁶⁻¹⁸ Therefore, the experience of socioeconomic disadvantage is often compounded by being underserved. Adding another layer of disadvantage, underserved children and families have been described by researchers and service providers as "hard-to-reach" – implying individual responsibility for their predicament.¹⁹⁻²⁰ In contrast, describing them as "need-to-reach" and focusing on "how-to-reach" them implies collective ethical responsibility – in keeping with longstanding acknowledgement that all children have the right to receive needed services. This latter approach is also consistent with the principle of proportionate universalism which calls for ensuring *enhanced* services for those who are most in need.²¹⁻²⁴

Paradoxically, service barriers persist for disadvantaged children and families despite considerable highquality research evidence from other countries showing that these populations *can* indeed be reached – and with programs that can yield significant and enduring benefits. Several examples stand out. Nurse-Family Partnership (NFP) is a home-visiting program that supports disadvantaged young first-time parents and their children over two-and-a-half years, starting prenatally. Randomized controlled trials (RCTs) in the United States (US), the Netherlands and England have shown significant short- and long-term benefits including improved child development and mental health, reduced child maltreatment and improved maternal wellbeing.²⁵⁻²⁸ Perry Preschool is an early childhood education program delivered to disadvantaged threeand four-year-olds over two years. An RCT in the US has shown enduring benefits when participants were 40 years of age, including improved mental health and positive participation in society.²⁹ Numerous other programs have similarly proven successful at reaching disadvantaged children and families and improving their lives.³⁰ As well, economic analyses suggest that such programs can be wise public investments – incurring net benefits through averted expenditures in healthcare, special education and the justice and foster care systems.³¹⁻³⁵ This research evidence on successful programs provides exemplars for better reaching and serving disadvantaged children and families.

1.2 Learning From the British Columbia Healthy Connections Project

Beyond providing evidence on effective program approaches, long-term studies conducted with disadvantaged populations can also inform policy and practice efforts to improve service reach. This is because researchers conducting such studies must minimize dropouts, or attrition, to ensure that results are valid – representing all participants and not just those who are easier to engage. One such study with policy salience is the British Columbia Healthy Connections Project (BCHCP). This RCT is evaluating NFP for the first time in Canada, comparing the program with existing services across BC in a sample of nearly 1,500 children and mothers (2011–2022).³⁶ The BC Ministry of Health is funding this study with support from the BC Ministries of Children and Family Development and Mental Health and Addictions. The study also involves close collaborations with Fraser, Interior, Island and Vancouver Coastal Health Authorities who are funding NFP delivery – and is guided by a Provincial Advisory Committee comprising numerous BC child- and family-serving organizations including the First Nations Health Authority.

Baseline data showed high rates of adversities in early pregnancy beyond the eligibility criteria (young age, limited income, limited education, being single). These adversities included unstable housing, maltreatment experiences, and mental health problems including substance use.³⁷ Prenatal findings showed that NFP reduced prenatal use of cigarettes (in smokers) and reduced cannabis use.³⁸ Findings on child injuries, cognitive/language development, and mental health (behaviour) at age two years, as well as maternal economic self-sufficiency, are anticipated in 2021–2022.

To focus on those most likely to benefit from NFP, pregnant participants were intentionally recruited on the basis of experiencing socioeconomic adversities including limited income, education and social supports, in addition to preparing to parent for the first time at a young age. Identifying these participants and sustaining close connections with them was crucial to ensuring at least 80% retention (the usual RCT standard) across six research interviews over two-and-a-half years.³⁶ Notably, this intensity and this time frame broadly mirror successful childhood interventions described in the literature, such as NFP and Perry Preschool. Embedded within BC's public health system, this trial can therefore provide "real world" lessons on creating and sustaining vigorous connections with "need-to-reach" children and families over several years. As well, the trial provides a useful case study for creating and sustaining connections with populations who are coping with multiple adversities. For BCHCP participants, beyond limited income, education and social supports, these adversities included: precarious housing; high rates of mental and physical health problems; and high rates of exposure to violence.³⁷ These participants therefore epitomize the need for enhanced services proportionate to need.²⁴

1.3 Purpose of This Research Report

To inform policy and practice efforts to better reach and serve disadvantaged children and families in BC, this report aims to synthesize lessons from the BCHCP. Specifically, we will:

- Summarize trial recruitment processes and approaches for overcoming challenges;
- Outline a protocol for sustaining engagement; and
- Present data from families on better supporting their inclusion.

The overarching goals are to contribute to ensuring that all children in BC can flourish and that all children and families receive the programs and services they need, when they need them.

2. Approach

In this report, we summarize the trial recruitment processes and the roles that the study team undertook together with policy and practice partners. We also outline initial recruitment challenges and the approaches we used to address these challenges, including using the project's active and robust research-policy-practice governance structure (see Appendix 1). Next, we outline the intensive protocol that the study team developed to successfully sustain engagement with children and families over their two-and-a-half years of participation.

We then present new analyses of tracking data depicting what we learned from families on the frequency and nature of the connections they required to support their participation. This includes data on: how adverse circumstances increased the needs; preferred modes of connection; and differences between NFP and control groups. Tracking data were collected by field interviewers using a secure web-based application (Research Electronic Data Capture or REDCap) and stored on secure servers at the Children's Health Policy Centre at Simon Fraser University (SFU). The study team organized and categorized the data and conducted descriptive analyses using SPSS Statistics 22.³⁹⁻⁴⁰ We compared baseline risk factors by retention level using Student's t-test and Chi-square tests for continuous and categorical data respectively, using R Version 4.0.⁴¹ Data were then summarized. All steps were verified by two or more team members to ensure accuracy in analyses and interpretations.

The BCHCP receives ongoing research ethics approvals from SFU, the University of BC, the University of Victoria, McMaster University, the Public Health Agency of Canada, Fraser Health, Interior Health, Island Health and Vancouver Coastal Health Authorities. An independent Data and Safety Monitoring Committee also oversees the trial. (See childhealthpolicy.ca for more information about the BCHCP.)

3. Findings

3.1 Identifying Those in Need

3.1.1 Recruitment Processes

For the BCHCP RCT, Fraser, Interior, Island and Vancouver Coastal Health Authorities identified and recruited pregnant girls and young women who met eligibility criteria. These criteria included: 1) being age 24 years or younger; 2) preparing to parent for the first time; 3) being less than 28 weeks' gestation; 4) speaking English; and 5) experiencing socioeconomic disadvantage as evidenced by either being an adolescent or being older but coping with added challenges such as limited education, or income, or being single.³⁶ Public health nurses screened potential participants and obtained consent to pass their information to the SFU study team. The study team then contacted potential participants, introduced the RCT, confirmed eligibility, obtained informed consent and scheduled in-home interviews. Following initial baseline interviews, participants were randomly allocated (like flipping a coin) to either the intervention (NFP plus existing services) or control (existing services) groups. The study team was not involved in NFP delivery. Rather, Health Authorities delivered the program, including ensuring appropriate nurse education and supervision and fidelity with program requirements. The study team conducted five additional interviews beyond baseline with all study participants – at 34-36 weeks' gestation and when children were two, 10, 18 and 24 months – collecting quantitative data on socioeconomic status, demographics, child and maternal wellbeing and functioning, and service access and use. (Appendix 2 outlines the interview measures and time points.)

3.1.2 Initial Recruitment Challenges and Approaches for Addressing These

Initial recruitment targets were determined based on RCT sample size requirements and on BC Ministry of Health population estimates of the annual number of first births for girls and young women living on low income. Recruitment opened in October 2013, following research ethics approvals from the 10 participating organizations. However, early in the trial, Health Authorities received few referrals via their newly established public health registry systems. Consequently, the Steering Committee harnessed the project's research-policy-practice collaborations and governance structure to address the recruitment challenges, including extending recruitment by a year. (Formed in 2011, the Steering Committee includes the study team leads from SFU and the project policy leads from the BC Ministries of Health, Children and Family Development, and Mental Health and Addictions; see Appendix 1.) With guidance from the study team and the Provincial Advisory Committee, NFP nurses visited primary care providers, schools and relevant community agencies to increase referrals to the prenatal registries. These approaches met with success. We reached sufficient enrollment numbers by December 2016 and completed all research interviews in November 2019. Even so, enrollment was lower than anticipated based on the initial targets – representing less than 50% of all potentially-eligible girls and young women in BC. This situation underscores the urgency and importance of better identifying and reaching children and families who are experiencing disadvantage.^{21,36}

3.2 Sustaining Engagement With Children and Families

3.2.1 Developing a Protocol

To help sustain long-term connections with children and families, we developed a theory- and researchinformed protocol to encourage engagement over the two-and-a-half years of trial participation. This protocol was also intended to help us complete nearly 4,000 research interviews (739 baseline and 3,176 follow up interviews) across a wide geographical area and spanning six years of data collection (2013– 2019).²¹ Protocol development included: identifying potential barriers to participation and creating strategies to mitigate these, such as offering flexible appointment times; investing in training and supporting field interviewers to foster respectful and enduring participant relationships; and building a secure, online tracking database to allow for feedback and refinement. Table 1 highlights crucial components of the protocol including planning, building capacity, communicating, and tracking progress.

| Designing To build and maintain rapport, trust and connections, we conducted interviews at baseline in early pregnancy (in participants' homes) and when children were two, 10, 18 and 24 months (in homes or by telephone). To honour their time, participants received gift cards (\$50–\$75) after completing each of the six research interviews (typically 2.5 hours in duration). Building Capacity To ensure both participant rapport and high-quality data collection, we invested in recruiting and retaining full-time field interviewers — who had bachelor's or master's degrees in related fields, with some also having related clinical or research experience. We then provided four weeks of intensive initial training on: maintaining ethical conduct including confidentiality; understanding the study and our participants; cultural safety; conducting interviews with mothers and developmental assessments with children; building rapport and engaging families in lengthy research interviews; managing difficult situations; self-care; and managing data. Interviewers received weekly supervision and support (more often as needed) and attended annual in-person workshops to ensure their continuing knowledge and skills. Communicating To stay in touch between interviews, we scheduled check-ins via text, email or phone to remind offering choices, persisting we also obtained alternate contact information, e.g., family members, partners or friends. We gave participants communications choices, e.g., text, email or toll-free telephone. Interviews we also obtained alternate contacts, respecting that participants were busy, with complicated lives. | Planning | | | | |
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| Communicating Checking in, offering choices, persisting • To stay in touch between interviews, we scheduled check-ins via text, email or phone to remind participants about interviews, obtain updates on contact information and let them know their efforts and information were appreciated and integral to study success. With their permission, we also obtained alternate contact information, e.g., family members, partners or friends. • We gave participants communications choices, e.g., text, email or toll-free telephone. Interviews were also available weekdays, evenings and weekends to accommodate their schedules. • We made multiple contacts, respecting that participants were busy, with complicated lives. Tracking Progress Keeping good • For each interview, we recorded the number, type and frequency of contacts, including checkins and completion rates. We also developed a participant engagement database to collect and monitor all communications data, using weekly progress reports to refine our approach. | Training and supporting field interviewers | To ensure both participant rapport and high-quality data collection, we invested in recruiting and retaining full-time field interviewers — who had bachelor's or master's degrees in related fields, with some also having related clinical or research experience. We then provided four weeks of intensive initial training on: maintaining ethical conduct including confidentiality; understanding the study and our participants; cultural safety; conducting interviews with mothers and developmental assessments with children; building rapport and engaging families in lengthy research interviews; managing difficult situations; self-care; and managing data. Interviewers received weekly supervision and support (more often as needed) and attended annual in-person workshops to ensure their continuing knowledge and skills. | | | |
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| * Adapted from Catherine 7070251 | Keeping good data | For each interview, we recorded the number, type and frequency of contacts, including check- ins and completion rates. We also developed a participant engagement database to collect and monitor all communications data, using weekly progress reports to refine our approach. | | | |

Table I. Approaches to Sustaining Engagement*

3.2.2 Tuning the Protocol

To further track our progress, midway through the six years of data collection a senior research manager conducted in-depth qualitative audits with seven field interviewers — each with an average of three years of full-time trial experience — on their approaches to engaging children and families. We coded the transcripts for frequent themes, discussed the findings during an annual workshop, and incorporated new and refined strategies into our ongoing participant retention efforts. In particular, interviewers described strategies they used to address common barriers to engagement, most involving texting with participants. Table 2 summarizes the barriers and strategies, with illustrative field interviewer quotes.

| Barriers | Strategies |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cancelling interviews | • Reframe as "rescheduling" to create opportunities for follow-up, e.g., |
| frequently | "Hi [name], your next appointment is scheduled for tomorrow at 11. Please respond 'R' to reschedule and let me know which day works better for you; or respond 'Yes' if you are still available. Looking forward to seeing you soon!" |
| Rescheduling interviews | • Be specific and provide alternatives rather than leaving it open-ended, e.g., |
| | "Hi [name], this is [name] from the BCHCP. Just checking in about rescheduling our interview from yesterday. Would next Tuesday at 1 or Wednesday at 11 work for you? I will get in touch on Friday to follow up if I don't hear back from you. Talk with you soon!" |
| Disengaging for an | • Remind participants of why they are important, e.g., |
| extended period | "Hi [name], hope you and [child's name] are doing well! [Child's name] must be getting big since we last saw you. You both have made it so far with the study and we are so pleased to have you both involved. Let me know if you are still available for the [date], or if we need to reschedule to a new date and time that works for you. Looking forward to seeing you soon!" |
| Being too busy to schedule | • Provide solutions (if appropriate) and express gratitude for their commitment, e.g., |
| interviews | "Hi [name], it's great to hear from you – thanks for following up about rescheduling our appointment. It sounds like you have a lot going on right now with school, work and [child's name]. I so appreciate you making time for our appointment. |
| | • Is there anything I can do to make the appointment easier, such as meet over the phone or meet on the weekend? I'm sure that together we can find something that works for you." |
| | Provide an opportunity to participate later, e.g., |
| | "If you don't want to commit to booking an appointment right now, how about I get in touch in a month and we can see how you feel then? In the meantime, feel free to get in touch if anything comes up or if you have any questions. Talk soon!" |

Table 2. Barriers and Strategies for Participant Engagement

3.3 Learning From Participants

3.3.1 Contacts Needed for Sustaining Engagement

We believed that it was crucial to learn from participants about the best ways to facilitate sustained engagement over the course of the trial. As one means of doing this, we tracked the number of contacts required to successfully complete each research interview at our five time points over 2.5 years (following the initial baseline interviews). Field interviewers who knew the families made all the contacts. These tracking data showed that we needed to make increasing contacts over time to sustain acceptable overall study retention rates of 80% or more. The mean number of contacts required for each interview ranged from 6.5 for the short time from early-to-late-pregnancy (<28 to 34–36 weeks' gestation) to 14.3 when children were 24 months old. Yet while requiring increasing amounts of staff time, persistence paid off with us meeting our retention goals – without necessarily being intrusive for participants. As one of our field interviewers explained: "Participants often expressed that they were glad that we continued to reach out to them, that we never gave up. They felt that we cared." Table 3 shows the number of contacts required to successfully sustain engagement at each time point.

| able 5. Contacts Needed to Sustain Engagement | | | |
|-----------------------------------------------|----------------------------------------------------|--------------------------------------|--|
| Time Point (Child Age) | Mean Contacts (Standard Deviation) [*] | Completed Interviews [†] | |
| [<28 weeks' gestation] [‡] | [NA] | [100.0%] | |
| 34–36 weeks' gestation§ | 6.50 (5.41) | 90.1% | |
| 2 months | 10.29 (5.99) | 91.5% | |
| 10 months | 11.49 (8.32) | 84.7% | |
| 18 months | 12.29 (8.11) | 80.1% | |
| 24 months | 14.37 (11.02) | 82.9% | |

Contacts Needed to Sustain Engagement

NA = not available

Includes all successful and unsuccessful contacts, unrelated to interview completion status

Proportion of participants who completed the interview

Baseline interviews involved all 739 (100.0%) maternal participants

‡ § Participant tracking data was only available for a smaller sample at this time point

Participants often expressed that they were glad

that we continued to reach out to them, that we never gave up.

They felt that we cared.

3.3.2 Everyone to the Finish Line

We explored the number of contacts specifically required to reach and engage the 613 families who completed the final research interviews when children reached age two years — which was 82.9% of the original 739. While 13.9% required four to five contacts, most required six to 10 (44.4%) or 11 or more (41.7%). Again, persistence paid off. As one field interviewer elaborated: "Don't take 'no response' personally as there is a lot going on in people's lives." Figure 1 shows the number of contacts required to complete the final interview — to get everyone to the finish line.





Don't take 'no response' personally as there is a lot going on in people's lives.

3.3.3 Supports According to Circumstances

Considering potential differences in participants' circumstances when they first started the BCHCP, we also examined factors that might influence who required more contacts to complete the final interview – namely, those who were coping with greater adversities in early pregnancy. Compared with mothers who required 10 or fewer contacts to complete the final interview, we found several differences for those requiring more contacts. Specifically, at baseline those requiring 11 or more contacts were statistically significantly more likely to: be younger (54.3% aged 14–19 years versus 43.5% aged 20–24 years; p<.01); have not completed high school (59.4% versus 41.9%; p <.001); and have very limited income (47.9% versus 37.8% had less than \$5,000/year; p<.01). These added adversities likely accounted for the more intensive supports that were needed to ensure that these participants, too, could complete their final interviews and have all their data included. As one field interviewer reflected: "Participants told us they felt their voices were being heard – often for the first time."

Participants told us they felt their voices were being heard — often for the first time.

3.3.4 (In)consistent Access to Technology

We also explored which modes of communication might work better for participants, by documenting the proportion of successful contacts according to whether we used text, telephone or emails. *Successful contacts* were defined as those garnering same-day responses, whether initiated by participants or the study team. Using this definition, we observed decreasing success over the two-and-a-half years of study participants. We also found that texting was by far the best mode of communication for our young participants, partly due to inconsistent access to technology – which in turn was influenced by socioeconomic circumstances. As one field interviewer recalled: "Participants were often dealing with limited income, with inconsistent cellphone access or money for minutes, so it was more difficult to reach those we needed to reach." Table 4 shows the rates of successful (same-day) contacts and the preferred modes of communication.

| Time Point | Successful | Mode o | Mode of Successful Same-Day Contacts | | |
|-------------------------|----------------------|--------|--------------------------------------|-------|--|
| (Child Ages) | Same-Day Contacts | Text | Telephone* | Email | |
| [< 28 weeks' gestation] | [NA] [†] | [NA] | [NA] | [NA] | |
| 34–36 weeks' gestation | 50.4% | 76.9% | 13.8% | 9.3% | |
| 2 months | 51.7% | 75.1% | 16.6% | 8.3% | |
| 10 months | 41.7% | 73.7% | 14.1% | 12.2% | |
| 18 months | 36.5% | 74.0% | 13.7% | 12.2% | |
| 24 months | 35.7% | 73.9% | 13.7% | 12.3% | |

Table 4. Successful (Same-Day) Contacts and Preferred Modes of Communication

NA = Not available

* 95.6% of calls involved cellular phones, while 4.4% involved landlines

† Tracking data not available for the first time point

Participants were often dealing with limited income, with inconsistent cellphone access or money for minutes,

so it was more difficult to reach those we needed to reach.

3.3.5 Did Receiving Nurse-Family Partnership Make a Difference?

Our findings were embedded within an RCT evaluating NFP. So, we wanted to ascertain whether participants differed depending on whether they were in the NFP or control groups. Specifically, we wondered whether receiving NFP might make it easier for us to locate participants for their final interviews – as many would have been in regular communication with their NFP nurse. But we found no difference between the two groups in overall final interview completion rates or in the proportion of families completing interviews based on fewer (10 or less) versus greater (11 or more) contacts. These findings suggest that skilled field interviewers with retention training and support were able to locate those in the comparison group just as effectively as those who had an NFP nurse – and that our efforts were not reliant on NFP program-specific resources. Our results may therefore be generalizable to policy and practice settings where there is a need to reach similar children and families, without assuming the availability of NFP resources.

4. Discussion

Our experiences with the BCHCP trial suggest successful ways to engage with populations who are experiencing high levels of adversity. These populations are likely to benefit from intensive programs such as NFP yet are often underserved. The BCHCP is also a "real world" trial – embedded within BC's public health system with active policy participation in its governance. We therefore believe that our findings have salience for informing policy.

We found that developing a thorough engagement strategy helped families to participate over the trial's two-and-a-half years. Tracking data allowed us to refine the protocol, for example, adapting to accommodate evening and weekend interviews. Participants also provided valuable lessons. Most importantly, they taught us that it was our responsibility to make frequent and respectful contacts to successfully complete our interviews. Contacts ranged from an average of 6.5 attempts early in the trial to 14.3 attempts at the end, with more outreach needed for who had reported experiencing more adversities early in the trial. Participants nevertheless told us that they appreciated us persevering so that they could be included. We also learned of impediments such as limited access to communications technology. Texting was by far the most effective – and cost-effective – approach for reaching these families, given their young age and socioeconomic circumstances. As well, we confirmed that it paid off to invest in the study team members who were engaging with the children and families – training and supporting them to create rapport and sustain long-term relationships. These strategies led to us achieving our goal. More than 80% of families participated in the final research interviews, when children were two years of age.

We acknowledge that our findings and their implications may pose challenges for policymakers. Initial costs could be high, for example, involving resources for: recruiting and training outreach staff; supporting them with participant-centered education and cultural safety training to make multiple contacts and sustain relationships over time; and supporting digital inclusion by providing families with cellphones and data

plans. Offering flexibility with evening and weekend appointments may pose particular challenges for some agencies. Yet we believe that the benefits would be substantial, permitting more equitable inclusion of marginalized children and families who are coping with multiple adversities and who can greatly benefit from enhanced delivery of intensive supports and programs.

We also believe that addressing service barriers for populations in need is feasible, for example, based on policy initiatives in BC and elsewhere during the COVID-19 pandemic which have involved providing cellphones and data plans. The BC Ministry of Social Development and Poverty Reduction partnered with several organizations to provide 3,500 cellphones (with wi-fi capabilities and \$10 for data) to people experiencing homelessness.⁴² Similarly, the Yukon Territory provided 325 cellphones (with four-month service plans) to people experiencing adversities such as limited income, unstable housing and exposure to violence – enabling virtual physician visits and increasing connections with family and friends.⁴³ A for-profit communications company has also delivered more than 10,000 free mobile devices (with no-charge data plans) to Canadians experiencing disadvantage.⁴⁴ Ensuring digital inclusion can in turn leverage other forms of inclusion and connection. For example, digital tools that support goal setting, such as *GoalMama*, have been well-received by families provided NFP in the US.⁴⁵ BC's Interior Health Authority has also developed an NFP telehealth project to increase engagement with families receiving NFP – reaching those living in rural, remote and Indigenous communities and offering virtual visits through videoconferencing and cellphone applications.⁴⁶ So enriched supports for families in need can be, and have been, implemented in BC and elsewhere. Texting is also a relatively cost-effective means of reaching families.

But fiscally, are enriched supports for families in need affordable? For 2019, total national health expenditures were estimated at \$265.5 billion or more than \$7,000 per Canadian – with most spending going towards hospitals, drugs and physicians.⁴⁷ BC data mirror these national data.⁴⁷ While healthcare (and social) systems have been challenged by the COVID-19 pandemic, these figures nevertheless suggest that public resources are ample. Of total national health spending, however, public health accounted for only 5.7%.⁴⁷ This figure suggests that there is room for redistribution to pay for more equitable program delivery – particularly given economic analyses showing net public benefits from programs that support disadvantaged children and families and avert later health and social problems and expenditures.³¹⁻³⁵ So reaching all families in need should be affordable.

Beyond feasibility and fiscal considerations, we believe that there is a collective ethical imperative to better reach and serve disadvantaged children and families in BC. Delivering programs with an intensity and scale that is proportionate to the level of disadvantage will in turn help ensure that more children and families can participate in needed services — to address avoidable adversities and ensure healthy development and wellbeing for all children.²⁴ These goals are also in keeping with collective aims to honour children's rights by ensuring that they receive needed services.²³

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Competing interests: Nicole Catherine and Charlotte Waddell are co-leading the BCHCP. The other authors have also worked on the BCHCP.

Cover photo is from Bigstock.

6. Appendices

6.1 Appendix I

Figure A1: British Columbia Healthy Connections Project Governance Structure*



* Adapted from Waddell et al., 2016;⁴⁸ since study inception, governance has shifted, adding the BC Ministry of Mental Health and Addictions, and closing the Regional Evaluation Advisory Committee, which was a sub-committee of the Provincial Advisory Committee, in 2016

6.2 Appendix 2

Table A2. British Columbia Healthy Connections Project Interview Measures and Time Points*

| Measures | Time Point (Child Age) | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--|--|
| Maternal sociodemographics | | | |
| Age, racial/cultural group (at <28 weeks' gestation only), education and employment, housing stability, relationship status (all time points) | < 28 weeks' gestation, 34–36 weeks' gestation, 2 months, 10 months, 18 months, 24 months | | |
| Maternal health and functioning | | | |
| Cognitive functioning, history of maltreatment as a child (at <28 weeks' | < 28 weeks' gestation, 34–36 weeks' | | |
| gestation only); mental health including substance use, physical health, | gestation, 2 months, 10 months, 18 months, | | |
| recent intimate partner violence, self-efficacy, mastery (all time points); | 24 months | | |
| subsequent pregnancies (postpartum) | | | |
| Parenting behaviours and beliefs | | | |
| Breastfeeding, safe and nurturing home environment, child's exposure | 2 months, 10 months, 18 months, 24 months | | |
| to second-hand smoke | | | |
| Child health and development | | | |
| Injuries and ingestions (all time points), physical health, cognition, | 2 months, 10 months, 18 months, 24 months | | |
| language and problem behaviour (24 months) | | | |
| Maternal and child service access use | | | |
| Financial assistance, prenatal and parenting programs, primary and | < 28 weeks' gestation, 34–36 weeks' | | |
| secondary healthcare, barriers to accessing essential services (e.g., | gestation, 2 months, 10 months, 18 months, | | |
| primary healthcare, financial assistance, prenatal programs) | 24 months | | |

* Adapted from Catherine et al., 2016³⁶