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Community-Based screening and triage versus standard referral of Aboriginal children: a prospective cohort study protocol.

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Community-Based screening and triage versus standard referral of Aboriginal children: a prospective cohort study protocol.

Abstract

Health solutions for Aboriginal children should be guided by their community and grounded in evidence. This manuscript presents a prospective cohort study protocol, designed by a community-university collaborative research team. The study's goal is to determine whether community-based screening and triage lead to earlier identification of children's emotional health needs, and to improved emotional health 1 year later, compared to the standard referral process. We are recruiting a community-based sample and a clinical sample of children (ages 8 to 18 years) within one Canadian First Nation. All participants will complete the Aboriginal Children's Health and Well-being Measure (ACHWM)[®] and a brief triage assessment with a local mental health worker. All participants will be followed for 1 year. Children with newly identified health concerns will be immediately connected to local services, generating a new opportunity to improve health. The development of the research design and its execution were impacted by several events (e.g., disparate worldviews, loss of access to schools). This manuscript describes lessons learned that are important to guide future community-based research with First Nations people. The optimal research design in an Aboriginal context is one that responds directly to local decision makers' needs and respectfully integrates Aboriginal ways of knowing with Western scientific principles. Such an approach is critical because it will generate meaningful results that will be rapidly adopted, thus reducing the knowledge-to-action gap.

Keywords

Prospective cohort study, Aboriginal, children, mental health, screening

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Background

Aboriginal¹ children and youth² are the fastest growing segment of the population in Canada (Canadian UNICEF Committee, 2009; Statistics Canada, 2011). These citizens experience serious health inequities (Blackstock & Bennett, 2003; Canadian UNICEF Committee, 2009, 2012; Smylie & Adomako, 2009). For example, the rate of youth suicide is 5 to 6 times the national average (Advisory Group on Suicide Prevention [Canada], 2003; Canadian UNICEF Committee, 2009), and suicide/self-inflicted injury is the leading cause of death among Aboriginal youth (Adelson, 2005). Within the province of Ontario, rates of emotional health crises are highest in northern and rural communities, where the rates of physician visits for emotional health support are lowest (MHASEF Research Team, 2015).

First Nations represent 61% of the Canadian Aboriginal population and are the focus of this protocol. In Ontario, there are 133 First Nations reserves (Chiefs of Ontario, 2015), and most are geographically isolated. First Nations ranked 68th while Canada ranked third on the Human Development Index, a composite measure of life expectancy, education, and average income (Canadian UNICEF Committee, 2009). First Nations have scored consistently lower on the Community Well-being Index, with a deficit of approximately 20 points (Aboriginal Affairs and Northern Development Canada, 2015).

On-reserve health services have the capacity to deliver health promotion, prevention, early intervention, and counselling (White & Jodoin, 2004), yet many families seek emotional health support for children only during an acute crisis. Since intensive or specialist-based services are not available on reserves, children are often forced to leave their communities to seek services hundreds of kilometres from home, away from family supports (Nagarajan, 2004).

To achieve better alignment between the needs of First Nations children and the scope and capacity of on-reserve services, we must identify the needs of this population earlier. That requires recognizing children's need for support when their emotional health needs are emergent rather than urgent, and connecting children to culturally sensitive and efficacious support services within their own community. This protocol aims to turn attention to population health promotion and secondary prevention, and to engage the full scope of services, beyond specialist and physician care. It is in line with the *Ottawa Charter for Health Promotion's* recommendation to focus *upstream* (Mahler, Epp, Franklin, & Kickbusch, 1986), and with the *Mental Health Commission of Canada's Strategic Plan* (Mental Health Commission of Canada, 2016). Both documents highlight prevention strategies as critical in isolated communities. This protocol attempts to "develop and carry out locally-driven community plans for preventing suicide" as outlined in Canada's *National Aboriginal Youth Suicide*

¹ The term *Aboriginal* in this paper includes First Nations, Inuit, and Métis, and is the term preferred by our community partner.

² The term *children* is used in this paper to include both children and youth up to the age of 18 years.

Prevention Strategy (Health Canada, 2013). In other words, this project began with a strengths-based intention to paddle upstream towards wellness.

The screening tool embedded within the Aboriginal Children's Health and Well-being Measure (ACHWM)³ is a strategy for earlier identification. The ACHWM was developed by Aboriginal children and health providers, in collaboration with academic researchers (Young et al., 2013; Young, Wabano, Ritchie, et al., 2015; Young, Wabano, et al., 2016; Young, Wabano, Usuba, et al., 2015). It is completed independently by children (8 to 18 years), using Android tablets. The ACHWM is able to identify at-risk children (Young et al., 2017) in a way that is culturally appropriate and feasible in isolated Aboriginal communities (e.g., First Nations) and is tied to rapid triage and access to treatment resources. Previous testing of the ACHWM's screening and triage process took place from 2014 and 2015 (Young et al., 2015; Young et al., 2016; Young, Wabano, Usuba, Trottier, & Burke, 2014). Results indicated that 18% of children were at risk, and most had not previously been supported through standard practice (Young et al., 2014; Young et al., 2015; Young et al., 2016). The screening algorithm has good psychometric properties in this setting: a positive predictive value of 84.5% and a negative predictive value of 94.7% (Young et al., 2016).

The purpose of this study protocol is to evaluate the effectiveness of screening, triage, and subsequent treatment on the emotional health of children living in a rural First Nation. This paper describes the protocol and reports on the experiences from the planning and implementation stages of this project, with the goal of informing future research.

Methods

This research is guided by the *First Nations Mental Wellness Continuum Framework* (Health Canada, 2015). The framework articulates essential services, beginning with "Health Promotion, Prevention, Community Development, and Education" and "Early Identification and Intervention" (Health Canada, 2015). The social determinants of health model (Greenwood & de Leeuw, 2012; Mikkonen & Raphael, 2010; Raphael, 2009) also plays a pivotal role. Most important, this protocol was designed with, and for, a First Nation. This protocol is in the implementation stage at the time of writing.

Relationships

Our team includes a mix of Aboriginal and Western clinicians and scholars. The leaders of this project (MJW and NLY) bring expertise from the community and the academy. They have a history of respectful collaboration that has spanned almost a decade and eight previous collaborative projects. The trust and respect within this relationship is an important component. The leaders expanded the team for

³ Aboriginal Children's Health and Well-being Measure[®] is a registered copyright of N. L. Young, M. J. Wabano, and S. D. Ritchie.

this project, bringing in additional expertise, carefully balanced to reflect and respect diversity and ways of knowing.

Research Question

This protocol answers one overarching research question: *Does the ACHWM screening and triage process lead to earlier identification of needs and better emotional health outcomes among Aboriginal children, compared to the standard referral practices?* Note that the term *earlier* refers to the stage of their illness trajectory rather than age (i.e., while their needs are first emerging).

Design and Justification

This protocol is evaluating a potential solution to a high-priority issue on First Nations reserves in northern Ontario: children's emotional health. It supports the community's direction to move towards community-based screening. We are following the guidance of the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans* (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, & Social Sciences and Humanities Research Council of Canada, 2010) and fulfilling the OCAP⁴ principles: ownership, control, access, and possession (Schnarch, 2004).

We are currently conducting a prospective cohort design with a 1-year follow-up period, to compare the emotional health of children who access on-reserve emotional support services through two different referral processes and to healthy peers. This approach is appropriate for community-based research and congruent with Aboriginal worldviews (Ten Fingers, 2005). It is also consistent with best practices for research with Aboriginal communities (Brant Castellano, 2004; Canadian Institutes of Health Research, 2010; Maar et al., 2011; Noojmowin Teg Health Centre, 2003; O'Neil, Elias, & Wastesicoot, 2005; Saylor & Blackstock, 2005). The potential for rapid uptake of findings into practice is enhanced because this design responds directly to local needs. Our protocol is informed by the "Strengthening the Reporting of Observational Studies in Epidemiology" guidelines (Von Elm et al., 2014).

Balancing Western science and Aboriginal ways of knowing.

Our goal from the outset has been to blend the strengths of Western science with Aboriginal knowledge, an approach that has been referred to as Two-Eyed Seeing (Bartlett, Marshall, & Marshall, 2012; Martin, 2012). While randomized controlled trials (RCT) are strongly favoured, such approaches have been critiqued in the context of research with Aboriginal Peoples for being heavily laden with imperialism and colonialism that influence the gaze of the researcher, and for privileging Western perspectives over Aboriginal ways of knowing (Smith, 1999). Our approach aims to follow the recommendations from the Truth and Reconciliation Commission of Canada (TRC, 2015b) to close gaps

⁴ OCAP[®] is a registered trademark of the First Nations Information Governance Centre (FNIGC; www.fnigc.ca).

in outcomes between Aboriginal and non-Aboriginal communities (Call to Action #19) and include Aboriginal voices to help provide guidance on the needs of Aboriginal people to improve health care access and processes.

The privilege afforded to Western experimental designs over Aboriginal worldviews is not uncommon (Ten Fingers, 2005) and presented several unique challenges in the process of grant development. An RCT offers scientific rigour; however, several requirements, such as blinding and randomization, were neither feasible nor appropriate in this community. Furthermore, the externally controlled nature of an RCT is viewed by many Aboriginal Peoples as contravening their autonomy and sovereignty; it also introduces selective participation and threatens the external validity of RCT results (Eap & Nagayama Hall, 2008; Lau, Chang, & Okazaki, 2010). Moreover, RCTs “may be useful tests of efficacy but rarely allow an evaluation of effectiveness” (Sanson-Fisher, Bonevski, Green, & D’Este, 2007). A potential limitation is their lack of external validity (generalizability) (Bowling, 2009; Cummings, Grady, & Hulley, 2007; Sherman et al., 2016). Because of these limitations, an RCT design would not generate evidence to change practice in the context of Aboriginal children’s health. A comparative, prospective cohort design is the most appropriate study design to answer our research questions. This design is also a good fit for the research capacity of the community and offers an opportunity to generate scientific evidence, while being inclusive and respectful of Aboriginal worldviews and values.

Setting

This protocol is being conducted on the Wiikwemkoong Unceded Territory, the largest rural First Nation in Ontario, with 547 members (17%) between the ages of 8 and 18 years (Band Council Secretary, 2016). The leadership of Wiikwemkoong has been proactive in developing new strategies to promote better health outcomes, with a specific focus on children (Wiikwemkoong Chief and Council, 2013). The development of the Aboriginal Children’s Health and Well-being Measure (ACHWM) began in this First Nation, and the mental health workers in this community originally identified the opportunity to embed an emotional health screening and triage process within the ACHWM. The rural location of this First Nation, located 2.5 hours (175 km) from the nearest urban centre, reduces the influence of urban services, making it a relevant microcosm in which to assess the impact of screening and triage. It has the health care resources necessary to respond to screening results, making it safe and relevant to conduct the proposed research. The findings from this study will be highly relevant to many other First Nations.

Participants

Children between the ages of 8 and 18 years who are members of Wiikwemkoong Unceded Territory are being recruited in two different ways: a community-based sample from schools and community events; and a clinical sample at intake into Nadmadwin Mental Health clinic, the primary emotional support service provider in Wiikwemkoong. School-based screening is recognized as a best

practice for harm reduction (Kutcher & Szumilas, 2008; Scott et al., 2009). Secondary prevention is most effective in high-risk populations (Clifford, Doran, & Tsey, 2013; Robinson et al., 2013).

The recruitment process includes sending information letters and consent forms to homes and schools, connecting with children at community events through information booths, and sending individual invitations to all children who have recently begun receiving emotional support services. Written informed consent and assent for the project are being obtained and securely stored in the health records office at Naandwechige-Gamig Wikwemikong Health Centre.

Variables and Measures

There are two main outcomes of interest: (1) timing of the identification of participants' needs for emotional support; and (2) emotional health 1 year later. Identification is determined by clinician assessment. The timing component is determined by level of emotional health, with higher scores at identification suggesting an earlier stage of their illness trajectory. Emotional health is being measured using the emotional quadrant (EQ) score of the ACHWM.

The Aboriginal Children's Health and Well-being Measure (ACHWM). The ACHWM is a self-reported health assessment tool developed with First Nations children in Wiikwemkoong (Young et al., 2013). It endeavours to move beyond the biomedical model of illness to understand the health and wellness of Aboriginal children through a culturally informed model. It is conceptually grounded in the Medicine Wheel framework (Dumont, 2005) and assesses spiritual, emotional, physical, and mental health to generate a wholistic⁵ picture of children's wellness (Young et al., 2013). Scores range from 0 to 100 and higher scores indicate better health. In addition to being culturally appropriate (Young et al., 2013; Young, Wabano, Ritchie, et al., 2015), it is also valid (Young, Wabano, Ritchie, et al., 2015; Young, Wabano, Usuba, et al., 2015) and reliable (Young, Wabano, et al., 2016). In the hands of First Nations health leaders, the ACHWM process enables solutions to come from within each community (Saylor & Blackstock, 2005) and fosters empowerment (Chandler & Lalonde, 2009). The ACHWM is relevant to other communities (Baker-Anderson et al., 2015; Paquette, Boulard, Roy-Charland, & Young, 2014; Young et al., 2017) and has the support of the Chiefs of Ontario Band Council Resolution #13/15. The EQ score is the average of responses to 24 questions and is a marker of emotional health. Our previous analyses of the psychometric properties of this ACHWM subscale (e.g., Cronbach's $\alpha = .88$) indicated that it satisfies key criteria necessary for a primary outcome (Young et al., 2016). The EQ score is the primary outcome in this study.

Other measures. Additional information on treatment is being gathered for all participants treated at the local mental health clinics. This information includes: diagnostic codes, number of clinical

⁵ The term *wholistic* is preferred over *holistic* because it is based on "whole," meaning interconnection of several parts to form a whole, rather than a gap as would be implied by "hole."

visits, number of missed clinical visits, other health services utilizations, type of services, duration of service, clinical progress, and critical incidents. Location of services (on vs. off reserve) and type of provider are also being recorded.

Procedures

All participants are being asked to complete the ACHWM on tablets at intake into the study (baseline). Data are being stored using ID codes, uploaded to a REDCap (Harris et al., 2009) server at Laurentian University (<https> protocol), and reviewed for any errors or omissions at the end of each implementation day. This system offers a high level of data security, is backed up daily, and provides the community partners access to their data through our server as specified on our sharing agreement.

ACHWM screening and triage process. The ACHWM screening and triage process previously described by Young, Jacko, et al. (2016) is being applied to identify emergent emotional health concerns. The ACHWM identifies potential risk in real time based on responses to 18 screening items. The ACHWM Android tablet application executes the preprogrammed screening algorithm, then displays and prints a screening report showing flagged responses, summary scores, and all quadrant scores including EQ. Screening results for each participant are immediately shared with a local mental health worker (MHW) on site, who conducts a brief assessment with each child in private to determine their risk status (not at risk or at risk). The MHW then triages at-risk participants to appropriate emotional health supports (e.g., one-on-one counselling or services of a traditional healer).

Group Assignment

The *children recruited in the community* are being divided into two groups based on the MHW's assessments: the subgroup who are not at risk form the healthy peers group (HP), and the subgroup who are at risk form the newly identified needs (NIN) group. The *children recruited in the clinic*, and who are in the early stages of treatment (with 3 months since diagnosis), form the typical treatment group (TT). The group assignment is summarized in Figure 1.

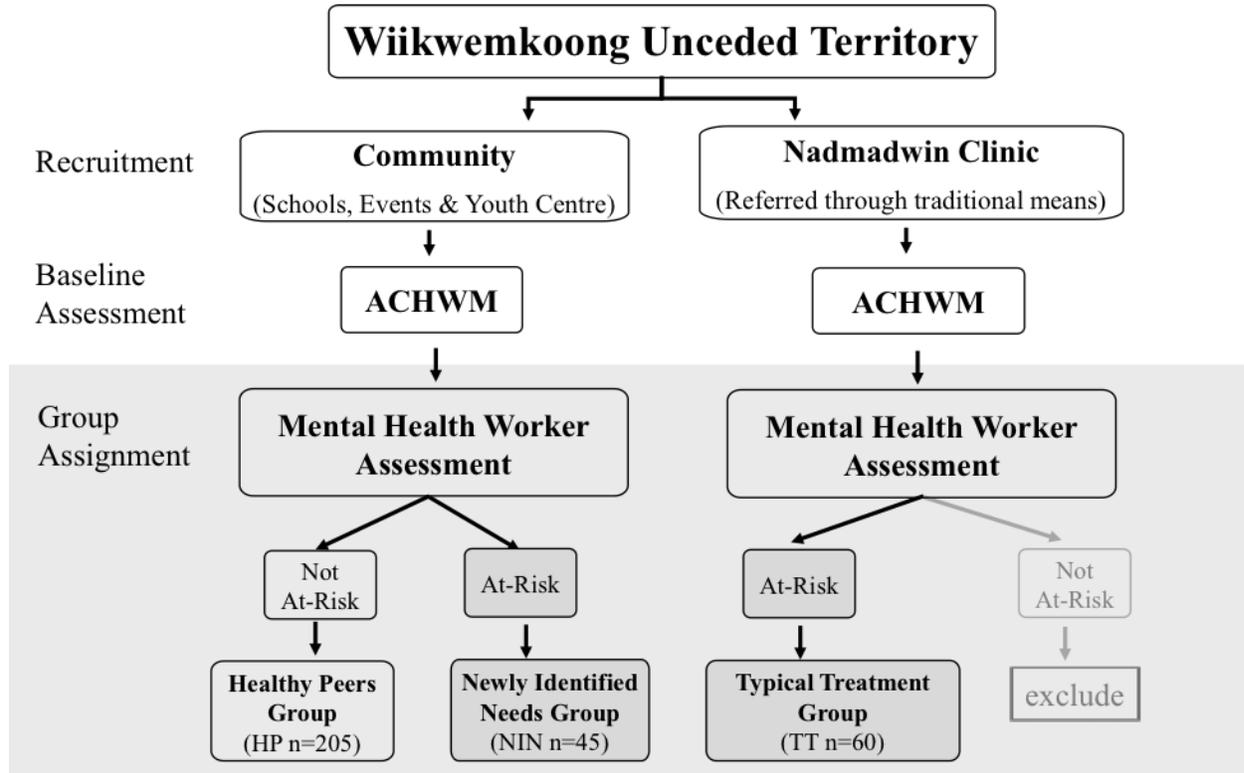


Figure 1. Identification of three cohorts in the triage process via mental health worker assessment. Sample size values are predicted estimates. ACHWM = Aboriginal Children’s Health and Well-being Measure[®].

All three groups are being followed for 1 year from baseline. The HP group are being assessed at baseline and 1 year later using the ACHWM. The NIN and TT groups are being referred to local MHWs for support according to usual clinical protocols in this community. These participants are to be reassessed using the ACHWM at quarterly intervals until the end of the follow-up period (i.e., 1 year from baseline). MHWs treating participants in the NIN and TT groups are to submit a quarterly report on each participant’s use of mental health services and progress. These data will be used to support the exploration of cost implications related to the ACHWM screening and triage process.

Analyses

Descriptive statistics will be used to summarize the demographic characteristics of the study groups, including age, gender, the ACHWM overall score, and the four ACHWM quadrant scores. The amount of missing data and reasons for missing data will be used to determine the imputation plan for incomplete variables, including missing longitudinal measures (Van Buuren, Brand, Groothuis-Oudshoorn, & Rubin, 2006). The modelling strategies described below will then be applied to each imputed data set to answer our overarching research question: *Does the ACHWM screening and triage process lead to earlier identification of needs and better emotional health outcomes among Aboriginal*

children, compared to the standard referral practices? This overarching research question will be divided into two subquestions for analysis.

To what extent does the ACHWM screening and triage process enable the identification of needs earlier in the illness trajectory, among Aboriginal children, compared to the standard referral process?

This question uses the term *earlier* in reference to stage of children's emotional health trajectories rather than age, and has been operationalized based on EQ scores at baseline (where higher scores indicate better emotional health or an earlier stage of illness). This question will be answered by comparing EQ scores at *baseline* for the NIN group (identified via the screening and triage process) to those of the TT group (identified through traditional referral mechanisms and receiving emotional support from local MHWs).

We will use a linear regression model of *EQ scores at baseline* with group (NIN vs. TT groups) as the independent variable, generating point estimates (and 95% confidence intervals) that will quantify the differences at baseline between those identified through screening compared to the usual referral process. We will also include covariates in this model to adjust (using inverse weighting with propensity scores) for the influence of age at baseline, gender, and which school they are attending.

To what extent does the ACHWM screening and triage process contribute to better emotional health 1 year later for at-risk Aboriginal children (NIN group), compared to the standard referral process (TT group)?

To understand the impact of the screening component on emotional health trajectories over 1 year, we will graph the distribution of EQ change scores as a function of time for each of the groups: NIN, TT, and HP. Box and whisker plots will be used to examine the changes in each of these groups. These graphs will demonstrate the pattern of change in each group. We will use a linear regression model to compare the 1-year EQ change scores between the NIN and TT groups, relative to the HP group to adjust for any changes over time in the general population's EQ scores. This regression will also include adjustment for age, gender, and school. The HP group will form the reference (or control) group to adjust for any changes in health that occur in children who are not receiving treatment. The comparison of the NIN to HP group will determine whether or not there is a significant improvement in health in the NIN group, over and above the underlying trend in child health in this community, as demonstrated by the HP group. The comparison between the NIN and TT groups will determine whether treatment of the NIN group is more or less effective than treatment beginning at the usual point in the health trajectory.

The clinical expectation for EQ change scores over 1 year is moderate improvement in the TT group; greater improvement in the NIN group due to better fit between their needs and the scope and capacity of local services; and no change or slight decline in the HP group.

Bias

To minimize systematic bias, we have established standardized training, and all scoring and screening processes have been automated. During the development of the ACHWM, considerable effort was made to reduce random errors from participants through standardized testing protocols and information-gathering methods. Children are completing the ACHWM in a quiet, nondistracting environment. We acknowledge that there may be selection bias, with a tendency to recruit children with better health (early adopters), which has the potential to bias the generalizability of our findings. Thus, caution will be exercised in the interpretation of results. We also recognize that there may be events in the community (either positive or negative) that may influence ACHWM scores. The inclusion of the HP group will permit us to account for any systematic change in the population during the study period.

Sample Size Estimation

We designed this study to include 250 children (46% of the target population) between the ages of 8 and 18 years to complete the survey at school or at a community event. Within this sample we expect 45 children (18%) to be at risk (NIN group) (Young et al., 2016), leaving 205 in the HP group. We expect the TT group to include approximately 60 children as part of the standard referral practices, based on referral records at Nadmadwin for 2014 and 2015. Attrition at 1-year follow-up is expected to be high, but the magnitude is unknown. However, all participants will be attending local schools or Nadmadwin. These sites provide an excellent opportunity to maximize follow-up.

The baseline EQ mean (and standard deviation) for the HP group is estimated to be 77.7 (11.3) and the EQ mean for the NIN group is estimated to be 56.5 (10.8), based on 2014 and 2015 data from this community (Young et al., 2014; Young et al., 2015). We also know that the EQ mean for children reporting “good” health has been 10 points higher than the mean for those with “fair” health in previous studies (Young et al., 2014; Young et al., 2015). With our expected group sizes, an alpha of .05, and a standard deviation of 11 points, the study will have 80% power to detect a baseline EQ score difference of 6.1 points (a medium effect size).

Discussion

This protocol was developed by a diverse interdisciplinary team who were carefully selected to support a Two-Eyed Seeing approach (Bartlett et al., 2012; Martin, 2012). To inform future work, we discuss the lessons learned through both the planning and implementation stages.

Lessons Learned Through Planning

It became apparent in the early stages of developing this protocol that many aspects of the design could be approached in substantively different ways (Aboriginal and Western) that were not easily reconciled. For example, the team had two different approaches to the research question. The overarching question that developed in collaboration with Aboriginal community and academic partners was: *Does the ACHWM screening and triage process lead to earlier identification of needs and better emotional health outcomes among Aboriginal children, compared to the standard referral practices?* For the submission of the protocol, the funding agency required the research question in PICOT format (population, intervention, comparison group, outcome, and time) (Guyatt, Rennie, Meade, & Cook, 2008; Haynes, Sackett, Guyatt, & Tugwell, 2006; Rios, Ye, & Thabane, 2010): *Compared to the standard referral process, does the ACHWM screening and triage process enable the identification of children's needs earlier in their illness trajectory and result in better emotional health over 1 year, for at-risk children living on a reserve?* This format reflects a Western perspective. Furthermore, the PICOT format was not acceptable to the community partners and several of the academic partners. In this manuscript, both question formats are presented. However, we are focusing on the first non-PICOT question, because we have the shared aim to improve tailored health systems and practices by creating innovative, patient- and community-centred research approaches, and because we have a community as our partner and their children as our priority. The nuances of the two variants of the question underscore one of the challenges of working in two paradigms.

Some challenges arose that were unfamiliar to some of the collaborative members, such as the need for approval from the local Chief and Council in the form of a Band Council Motion in addition to the standard approvals from the university and the Research Ethics Board. Community engagement, reciprocal dialogue, and Chief and Council approval are essential to respect the sovereignty of the First Nation.

It was clear that nuances of language had great significance as we progressed in writing this manuscript and received feedback from both community and academic partners. The weight of the implications of some terms became apparent. For example, the use of the term *privilege*, (Beavis et al., 2015) was important to consider due to the gravity of its meaning to Aboriginal people. The weight of this word was not initially appreciated by all scientists within the team, and through the writing we moved towards a better understanding of critical terminology. The nuances of clinical terminology versus scientific terminology versus community practice terminology were also distinct and required careful consideration, such as the term *emotional health* versus *mental health*. In Anishinaabek teachings, feelings are part of “emotional wellness,” yet in Canadian society the equivalent term is “mental health.”

The team considered registration of the design with the primary clinical trial registry at www.isrctn.com; however, it became apparent that the categories and language used in the registration process (e.g., “condition” implies disease) did not adequately fit the community-based population sample described here. Our goal is to give voice and power to community members and build strength, in keeping with the recommendations for research with Aboriginal Peoples in Canada (Baydala, Saylor, & Ruttan, 2013). We are respectfully electing to share the methods through this publication, rather than via a clinical trials registry.

The team also developed strategies to share information about the project and to link partners across distance. There were unique requirements to fit with the context (e.g., need for processes that worked outside of Wi-Fi and with low Ethernet connectivity). There was also extensive relationship building and education on both sides of the team, including developing an understanding of Aboriginal culture among scientific partners. This was achieved through weekly phone meetings and monthly face-to-face meetings to build and maintain relationships across the core team; file sharing between all members of the team; and data sharing with a limited number of community and academic partners via REDCap (Harris et al., 2009). While not optimal, these solutions met the needs of this collaboration. Screen sharing and toll-free dial-in numbers were provided for most team meetings, to ensure review of all pertinent material both visually and through verbal discussion. The first full team meeting was held on the traditional territory and was an important contextual learning experience for the academic team, several of whom had little or no experience of life in a First Nation. It aided in developing relationships that are essential to respectful collaboration.

Lessons Learned Through Implementation

Through the implementation of this design, several key lessons were learned that were not expected by a few members of the team, and thus are important to share. First, the time required to initiate the project was significantly extended. This was due to the need to further develop collaborative relationships across the extended team, obtain engagement of all involved, secure the subgrant agreements through the university, and hire local staff in an environment with limited human resources.

Second, on-reserve clinical services were continually evolving, both as staff transitioned in and out of positions, and in response to local policies. For example, the local MHWs were employed through an intermediate agency, and additional approvals were necessary to gain access to these key staff. The study could not be fully implemented in their absence. In addition, the MHWs had grown accustomed to having information from the ACHWM to inform their counselling. Thus, it was important that the local MHWs be able to use the measure with all new clients, not only those who consented to the study. The consent process was modified to permit the ACHWM to be used as part of clinical practice, with consent obtained later to share the clinical results with the research team. The timing of consent was thus delayed to ensure the clinical needs of the children were not compromised by the consent process. We also learned that many participants wanted to have the consent discussion with the MHW who was

providing their treatment. We identified that choice was important in this consent process and determined that the children should be the ones to choose. Participants were offered the option to speak to another staff member about a related research project or to have that discussion with their clinician. This process was approved by the Laurentian University Research Ethics Board (6008139 & 6008433).

The ethics approval was achieved efficiently, as was Chief and Council approval, due to the strong, positive, and longstanding relationships between the team and these organizations. Recruitment began smoothly but was later compromised by a change in the interpretation of Board of Education policy. Given the community-engaged nature of this study, working within the guidelines of local agencies was imperative. The team discussed alternative recruitment strategies, such as recruiting through community events and at the local health centre, to compensate for lack of access to the schools. The team also connected with two neighbouring First Nations to permit recruitment of additional participants.

Finally, a key issue in the study was potential for loss of follow-up. This may be related, in part, to seasonal migration to and from the reserve. The tracking of all participants through the period of the study has been uniquely challenging and critically important. We have also discovered that members of the NIN group may choose to seek services away from the reserve to ensure greater privacy, since there may be familial ties to some service providers within this isolated community. They may also wish to access more intensive or specialist-based services. These concerns are unique to remote communities, and add to the complexity of research with isolated communities (Ritchie et al., 2013).

Conclusions

This manuscript presents an evaluation protocol for Aboriginal emotional health that integrates Aboriginal ways of knowing and Western scientific principles. This blended research approach is not well known in the scientific community and infrequently published in the literature. The unique challenges this diverse team faces, including the challenge of maintaining a balance between the paradigms, present unique learning opportunities for those embarking on research relevant to Aboriginal populations, including scientists and community leaders looking to build partnerships with researchers. Hence publication of the protocol and unpacking key challenges and solutions are important for future research.

Our collective observations to date underscore the importance of capturing data that go beyond the traditional quantitative outcomes. These observations pertain to both the process and outcomes of the research. Through our process we recognize the need to add a qualitative component to capture the broad impacts of this study. This approach is acceptable in the community and will allow for greater exploration of the mechanisms contributing to meaningful impacts and outcomes. The selection of methods that are in keeping with local practices and ways of knowing is critical to reducing the knowledge-to-action gap (Graham et al., 2006; Maar et al., 2011; Straus, Tetroe, & Graham, 2013).

Our observations are consistent with a fundamental tension between the demands of research and the capacity of the community, similar to the tensions described by Boydell et al. (2016) in the context of arts-based health research (i.e., balancing structure vs. openness and flexibility; fulfilling academic obligations of truth and accuracy; resisting typical notions of what counts in academia; and managing expectations vis-à-vis measuring the impact). Tensions have been resolved through strong and respectful collaboration between community and academy. Through this protocol, we present a model of how effective research may be possible in Aboriginal communities, when driven by decision making at the community level. This paper reinforces the need for a redefinition of what is considered scientifically rigorous knowledge production when working with Aboriginal people. It is an example of a design that presents the opportunity for rapid uptake of results that lead to change in First Nations communities, because this design responds directly to local needs.

This research protocol is the result of respectful collaboration and meets the objectives and priorities of the community. This protocol is also in alignment with the *Truth and Reconciliation Commission of Canada: Calls to Action* report (TRC, 2015b). It aims to address inequities in health outcomes related to children's emotional health. Regionally, this research is in line with the goals and plan of North East Local Health Integration Network's (2016) *Aboriginal Health Care Reconciliation Action Plan*.

The overall impact of a process change (screening and triage) on health outcomes for children at risk will be clear in the future results from this study. Furthermore, the results are expected to impact intermediate determinants of health (Reading & Wien, 2009) and improve community health by enhancing the delivery of on-reserve health services. Finally, we hope that this paper may become one of many examples of how researchers may respond to the TRC Calls to Action, with research that puts the needs of Aboriginal children first through partnership, blended models, and real-world study designs.

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