

# Mental Health Mobile Applications Developed for Indigenous Communities in Canada: A Scoping Review

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## ABSTRACT

In Canada, Indigenous populations have an increased prevalence of psychiatric disorders and distress. Mental health mobile applications can provide effective, easy-to-access, and low-cost support. Examining grey literature and academic sources, this review found three mobile apps that support mental health for Indigenous communities in Canada. Implications and future directions are discussed.

**Keywords:** technology, mental health, Indigenous, First Nations, mobile apps

## RÉSUMÉ

Parmi les autochtones du Canada il y a une prévalence accrue de troubles psychiatriques et de détresse. Les applications mobiles en santé mentale peuvent fournir une assistance efficace, simple et abordable. En examinant la littérature grise et les recherches universitaires, cette revue a identifié 3 applications mobiles qui soutiennent la santé mentale des communautés autochtones du Canada. Les conclusions et les implications sont ici discutées.

**Mots clés :** technologie, santé mentale, Autochtones, Premières Nations, applications mobiles

Indigenous communities in Canada have faced cultural genocide and substantial trauma caused by residential schooling enforced by the Government of Canada. This trauma has passed through generations, with descendants of residential school survivors experiencing similar mental and emotional burdens. To date, mental health services have not been able to meet the needs of Indigenous communities. Healthcare professionals who facilitate mental health services for Indigenous communities receive limited training, lacking cultural competence, and/or expert knowledge of mental health disorders. Other challenges for accessing mental health services include stigma, discrimination, and maintaining anonymity due to limited choice of healthcare providers and counsellors. Given that there is insufficient mental health support for Indigenous communities, other methods of service delivery must be considered.

Apps are smartphone software tools that can deliver more affordable and accessible mental health services by increasing engagement, facilitating treatment, and maintaining gains after treatment has ended. Culturally appropriate mobile mental health apps designed with and for Indigenous communities may help fill the gap between mental health service needs and availability.

This review investigates the current landscape of mental health apps designed specifically for Indigenous communities in Canada through a scoping review framework. We examine two key cultural elements (language and cultural symbols) and several functional elements of each app and highlight future directions for the field. The authors also share work currently in progress that contributes to the development of a culturally relevant co-designed mobile mental health app.

## METHODS

This research was guided by an Indigenous Youth Mental Wellness Advisory Committee from Six Nations of the Grand River who identified the research question, provided feedback, and gave further input

as needed. We acknowledge that in part this project was funded by grants to C. Wekerle and D. Martin Hill from the Global Water Future agency and Canadian Institutes of Health Research, Institute of Indigenous People's Health. We employed the Arksey and O'Malley (Arksey & O'Malley, 2005) framework with supplements for methodological improvements for scoping reviews. We included sources from biomedical and grey literature searches that reported on mobile health apps to support mental health for Indigenous communities in Canada. Exclusion criteria were mobile apps that targeted conditions other than a mental health disorder (e.g., diabetes) even if they included a mental health component (e.g., resiliency), apps for Indigenous communities not in Canada, and/or apps not related to mental health.

## RESULTS

Three apps, IndigenousFriends (Banos, 2016), FirstResponse: Matawa LC (Qwantech, 2019) and It's My Life (Push Interactions, 2017) met our inclusion criteria. Based on app store descriptions from GooglePlay and the Apple App Store, the three apps were classified as "social networking," "utility" or "lifestyle," and age ratings varied (IndigenousFriends: 12+, FirstResponse: 17+, It's My Life: 4+). Each app had account capability; none had notification customization features within the app (e.g., hiding notifications, notification frequency, or specific notifications only). All apps had a simple interface with purposeful page layouts, consistency between screens, and common elements such as menus, and buttons. Only IndigenousFriends fulfilled the domains of high patient engagement and self-monitoring features. None of the apps had been evaluated for clinical outcomes of users in rigorous trials. Both IndigenousFriends and It's My Life had feedback surveys for users and had recently been updated. Uniquely, IndigenousFriends included map features, allowing users to locate nearby Indigenous resources and tutorials, and had an option for French language. There was no cost associated with the three apps.

Indigenous-specific features associated with each mobile app varied. None of the apps had an option for Indigenous language, while all used Indigenous related symbols and images (e.g., medicine wheels, eagles, feathers, and dream catchers). IndigenousFriends used three symbols, It's My Life used two symbols, and FirstResponse used one symbol. None of the apps incorporated Indigenous teachings of love, respect, courage, wisdom, humility, honesty, or truth. IndigenousFriends was designed specifically for university students of York and St. Paul's universities in Canada. All apps included Indigenous-specific resources and information available such as events in the area, scholarships, upcoming movies, and popular articles.

IndigenousFriends included information and articles related to emotional wellness, suicide, and grieving. FirstResponse had information and articles related to anxiety, depression, and schizophrenia. However, this mental health information was only available by links to external websites, and thus required web access. In contrast, It's My Life had information related to a wide range of mental health topics including resiliency, social and emotional wellness, anxiety, depression, schizophrenia, eating disorders, grieving, and obsessive-compulsive disorders. All articles and information available on It's My Life were embedded within the app and accessible without internet access.

## DISCUSSION

Of the included mobile apps, two important cultural features were examined thoroughly: language and cultural symbols. Of the three apps, none had an Indigenous language option. IndigenousFriends stated that while Indigenous languages were considered, they were ultimately not included. Selecting a single Indigenous language for an app could be problematic because users may belong to different Indigenous nations and speak different languages and dialects. The decision to use English as the application's primary language was made to avoid confusion among Indigenous users. However, a culture's conceptual understanding of the world is articulated through its own language, making language a crucial part of identity. Future mobile apps should consider offering a variety of Indigenous language translations in addition to English.

Symbols are considered the basic unit of culture, as they convey a message without further explanation or language. All included applications had at least one symbol relevant to Indigenous culture. For example, IndigenousFriends contained symbols of the medicine wheel based on Anishinabe and a tipi. The medicine wheel depicts four colours representing the dimensions of human beings, and tipis are sacred places that should be cared for by the whole community. Further, the app was developed in keeping with the tipi tradition: the app may be considered as a sacred space to be cared for by the community. This approach was a deliberate effort to include understanding and teachings of the Indigenous peoples.

While symbols are important to convey culture and unite a community, these apps may have been created to be generalizable to all Indigenous populations in Canada. It could be potentially harmful to use symbols belonging to one Indigenous clan due to misinterpretation and conflicting meanings. For example, crests are commonly property of the Indigenous clan who own them; they may defend their ownership of these crests to prevent infringement of trademarking. It is important for app developers to consider making similar re-iterations of apps with appropriate symbols for each Indigenous community using the app.

## CONCLUSIONS & FUTURE DIRECTIONS

This scoping review highlights the current mobile mental health apps available and designed specifically for Indigenous communities within Canada. Our findings demonstrate a lack of peer-reviewed literature and only three grey literature sources. This is in stark contrast to more than 208 mental health apps readily available to non-Indigenous communities (Radovic et al., 2016). Though these general population apps could be used by Indigenous peoples, they are not designed with them as key users. This low yield of research activity and mobile app availability reflects the lack of culturally relevant mental health programming and support for Indigenous communities, despite higher levels of mental health disorders, and further, reflect a larger systemic and institutional problem.

Future apps could better incorporate culturally specific features (e.g., language and cultural symbols) by adopting co-creation, or collective creativity, principles. For apps, this involves user-input and collaboration in the design and build phases of app development to ensure fit to users' needs. For community-based research, co-creation refers to the involvement of the community at each step of research activity. As an example, the Six Nations-McMaster Youth Mental Wellness Research Development and Advisory Committee is currently modifying an existing mobile resilience app, JoyPop™ through a co-creation process to address ecological grief and water anxiety. This modified version of JoyPop™ will be evaluated and supported by a

project led by a research team at McMaster University (Ohneganos Ohnegahde:gyo - Water is Life Project; Principal Investigator: D. Martin Hill; Co-Leads: C. Wekerle & L. Davis Hill) which aims to operationalize the principles of participatory action research and co-creation to develop a culturally relevant holistic wellness tool for Indigenous youth in the form of a mobile app. Evaluation of the process and efficacy of the resulting app will contribute to best practices in co-creation and user informed design.

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