Clinicians' Attitudes toward the Use of Information and Communication Technologies for Mental Health Services in Remote and Rural Areas

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Abstract

Little research exists regarding clinicians' attitudes towards the use of information and communication technologies (ICT) in clinical service provision – particularly within populations such as First Nations and Operational Stress Injury (OSI) clients. These clients may be particularly well served by technologies such as videoconferencing which allow clinicians to service these clients, many of whom are located in remote and rural geographical locations. However, adoption of these services is dependent upon on clinicians' willingness to use these technologies. In this paper we discuss the results of qualitative and quantitative analysis of both survey and interview responses with a specific emphasis on clinicians' attitudes towards use of ICT in service delivery in the present and future. Further, we explore successes, challenges and barriers to the use of technology as well as suggestions for future directions for research.

Introduction

This paper explores mental health professionals' attitudes toward using information and communication technologies (ICT) for mental health work, with a specific focus on the rural and remote context. We are interested in the professionals' views on the usefulness and appropriateness of the technology, its ease of use, the perceived advantages and disadvantages, and perceived barriers to use and ways to overcome them.

Little research exists regarding clinicians' attitudes towards the use of ICT in clinical service provision – particularly within populations living in First Nation communities and Operational Stress Injury (OSI) clients. These clients may be particularly well served by technologies such as videoconferencing which allow clinicians to service clients living in remote and rural geographical locations.

Adoption of these services depends upon on a clinician's willingness to use these technologies. Many clinicians have concerns with using these technologies for various reasons, but their perceptions, and ideas on how to overcome them, have received little research attention. Knowledge gained about factors which help or hinder the inception of these technologies may help define targeted strategies for reducing barriers. This could result in the increased use of these technologies which are essential in providing adequate care for specific clinical populations.

Literature review and research questions

The focus of our overall research project is mental health care workers' attitudes and experiences with telehealth and other ICT, with a particular focus on the First Nations and the Operational Stress Injury (OSI) contexts. Our research team has conducted a previous comprehensive literature review and report on ICT for assessment and treatment of OSI (Molyneaux et al., 2009). We also have partner First Nations organizations that support telemental health delivery. Telemental health is being actively used in many Canadian provinces with rural and remote clients - particularly, individuals living in First Nations communities who need mental health services and individuals with Operational Stress Injuries. Given the lack of previous research on the topic, it seemed like a natural next step for us to explore the attitudes of the mental health professionals who are using these technologies.

Information and communication technologies (ICT) include a wide range of technologies used in health services and administration, from videoconferencing and telephones to video, patient portals, computers and laptops, digital phones, camera phones, computers, email and web pages, handheld devices, digital cameras and DVD players, MP3 players, and so on. Telemental health (using videoconferencing) was the focus of this paper. Our research results for other types of ICT will be explored in future papers.

Real time audio and video connections, typically through Tandberg or Polycom videoconferencing systems, allow clinical, educational, training, and consultational mental health activities to take place. Videoconference events can be point to point, or can involve multiple sites. When more than two sites are involved, a "bridge" or MCU is used. Travel time and costs can be reduced via videoconferencing – and services can be provided more readily across catchment areas.

The Nebraska Psychiatric Institute (NPI) in the US was one of the first institutions to begin using telemental health (at that time it was called "two-way television") in the 1960s (Wittson & Benschoeter, 1972). One of the projects at the NPI explored the use of using two-way audio and video in individual therapy, where a patient was treated for approximately one year seeing the therapist only over a television. Wittson and Benschoeter concluded "the use of TV did not affect either the establishment of rapport between the patient and the psychiatrist or the attitude of either toward the therapy situation" (1972, p.624). NPI also completed a project using the two-way television system for group therapy and found that "the presence of television was neither a problem nor an asset" (p.624). In the 1970s in New Hampshire, local clinicians consulting with psychiatrists at the Dartmouth Medical School found positive benefits – such as increased knowledge and changes in prescription of drugs – from their experience (Solow, Weiss, Bergen, & Sanborn, 1971). They also reported that videoconferencing was not a barrier to developing rapport, or to perceiving emotional reactions.

Also within the US context, Shore and colleagues completed research examining the use of telemental health for rural First Nations individuals. Shore noted that the interpersonal space that exists with telemental health can sometimes facilitate disclosure to clinicians (Shore et al., 2008). In addition, he noted that emergency protocols (often called "safety-nets") are important in telemental health contexts. Furthermore, knowledge of the community, tribal history, and culture

is beneficial, and collaborating with a local provider can help aid in building the connection between the clinician and the community (Shore et al., 2008).

Little research has been conducted on telemental health and First Nations communities in Canada (KO, 2002). Even less is known about mental health worker's attitudes toward using these technologies, besides information that is typically collected in program evaluations (Carewest, 2008; Telemental Health and Teleaddictions Partnership Project - Mawi Wolakomiksultine Evaluation Report, 2006; KORI 2008). Much of the knowledge that does exist on this topic has been created by Keewaytinook Okimakanak (KO). KO is the Northern Chiefs Tribal Council in Northwestern Ontario. One KO division is K-Net, a broadband service provider to rural and remote First Nations communities in the region. Another KO division is KOTM – KO Telemedicine, which provides telepsychiatry, telecounseling, training and other health services to various communities connected by K-Net.

In Northwestern Ontario, mental health clinicians can only visit a community a limited number of times annually. The First Nations communities have access to few resources for mental health treatment due to limited funding, community remoteness, and lack of infrastructure, among other things (KO, 2008). If individuals want treatment they usually need to be accompanied by an escort and taken to a more urban location, often Sioux Lookout or Thunder Bay. Having to leave their community for service can place them at risk for other wellness problems (e.g. increased depression and anxiety, exposure to substances). Many times individuals may not receive any treatment because of these constraints to service provision. Telemental health then provides an opportunity to provide resources within communities where they otherwise don't or can't exist. It can also connect communities and individuals speaking Native languages. For example, in Northwestern Ontario there is a group of elders who connect via videoconference on a regular basis (KOTM, 2009). This process allows them to communicate and interact using their Native language, allowing an important cultural tradition to continue. In some cases certain financial costs to telemental health still fall back onto the community (KO, 2002). Nevertheless, it seems that there have been significant benefits arising from the telemental health programs in Northern Ontario communities (KORI, 2008; KOTM, 2009). In addition, telemental health has been identified as a cost and time saving measure (Shore, 2007; KO, 2002; KO, 2006).

Operational Stress Injury (OSI) clinics have a mandate for mental health service provision to veterans of the Canadian military and the RCMP who have suffered mental health problems (e.g. Post-traumatic Stress Disorder) related to their service. Some OSI clinics within Canada use telemental health to access clients in remote areas (Carewest 2008). Other OSI clinics are about to start using telemental health and have the equipment already installed. In Atlantic Canada, one OSI clinic is servicing the entire Atlantic population across its four provinces. This clinic relies on telemental health to make it possible to provide assessment services over such a large geographical area.

Clinicians may have a number of concerns about telemental health. One is that it will be more difficult to establish a therapeutic alliance and connect with the client if both client and clinician are not there in person (May et al., 2001). Another concern would be the necessity for a "safety net" of resources for the person at the distant site. Certain technical issues can arise during a videoconference, and the clinician and client need to be aware of these before the start of the

session. These technical issues include, among others, the challenge of maintaining eye contact, influenced by camera placement and the tendency for some synchronization problems between audio and video at times (Cukor & Baer, 1994). May and colleagues (2000) noted that for better audio and video interactions in telemental health, one might need to alter some of their usual face to face communication behaviors. Certain things, then, require some attention and consideration when using telemental health. Of course, attention to the therapeutic context is always necessary in mental health work regardless.

Clinicians' attitudes toward using the technology – its perceived usefulness (PU) and its perceived ease of use (PEU) - will also affect how they engage with ICT in mental health work. Previous research has established the link between PU and PEU and intent to use different kinds of technology in various work situations – this was demonstrated by the Technology Acceptance Model (TAM) (Davis, 1989). Specifically, PU is understood to mean the users perceptions of how useful the technology is for the task, and PEU refers to how easy it will be for them to use it. Clinicians attitudes toward using the technology (PU and PEU) are often investigated in program evaluations of videoconferencing for health organizations (e.g. Meyer 2008; Gibson and O'Donnell, 2009) However, little is known about how mental health workers in Canada feel about telehealth and other ICT for mental health work for rural and remote clients; and no research appears to exist in any country using TAM and the PU and PEU constructs for telemental health.

Our current study explored the attitudes of mental health care workers toward using ICT, specifically telemental health, for delivering services to rural and remote locations.

We had three core research questions:
1) How useful and easy to use is videoconferencing for communicating with clients?
2) What mental health activities are deemed appropriate for telemental health?
3) What are the barriers to increased technology use?

Research method

Our study was conducted in partnership with First Nation organizations and OSI organizations. Our research partners grounded our data collection, provided feedback on measures, raised awareness of the study, and facilitated access to research participants.

The study employed two different methods: 1) Structured interviews with mental health professionals who a) worked with First Nations communities, or b) worked at Operational Stress Injury Clinics; and 2) A national online survey, open to all mental health workers in Canada. Data collection is ongoing.

The study results discussed in this paper are preliminary, based on data from 28 interviews and 30 survey responses. The interviews provided in-depth information about participants' experiences with telemental health and their attitudes towards it, while the online survey allowed us to access a broader range of Canadian mental health professionals to explore their views on ICT use for mental health service provision.

Given that online surveys are a more recent methodology in the health research field, we will provide some rational for our use of this method. There have been a number of investigations into the advantages and disadvantages of using online data collection methods (Wejnert & Heckathorn, 2008; Riva, Teruzzi & Anolli, 2001). Many researchers have proposed the benefits to using online study methods. For instance, Eysenback and Wyatt (2001) suggest that online surveys offer increased flexibility to both the researcher and participant. For example, while the researcher may benefit from lower costs of survey administration and less time spent on data entry, in an online survey format the participant is equally benefitted in that they are able to choose to complete the questionnaire at their convenience – that is, when and where they are able to. Other advantages to online research include access to a large population which allows for greater external validity and the possibility of generalizing the obtained results, lowered operational costs, the possibility of providing access to the survey around the clock without any time limitation as well as the completely voluntary participation which usually improves respondents' motivation to participate (Wejnert & Heckathorn, 2001). In addition, participants are afforded greater anonymity by completing online research and some studies find that many are more willing to disclose more information regarding sensitive information in this survey format (Eysenback & Wayatt, 2001). Unfortunately, this anonymity may also be considered a disadvantage to researchers in that it is nearly impossible to ascertain the true identity of a person who has filled out an online survey. Regardless of these advantages and disadvantages to this research method, more data is accumulating which demonstrates that there are no statistically significant differences in the psychometric properties or internal reliability of online surveys when compared to traditional pencil and paper versions of similar tests (Wejnert & Heckathorn, 2008; Riva, Teruzzi & Anolli, 2001). Thus, the online survey format was chosen for this study as the researchers decided the benefits of this online format far outweigh the disadvantages and that this format is the most suitable for the national scope of the current project.

Profile of online survey respondents: Females represented 79.3% of the sample, and males 20.7%. Participants ranged in age from 18 to 64, with the majority of respondents falling in the age category of 25-34. Respondents were from: New Brunswick, Quebec, Ontario, Manitoba, Alberta, and British Columbia. Their length of experience in the mental health field ranged from less than 1 year (3.6%) to more than 20 years (21.4%). Twenty two percent reported having experience working with First Nation clients in remote or rural locations, and 42.3% reported experience working with clients with OSI.

Respondents held a variety of mental health positions: psychologist, social worker, nurse, administrator/program manager, and student. They engaged with technologies in mental health to varying degrees. Only 4% had experience with videoconferencing. In contrast, 80% reported having referred a client to information on a website.

The online survey had 38 items including personal use of technology, experience working with different populations, attitudes toward using different kinds of ICT for mental health work, and more. The online survey was created through surveymonkey.com.

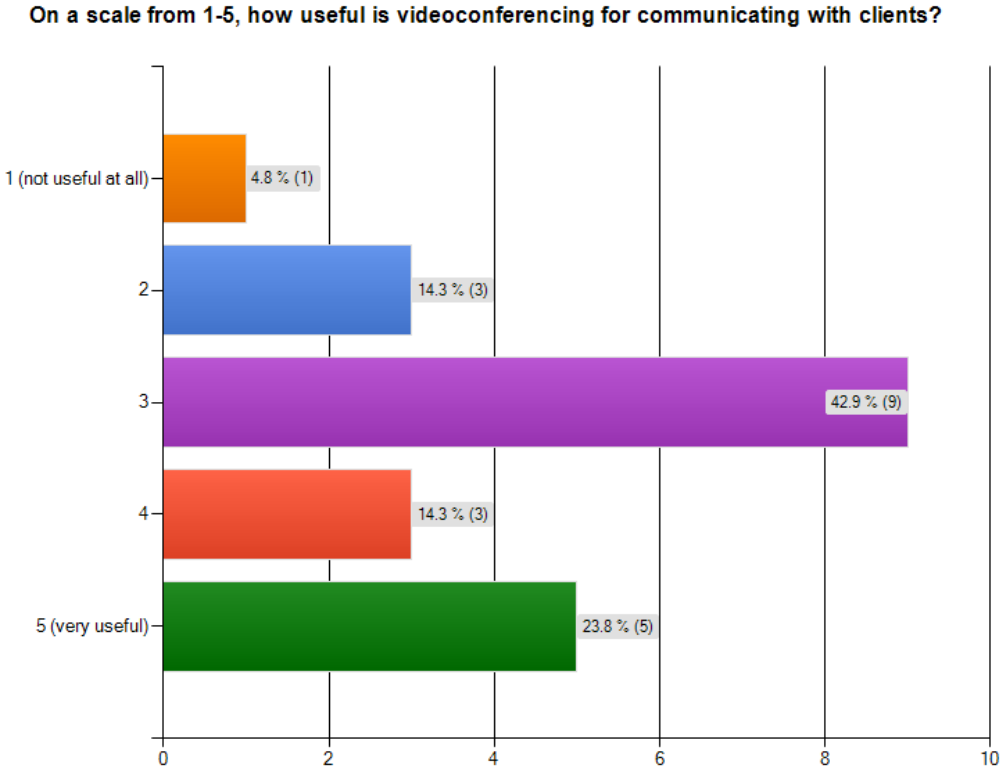
Interviews have been conducted with 23 OSI mental health professionals at four different OSI clinics in Fredericton, Quebec, Winnipeg, and Calgary. Two of the sites were involved with telemental health at the time of the interviews, and two of the sites had received the equipment

but had little experience overall with telemental health. In addition five interviews to date have been conducted with professionals with experience working with First Nation clients in Nova Scotia, Ontario, and British Columbia. Four out of five of these participants were female, and three of them had clinical mental health experience whereas the other two had nonclinical telehealth experience.

The study was approved by the National Research Council's Research Ethics Board. Participants were all treated in compliance with the ethical guidelines put forth by the American Psychological Association (APA, 2001)

Results for Videoconferencing for Clinical Mental Health

Chart 4.1: Perceived Usefulness of Videoconferencing



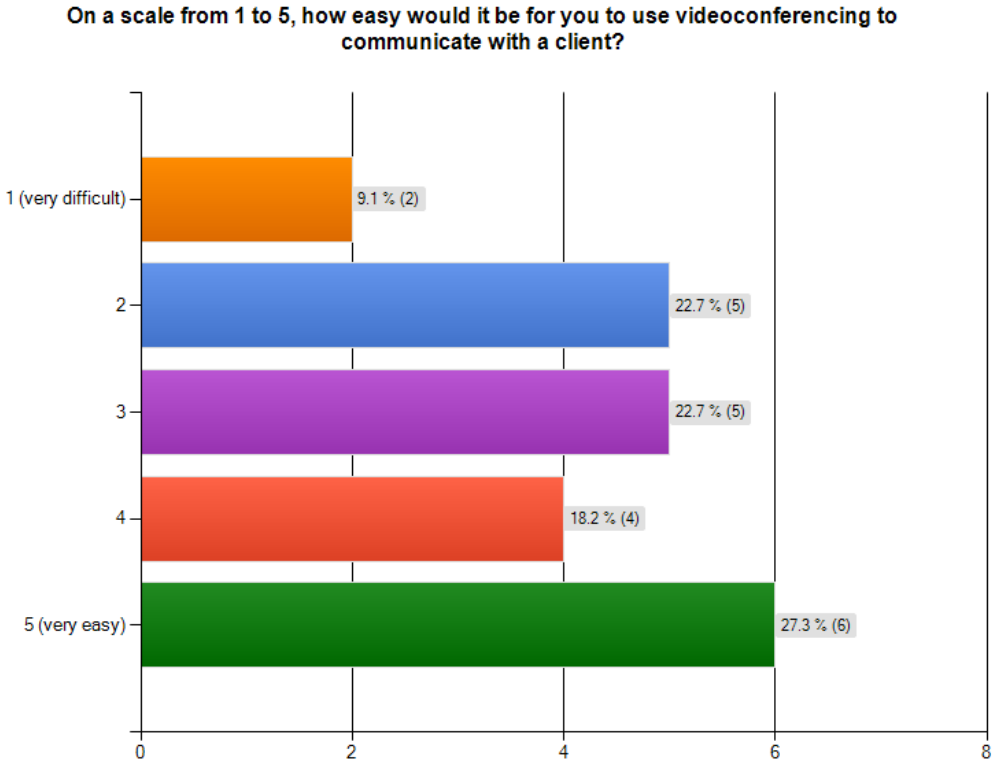
The most common response by survey respondents was that videoconferencing ranked 3 on a 5-point scale of usefulness (Chart 4.1). The mean rating was 3.4. When asked about the usefulness of videoconferencing, one interview participant said it would be 4 on a scale from 1-5 (where 5 equals very useful). She elaborated further:

> *" I think the technology . . . How do I say this? …the interpersonal distance is a little greater. And I think, for some people, they might actually be more comfortable with a little bit more distance…Particularly* when you're working with anxiety disorders. So it might help them to connect with the therapist faster, for some people." (OSI clinician)

Another interview participant spoke of the importance of taking the cultural context of videoconferencing and telemental health into consideration when looking at usefulness in First Nation communities:

> *"In order to deliver a program, the program has to come from the roots of the community, it has to come from within, and go out to the government. We're in a path, the way that we're doing it right now, the programs are coming from the government into the community, but it doesn't go into the roots, it just goes into the community, but when you're dealing from the roots, you're dealing with your culture, your traditions, your customs, and your, it's all community-based, it's all about you." (First Nations mental health professional)*

Chart 4.2: Perceived Ease of Use of Videoconferencing



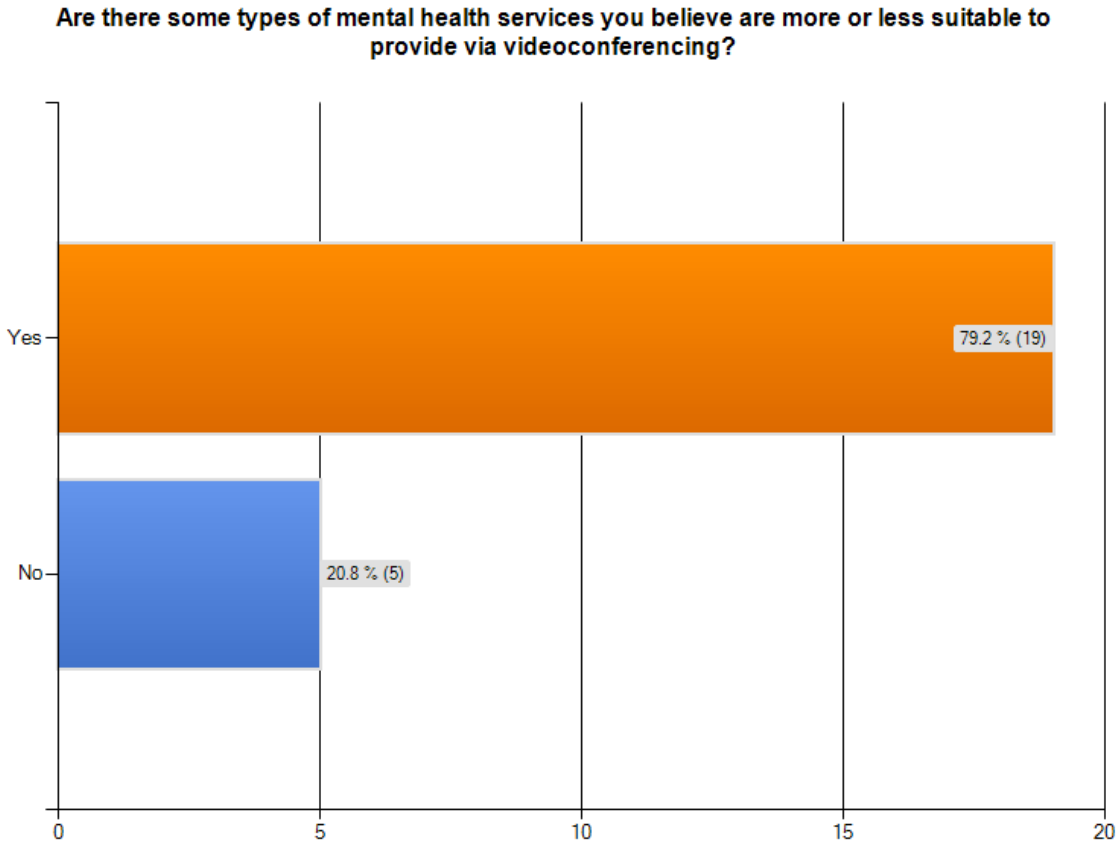
Respondents were also asked to report how easy they perceived videoconferencing to be. Participants were asked to report how easy it would be for them to use videoconferencing to communicate with a client. Responses were made on a 5-point scale with end points *very difficult* (1) to *very easy* (5). The most common response on this measure was 'very easy', and the mean score was 3.3. Most interview participants with telehealth experience remarked that it was fairly straightforward and easy to use once you had the chance to experience it "hands-on". The following clinician comments on how well telemental health has been working for her:

"Oh, very easy...It's straightforward and we've had really good luck with setting up sites for . . . in other locations and so, yeah, there hasn't been any problems." (OSI clinician)

The following participant explains her perceptions on the ease of use of the technology, and how the learning process was for her:

"It's easy, it took a little bit to get to know, and the intimidation of all of the buttons…but once I looked at what it was and read it that made things much easier, and then (tech support) came in …and I had an opportunity to play with it…that made things easy. I find sometimes that our elders know how to work these things (remote) better than I do, which encourages me!" (First Nations mental health professional)

Chart 4.3: Appropriateness of assessments and treatment through videoconferencing



Survey respondents were asked if they believe some types of mental health services are more or less suitable to provide via videoconferencing. A clear majority (79.2%) said yes, and their qualitative responses clarify these perspectives.

A preliminary analysis of the qualitative data (written responses) from survey respondents found that clinicians believe certain client characteristics might make the use of telemental health difficult – for example if a client is actively psychotic, and/or experiencing paranoia, or if they are anxious and uncomfortable about using the technology. In addition, it was remarked that

videoconferencing has not been used much in the provision of services to children – so exploration and research on this is still needed.

Several survey respondents wrote that psychotherapy would be difficult to provide via telemental health, and that assessment might be easier (though concerns were also raised about whether nervousness about using the technology could skew assessment results and how to maintain test privacy). One respondent wrote that therapy should be restricted to face to face encounters which create a "safe and secure environment". Another respondent said that the "use of video may interfere with the therapeutic process and relationship". Others explained that sometimes therapy is suitable for videoconferencing – such as when the therapist is working with the client on skill building, stabilization, or psychoeducation – but that exposure-based therapies seem less suitable for telemental health. Finally, one participant noted they saw little ability to use telemental health in the field of neuropsychology. Training of mental health staff was an activity deemed to be appropriate for videoconferencing.

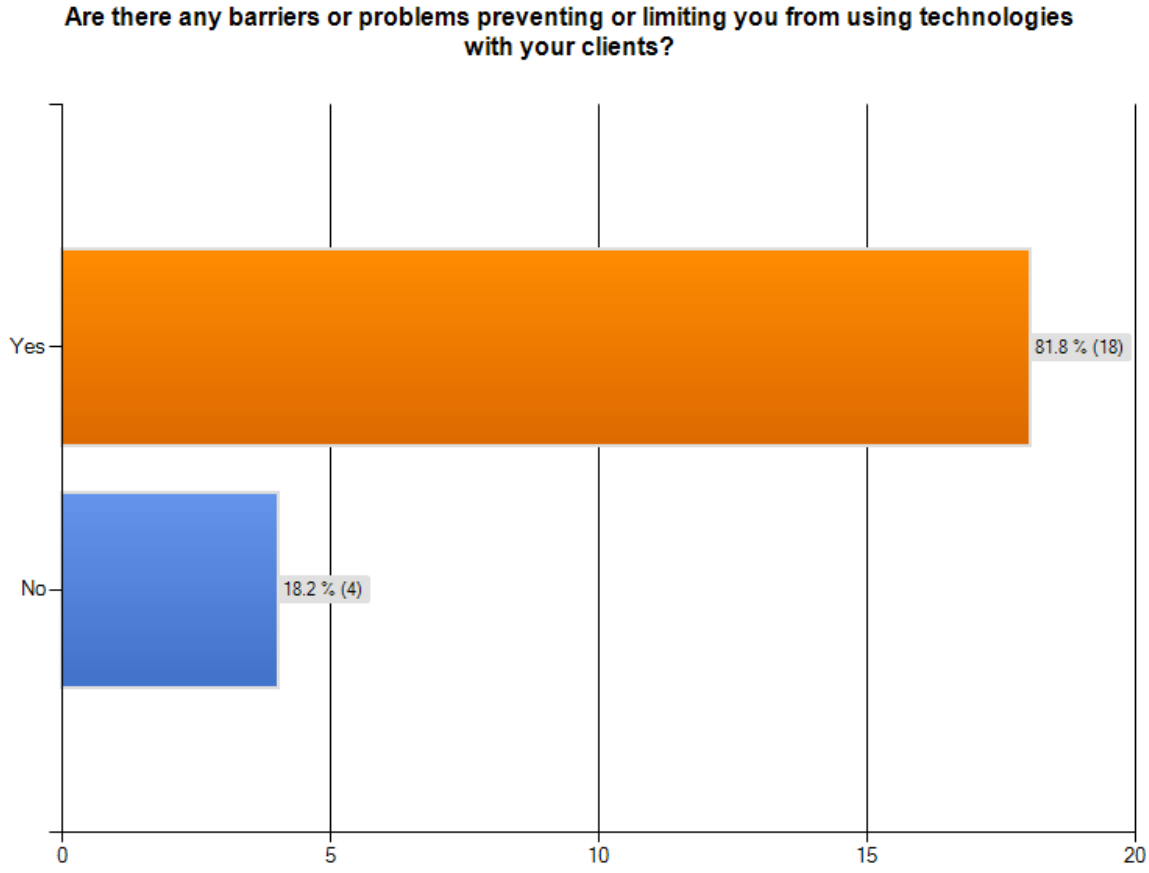
When asked about the suitability of videoconference for the provision of mental health services one interview participant said the following:

> *"Telehealth is just the same as face-to-face…. I think you have to . . . zone everything out, and I think when you become more comfortable with using it, then. . . your comfort level creates a comfort level for the client, as well. So, you're just there. And so I do a lot of education when we first start …although I'm on a video screen, although you know that this is just like if we were sitting together. And so after a while, they even say I don't even realize that we were not in the same room. And then you actually get a really good assessment." (OSI clinician)*

Another commented on its appropriateness in First Nation communities:

> *"When you start talking about residential school issues, you have to have a support group in the community, not just one, maybe two three people there, waiting for you, so that you don't walk out into, by yourself, into your own pain…Videoconferencing is not really appropriate, but it can be done as long as you provide follow-up immediately after…We tried having sharing circles. That works really good. People are still leery about it, but once we get going, it really works… They think like it's, because a sharing circle is part of our spiritual events, ceremonies, so it's kind of like, I guess, building technology and ceremonies, is like just too new." (First Nations mental health professional)*

Chart 4.4: Perceptions of Barriers for using ICT for Mental Health Services



Most survey respondents said there were barriers limiting their technology use with clients. When asked to elaborate, respondents reported a variety of constraints and barriers.

Technical difficulties were frequently cited as a barrier. One respondent wrote that the communities they would need to connect with have old phone lines, no fiber optic lines, and intermittent ISP connection. Clients having access to the technology and comfort, skills, and experience with using it was cited as another barrier. Privacy and confidentiality concerns were listed as another barrier to use. The financial costs of purchasing and using the technology was another reported barrier.

One respondent noted that the amount of time it takes to use some technologies is a barrier. Current organizational and clinic policies around telehealth were also reported as a barrier, as were clients' attitudes toward the technology - one respondent said "clients, despite distance and weather conditions, continue to prefer coming to the clinic."

An interview participant from an OSI clinic sums up some of her perceptions of the barriers to using ICT for mental health:

> *"I guess barriers would be making sure that there's an appropriate site available. And so sometimes that's, you know, calling, asking where it's located, you know, is this a private area? …And doing education on the phone with a client, because initially they're like: What are you talking about, video? So, I guess sometimes, even just the client's resistance. I find our new . . . our younger clients are probably more open to it, but I'm quite surprised that even our veterans and our elderly are, 'okay, yeah, I can use that'... And then just scheduling can be, you know, a challenge, to give enough notice to the site, to book it in, and then making sure that the client's going to be able to get there." (OSI clinician)*

The problem of funding of services was raised by one of the interviewees:

> *"We need funding. The clients do not have to pay, nobody here can afford it, so we have a budget we are working with… money is 'the thing' and has always been 'the thing'." (First Nations mental health professional)*

Discussion and Conclusions

This paper presents the preliminary results of a study on telehealth and other ICT for mental health, with a focus on the First Nations and Operational Stress Injury populations. Specifically, we drew on survey data and interviews to explore mental health workers' attitudes toward using telemental health, including their perceived usefulness and ease of use of the technology, perceived appropriateness for certain mental health activities, and perceived barriers.

Our first inquiry was usefulness of the technology. Mental health workers were asked how useful they found videoconferencing and telemental health for providing services to their clients. There was a distinct contrast between the perceptions of the survey respondents and the interview participants. The survey participants were comprised of mental health workers, who had less experience with videoconferencing (only 4% reporting use of it) and they seemed more skeptical of its use than the interview participants. Many of the survey respondents rated the usefulness of the technology at least 3 out of 5 (or higher). However the interview participants who had actually used the technology often gave very positive statements about videoconferencing and reported finding it extremely useful. One interview participant who had experience with telemental health for First Nations clients explained that prior to using videoconferencing she had limitations in her mind about what would be possible, but as she became more involved she realized the potential of ICT and how often the barriers to use exist mostly within our own minds. Further analysis of the data will investigate whether the differences between perceived usefulness of technology and other attitudes differ significantly as a function of experience with or use of the technology.

Next, we inquired about perceived ease of use of the technology. Almost the same percentage of survey respondents indicated the technology would be difficult to use (30%), and very easy to use (27.3%) (on a scale from 1-5 where 1 was very difficult). Interview participants with experience using the technology said it was simple for them to use the technology, and that if the clinician is able to become comfortable with the technology it allows the space for the client to

also relax. Even with minor technical problems, successful telemental health experiences were reported.

Mental health professionals varied greatly in their opinions of what services were appropriate to be carried out through telemental health. In the survey data and interviews, a few respondents indicated that telemental health should only be used if absolutely necessary, as it takes away from the face-to-face value of therapy and mental health. Others recognized certain limitations of telemental health, like how using videoconferencing for conducting more “intensive” therapies (e.g. EMDR or even exposure based therapies) may be more difficult or inappropriate. A mental health worker with First Nations experience explained that telemental health might not be the most appropriate for dealing with residential school system issues, though it could be possible. She went on to explain how the sharing circle format (a traditional First Nations model for group discussion) has been used through videoconferencing, and how the relationship between more traditional First Nations practices and videoconferencing is in its early stages. Overall, it appears that there is a very wide range of perceptions about what is appropriate to do over videoconference. The attitudes also appear to fluctuate depending on the users experience with telemental health.

Several barriers to increased ICT and telemental health use appear to exist. These include underdeveloped technical infrastructure (specifically within rural and remote communities), lack of funding for programs and technology, and accessibility problems. Client attitudes were also cited as a barrier – as one respondent remarked, when possible, clients prefer face to face interventions. Client confidentiality and privacy can sometimes be another barrier – though at the same time it can work in telemental health’s favor. For instance, sometimes videoconference rooms are not entirely soundproof, and of course people can be seen going into and out of the hospital. At the same time, in remote and rural communities, connecting with a therapist via videoconferencing means that the chances of encountering the therapist in the community or of being in a dual relationship with the therapist decreases significantly. As we continue this research it will be important to flesh out all of the barriers to use of the technology, so that these can be targeted for improvement, and also so clinicians and clients can be educated on the barriers and ways to overcome them.

In conclusion, clinicians have a wide range of attitudes toward using telemental health. Based on this preliminary data, it appears that the more comfortable the mental health worker is with the technology, and the more they have used it, the broader their imagination is for what can be done with telemental health. The usefulness and advantages of telemental health for providing services to remote and rural clients was echoed in the interviews. Many First Nation communities would not be able to access mental health services without telemental health; and many Operational Stress Injury clinics would not be able to fulfill their mandates without it either.

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and KOTM), the First Nations Education Council, the Atlantic Canada First Nation's HelpDesk - and the partners dealing with Operational Stress Injuries (OSI) - the National Centre for OSI, and the Fredericton OSI Clinic. Finally, the authors would like to acknowledge the support of colleagues on the National Research Council Social Analysis team.

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