Assessing Community Readiness for

Telepsychiatry in Rural Oregon: A Focused Descriptive Study

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Executive Summary

   The demand for psychiatric services in rural Oregon communities exceeds supply both from psychiatric specialists and general care providers. Telepsychiatry has been demonstrated to be a reliable and valid form of providing psychiatric care. Telepsychiatry addresses the issues that make recruitment and retention difficult. Adoption and implementation of a telepsychiatric program includes significant investment in time and resources. Adapting a reliable and valid assessment of readiness for telepsychiatry in rural communities may allow underserved communities to avoid waste by identifying areas that preclude implementing telepsychiatry or that can be addressed to better prepare for it.

   The purpose of this Clinical Inquiry Project (CIP) was to determine if a modified assessment tool for readiness for telemedicine could be used to determine community readiness for telepsychiatry. One key informant in each of three rural or frontier communities given the Modified Organizational Telehealth Readiness Assessment Tool Assessment Tool (MOTRAT)—a four section, 48-item self-assessment survey.

   The primary finding was the importance of an outside consultant or expert to assess community readiness using the MOTRAT. Rather than administering the tool as a survey, it was recommended that a content expert meet with local stakeholders—identifying both traditional and non-traditional content experts in the community. Via consultation with key stakeholders and content experts, a consultant is able to report a thorough and unbiased report that is not based on a single or narrow viewpoint.

   Doctors of Nursing Practice with telepsychiatry experience are uniquely qualified consultants because of their education in nursing, an advanced practice specialty, and didactics in economics, finance, ethics, policy, health technologies, and program evaluation. Translation and adaptation of research into practice is a cornerstone of DNP scholarship. This project exemplifies the clinical leadership of the DNP in improving patient outcomes via clinical and non-clinical routes.

   Considerations of hiring a consultant include the cost of their services. A consultant would likely increase the initial cost of implementing a telepsychiatry program. Potential community losses in time and resources may justify the expense of a consultant. If cost is prohibitive, using the MOTRAT can guide a community towards readiness; however, it is recommended an expert be consulted to a certain degree.

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Mental illness affects one-quarter of the US population in any given year, and more than half in their lifetimes (Gustafson, Preston, & Hudson, 2009; Kessler, Chiu, Demler, & Walters, 2005). Mental illnesses disrupt an individual's mood, thinking patterns, emotions, and thought processes—negatively affecting relationships and the ability to function in daily life (National Alliance on Mental Illness (NAMI), 2012).

Approximately one in every five people in the United States lives in a rural area; however, 91 percent of all medical or osteopathic providers practice in urban settings, creating a disproportionate ratio of rural patients to providers (van Dis, 2002). Despite similar prevalence and incidence of mental illness in rural and in urban communities, rural suicide rates among teens and older adults are significantly higher (Institute of Medicine (IOM), 2002; Gustafson, Preston, & Hudson, 2009; Kessler et al., 1994, U.S. Department of Health and Human Services Health Resources and Services Administration (HRSA), 2005). Prevalence and incidence rates of mental illness in rural versus urban subgroups vary dramatically For example, 41 percent of rural women have depressive symptoms compared to 13 to 20 percent of urban women. Yet, rural providers detect depression 50 percent less often than urban providers (Rost, Williams, Wherry, & Smith, 1995; Hauenstein & Boyd, 1994).

According to HRSA, a Health Professional Shortage Area (HPSA) is

determined by the patient to physician ratio in "an urban or rural area [or]…a

population group" (HRSA, n.d.a, 3rd paragraph). As of 2010, 22.3% of Oregon's

population (852,530 of 3,831,074) was residing in rural areas (United States

Department of Agriculture, 2010). Yet, in 2009 over 1.3 million Oregonians lived in a

mental-health HPSA, with figures indicating a shortage of mental health

professionals in rural and low-income urban areas (Oregon Office of Rural Health

(ORH), 2009a; United States Census Bureau, 2012). Applying the 25 percent

prevalence of mental illness in the United States to Oregon residents, approximately

210,000 rural Oregonians suffer from mental illness at any one time (ORH, 2009a).

Nationally, over 85 percent of mental health HPSAs are rural, pointing up the

position that there is an inadequate number of mental health providers in rural

areas (Bird, Dempsey, & Hartley, 2001; HRSA, 2005).

The nature of psychiatry and mental healthcare presents unique

challenges—particularly in rural settings where there is a "lessened sense of

confidentiality and anonymity" (Judd et al., 2002, p. 773). These challenges include

protecting patient confidentiality beyond the provider–patient relationship by

protecting privacy via location selection and/or construction. Additional

considerations of rural psychiatry are treatment for vulnerable populations such as

victims of domestic violence and sexual assault (Champion, Artnak, Shain, & Piper,

2002; Thomas, Miller, Hartshorn, Speck, & Walker, 2005).

The need for specialized psychiatric care in rural Oregon communities

significantly exceeds the number of psychiatric providers currently working in a

rural setting. Past attempts to provide psychiatric providers to meet the needs of rural Oregonians have been unsuccessful. Numbers of providers in rural areas are fewer because of difficulty recruiting and retaining them. Low numbers of psychiatric providers contributes to low patient to provider ratios in rural settings. Factors contributing to providers leaving rural communities include the challenges of dual/overlapping relationships with patients and their families, lack of personal privacy, isolation from colleagues and academic centers, a paucity of other providers with whom to consult, and decreased financial viability related to insufficient volume in the community the rural provider serves (Judd et al., 2002; Meyer, 2006; Dow et al., 2008; Tucker, Turner, & Chapman, 1981; Nelson, Pomerantz, & Schwartz, 2007).

State and national efforts to recruit and retain rural providers have not met demand (Oregon Area Health Education Center, n.d.; Wheat, Brandon, Leeper, Jackson, & Boulware, 2007). The primary national level program for provider recruitment and retention is the National Health Service Corp (NHSC). The current program was initiated on a national level to increase the number of rural providers by offering tuition reimbursement for providers who train or work in underserved and/or rural areas. However, of the 3679 mental health professional shortage areas, only seven percent are eligible for NHSC support (Loynd & Constantino, 2008). While the NHSC program initially attracts rural providers, only 12 to 20 percent remain in rural practice after loan repayment (Pathman, Konrad, & Ricketts, 1992; Cullen, Hart, Whitcomb, & Rosenblatt, 1997). A 2009 review of financial incentive programs initiated between 1930 and 1998 reported that causality was

not established between the programs and the number of health workers in underserved areas (Bärnighausen & Bloom, 2009).

Current systems in place to provide care for the mentally ill in rural communities include Rural Health Clinics (RHC), Federally Qualified Health Clinics (FQHCs), and a limited number of privately practicing clinicians. These clinics are located in rural and underserved areas to provide access to primary health care. If rural clinics are unable to provide psychiatric care or are not within close proximity, patients must either choose to drive long distances to an urban center or not receive treatment. If a health care clinic is within a reasonable distance, psychiatric care is often not available beyond basic or first-line treatments provided by primary care providers. Thus, many rural Oregonians are left without specialty psychiatric care.

Telepsychiatry has been proposed as a solution to providing rural psychiatric care. Urban-based psychiatric providers remotely servicing rural communities do not face the strains and pressures that cause many providers to leave rural communities. In addition, mentally-ill patients do not have to travel great distances for psychiatric-specific treatment or go without care.

Telepsychiatry has been demonstrated to be a reliable and valid form of providing psychiatric care. In order to maximize the likelihood of success in a rural community, assessment of the community's readiness is necessary before investing time and limited community resources. A formal assessment tool of a community's readiness for telepsychiatry does not exist. Although assessment tools have been devised for telehealth readiness in general, these tools (and the telehealth

literature) have not included parameters for the evaluation of community readiness specifically for telepsychiatry.

Telepsychiatry emerged as an early form of telehealth. Telehealth (TH) and Telemedicine (TM) are closely related but not synonymous terms. TH encompasses TM and is defined as, "the use of electronic information and telecommunications technologies to support long-distance clinical health care, patient and professional health-related education, public health and health administration" (HRSA, n.d.b, 1st paragraph). Telemedicine is broadly defined as, "the use of medical information exchanged from one site to another via electronic communications to improve patients' health status" (American Telemedicine Association (ATA), 2012). Telemedicine is a component of TH, and encompasses many subspecialties including teledermatology, teleradiology, telepsychiatry (TP) and telemental health (TMH).

TMH is an umbrella term that includes counseling and psychological and psychiatric services provided remotely via electronic communication. Mental health is particularly adaptable to TH services because the provider usually does not need to complete a physical exam. Visualization of the patient allows for assessment of appropriate non-verbal factors such as affect, grooming, body language, and signs of psychomotor agitation or retardation. The ability of psychiatric providers to visually assess psychiatric symptoms in their patients is a critical benchmark for the quality and efficacy of telepsychiatry (ATA, 2009a). The reliability of assessment, diagnosis, and treatment via telepsychiatry has been established in psychometric studies using inter-rater reliability to compare in-person and telepsychiatric care. The validity of using TP as a modality showed similar results (ATA, 2009a).

Successful implementation of TP depends upon available and coordinated community resources such as facilities and existing health programs. Assessment of a community's readiness for TH prior to implementation prevents loss of time and capital, decreases the frustration of stakeholders, and focuses attention on areas of need (Khoja et al, 2007). TP readiness assessment also optimizes the likelihood of a viable, long-term relationship between the rural community and the TP provider. Much has been written about factors that determine a community's readiness for and response to telehealth. However, few tools have been developed to measure readiness for TH (see Snyder-Halpern, 2001; Yawn, 2000; Jennett et al., 2003; Jennett et al., 2003b; Jennett, Gagnon & Brandstadt, 2005; Jennett et al., 2005; Khoja et al., 2007). No measures have been developed to assess community readiness for telepsychiatry. A TP specific readiness tool is needed because TP has unique challenges not associated with TH, for example increased privacy regulations.

The purpose of this Clinical Inquiry Project (CIP) was to determine what common elements of readiness for TP exist or are absent in rural Oregon communities regardless of location. Evaluation of community readiness for TP in rural Oregon would benefit rural communities by identifying steps needed to establish a sustainable TP program. The establishment of a TP program could address traditional rural providers' challenges of isolation and financial solvency— particularly as a specialist provider. TP in rural communities could relieve and/or assist primary care providers with psychiatric patients, and provide access to services when distance hinders or prevents care. The four questions the study attempted to answer were:

1. To what extent is there common readiness among three rural Oregon communities as indicated by overall score on a TP readiness assessment?

2. What variations do the communities have regarding core readiness, engagement and planning readiness, workplace readiness, and technical readiness?

3. To what extent do each of the communities meet readiness needs specific to TP?

4. What themes characterize the "other" responses for each dimension of readiness, if any?

Literature Review

A literature search was conducted with Ovid MEDLINE® and Ovid OLDMEDLINE® 1946 to January week 3 2012, using the terms evaluation, readiness, telehealth, and motivation, which resulted in 26 articles. All articles pertaining to the assessment and evaluation of motivation and/or readiness for telehealth were reviewed, and "similar articles" investigated. Additionally, authoritative texts regarding telemedicine, telepsychiatry, and electronic mental-health were reviewed for discussions of pre-implementation evaluation of community readiness for telepsychiatry and/or telehealth (see Wootton, Craig, & Patterson, 2011; Wootton, Yellowlees, & McLaren, 2003).

The following texts were consulted for additional information about rural healthcare, telemedicine, and telepsychiatry: *Rural behavioral healthcare: An interdisciplinary guide* (Stamm, 2009), *Introduction to telemedicine* (Wootton, Craig, & Patterson, 2011), *Telepsychiatry e-mental health* (Wootton, Yellowlees, &

McLaren, 2003), *Textbook of Rural Medicine* (Geyman, Norris, & Hart, 2001), and

Ethical practice in small communities: Challenges and rewards for psychologists

(Schank & Skovholt, 2006).

After a thorough review, only one study was identified that determined

criteria for a pre-implementation assessment of communities' readiness for TH.

While other researchers have investigated and presented thorough research into

specific and specialized areas of readiness for clinical innovation, their work has

been complementary rather than specifically directed towards assessing telehealth

readiness (e.g., *Indicators of organizational readiness for clinical information*

technology/systems innovation: a Delphi study, Snyder–Halpern, 2001).

Several studies by Jennett and her colleagues identified four primary types of

community-level readiness for telehealth that correspond to the four dimensions

measured in the Organizational Telehealth Readiness Assessment Tool (See

Appendix A) (Jennett et al, 2005; Jennett, Gagnon, & Brandstadt, 2005; Jennett, P. &

Health Telematics Unit of the University of Calgary (HTU), 2004; Jennett et al.,

2003a; Jennett et al, 2003b). Core readiness is the realization that the current

model of care is inadequate and does not meet the needs of the providers and/or

patients, for example the realization of geographical isolation or an insufficient

supply of providers to meet demand. Engagement and planning readiness is the

active investigation of the feasibility and effect telehealth could have on a

community, for example debate regarding the risks and benefits of TH. Workplace

readiness is the establishment of efficient structures to ensure an effective TH

program, for example human resources, policies, and training staff. Technical

readiness refers to all aspects of equipment and technology required to support TH, for example technical support, adequate bandwidth, or reliability of data transmission.

These dimensions served as the structural backbone for the e-Health Readiness Assessment Tools for Healthcare Institutions in Developing Countries, which was specifically created to assess readiness for telehealth in rural Pakistan (Khoja et al., 2007). No other assessment tools have been created to address the multiple aspects of telehealth preparedness (Légaré et al., 2010).

Psychometric study of the Jennett tool established face validity, content validity, and concurrent validity, as well as internal consistency (P. Jennett, personal communication, January 30, 2012). The Khoja tool, designed for assessing e-health readiness in developing countries, has been reported as having demonstrated face and content validity, as well as internal consistency (Khoja, Scott, Ishaq, & Moshin, 2007; Khoja, Casebeer, Scott, & Giliani, 2007). While similarities exist between the concepts of rurality and developing countries (see Center for International Development at Harvard University, (n.d.); United Nations Development Programme, 2011; United States Department of Agriculture, 2012), the tool focused heavily on technology preparedness (in Pakistan) and failed to adequately address core readiness.

The current literature reveals a paucity of information regarding evaluation of and assessment for community readiness. In particular, there are few tools that can be used to measure and quantify readiness. Both of the tools currently available to assess community readiness for TH rely on the same source of data for defining

types of readiness. Other tools in the literature are specific to specialties or organizational information technology development, or assess organizational preparedness for change. These inform rather than assess community level readiness for TH.

Additional Sources of Evidence

The American Telemedicine Association (ATA) was established in 1993 to promote use of telemedicine (American Telemedicine Association, 2012). The ATA has 11 special interest groups (SIGs). In 2009, the TMH SIG released evidence-based practice guidelines for telemental health, and videoconferencing-based telehealth (ATA, 2009a; ATA, 2009b). The working group and contributors consisted of leaders in the field of TMH. The Jennett tool assessed for each of the ATA recommendations for evidence-based TMH except for two: patient privacy and data security. Assessment of these items on the adapted community assessment will be necessary to adequately measure community readiness for TP.

Summary

Adoption and implementation of a telepsychiatric program includes significant investment in time and resources. As TP continues to gain acceptance in the healthcare community and in the general population, demand for services will increase. Adaptation of a current community readiness assessment tool for use in telepsychiatry will allow for (a) communities to ensure preparedness before an investment in time and capital, and (b) provide communities feedback regarding deficiencies to be addressed for future TP success. Having evaluated the current assessment tools for community readiness for TP by referencing research articles

and vetting texts on TMH and rural healthcare, the proposed project will provide a model for future assessment of TP in rural communities.

Methods

Clinical Inquiry Design

The CIP design is a focused descriptive study using a convenience sample of three rural communities. A descriptive study design was chosen because of the exploratory nature of the clinical inquiry questions. A focused descriptive study is the most appropriate study design when considering the scope of the clinical inquiry project, and the lack of established evaluation tools for community readiness for TP.

A descriptive study is commonly used to provide initial information about a new area of inquiry, and often prompts future rigorous studies in the area of inquiry (Grimes & Schulz, 2002). A negative consequence of using a descriptive study is the difficulty generalizing results; specificity is sacrificed for directionality of future research.

Setting

The Modified Organizational Telehealth Readiness Assessment Tool Assessment Tool (MOTRAT) (see Appendix B) will be given to one key informant in three distinct geographical rural communities. These communities will meet the ORH's definition of rural and be greater than 45 minutes driving time to a hospital emergency room staffed by providers specially trained in emergency medicine. These three sites were selected in order to obtain information from unique rural settings to determine if similarities in responses to the tool exist despite rural

location. Further, if commonalities in readiness existed across all three sites, the tool may help identify strengths and weaknesses related to readiness for TP. The results yielded by the MOTRAT may direct future development and psychometric testing of the tool.

The following rural communities were chosen because they represent a variety of settings in rural Oregon: Lincoln City, Vernonia, and John Day—a frontier community. Vernonia is a rural community located approximately 60 minutes from the center of Portland, Oregon. A logging town, it has a population of 2,151 with a population density of 1,444.2 persons/sq. mile (PSU, 2011; United States Census Bureau, 2010). There is not a health clinic or hospital located within the town's boundaries, and the nearest hospital emergency room is St. Vincent's Medical Center in Portland. It is approximately 46 minutes away during optimal driving conditions.

John Day is a frontier Oregon community located approximately 270 miles southeast of Portland and 270 miles east of Eugene. A frontier community is defined as one in a county with less than 6 people per square mile (ORH, 2009b). John Day is located in Grant County, which has a population density of 1.6 persons/sq. mile — qualifying it as a frontier community. Formally a logging community, it is mainly populated with ranchers and government workers for the nearby Malheur National Forest. John Day has a population of 1,744 and a population density of 931.6 persons/sq. mile (PSU, 2011b). Blue Mountain hospital is a Critical Access Hospital (CAH) located in John Day. It offers a 24-hour emergency room services; however, the providers are not emergency medical specialists. The providers are general family providers who work at the hospital and take turns staffing the emergency

room throughout the week. The next nearest hospital emergency room is St. Charles

hospital in Bend, approximately 150 miles away. If a patient needs emergency

psychiatric care, they are transported by car to Portland—an 11 hour round trip.

Lincoln City, is a rural Oregon community located on the western coast

approximately two hours southwest of Portland and 2.5 hours northwest of Eugene.

Its primary economy is tourism. It has a population of 7,930 with a population

density of 1,403.5 persons/sq. mile (PSU, 2011b; United States Census Bureau,

2010). There is a health clinic located within the town's boundaries (Lincoln

Community Health Center) that provides "primary care for patients of all ages"

(Lincoln County Health and Human Services, 2012). The nearest hospital emergency

room is St. Vincent's Medical Center in Tillamook, Oregon; during optimal driving

conditions, it is a 71-minute drive.

Key Informants

Rural communities were eligible if (a) there was no history of current or past

TH programs in the community; (b) the driving time to the nearest non-CAH

emergency room was greater than 45 minutes; and (c) the community met the

Oregon Office of Rural Health's definition of rural as a geographic area 10 miles or

more from a population center of 40,000 or more (ORH, 2009b). Key informants

were included if they had served or worked in the community for more than three

years and were either (a) a health care provider, (b) an administrator of a health

care clinic, and/or (c) in a position of formal leadership within the community.

After establishing minimum criteria for community inclusion, a convenience

sampling method was utilized based on the author's personal knowledge of key

informants in rural Oregon locations. Recruitment entailed contacting key informants in the communities and explaining the purpose of the study.

Due to the small sample size of this study, it was important to identify elements that may influence the participant's responses. The MOTRAT was given to key stakeholders who may or may not have a community health clinic in their area. Characteristics that may influence participant's responses include past participation in TH activities, a perceived threat to viability if TP was established in their community, pre-existing positive or negative desire for telepsychiatry, preconceived perceptions of cost of implementation, concern about the repercussions of participants' responses, and any other pre-existing positive or negative beliefs regarding telehealth and/or telepsychiatry.

Measure

A tool to assess readiness for TH was modified and used with additional questions related to TMH readiness. Three community leaders were interviewed using the tool and the responses analyzed.

The Jennett tool was produced in partnership with the now merged Health Telematics Unit at the University of Calgary, in Calgary Alberta, Canada. The Jennett tool is divided into four subscales: Core Readiness (2 items), Engagement & Planning Readiness (17 items), Workplace Readiness (24 items), and Technical Readiness (5 items). Items were developed from the same data used to determine the four types of readiness (P. Jennett, personal communication, January 30, 2012). The items are rated by key informants using a 5-point likert scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree, and a 0 score for

"don't know." Scores are calculated for each subscale as well as a total score.

Unmodified, the Jennett tool is unable to compare each item individually because it

requires the participant to evaluate several items as a block and provide a single

score. The modified Jennett tool, the MOTRAT, has the ability to score each item

within each subsection. Total scores range from 0-240 and a higher score reflects

greater readiness (See Table 1). Total scores are categorized in to three levels: 0 to

146 reflects there are barriers that need to be addressed prior to implementation;

177 to 221 indicates certain items may hinder successful telehealth implementation;

and scores at or above 222 reflect that the community is likely to successfully

implement telehealth. For subscales, the scores range from 0-10 on Core readiness,

0-85 on Engagement and Planning readiness, 0-120 on Workplace readiness, and 0-

25 on Technical readiness.

Table 1. MOTRAT Scoring adapted from Jennett & HTU (2004)

Score	Community Readiness
221+	The organization is in a good position to implement tele-health successfully.
147-220	Certain items may adversely impact successful tele-health implementation.
0–146	There are barriers to successful implementation that need to be addressed before moving forward in implementation.

The word "telehealth" was replaced with "telepsychiatry" throughout the

Jennett tool. In addition, two items were added to assess if a community is able to or

would be willing to ensure/add additional privacy features related telepsychiatry.

Given that patients in rural areas often express a diminished sense of confidentiality

and anonymity, two items were added to section C, "Organizational Workplace

Readiness" to evaluate privacy and security (see Table 2). The response format of

the added items was consistent with other items, using the 5-point Likert scale (1 =

strongly disagree to 5 = strongly agree; 0 = do not know). A score of less than four

on the added privacy and security items indicate the community is not ready for

telepsychiatry. These items add the potential for total higher scores and were

included in the above evaluation parameters.

Table 2. Evaluation of readiness for telemental health services.

Your organization:

Has taken steps to ensure increased privacy, and anonymity for telemental health patients:
  ▪ Has established additional structural changes to ensure physical privacy of patients entering, exiting, and/or utilizing the clinic for telemental health purposes
  ▪ Established additional security measures in electronic or paper charts for access only by providers

Data Collection Procedures

The adapted MOTRAT was provided to the key informants in each of the

three communities at their convenience. Participants agreed to answer each item;

however, a free-text "other" item was included at the end of each subscale section in

the tool. Participants were allowed to ask questions about unclear statements after

they initially responded to the question. They were instructed to write the new

score next to the original, which allowed for inter-site consistency for both the

questionnaire and unclear items.

Participants were asked to schedule a 30-minute block of time to complete

the assessment. Data from the assessment was entered into an excel spreadsheet

(see Appendix C).

Results

Sample

To be included in the study, two criteria had to be met. The first was location. The community had to be located in a rural area as defined by the ORH and not closer than 45 minutes to a hospital emergency room staffed by providers trained in emergency medicine. The second criteria was the presence of a key informant who had served or worked in the community for more than three years and were either (a) a health care provider, (b) an administrator of a health care clinic, and/or (c) in a position of formal leadership within the community (see Table 3). Three key informants were identified in the rural and frontier Oregon communities of Vernonia, Lincoln City, and John Day.

Table 3. *Characteristics of Key Informants.*

	M/F	Rural	Frontier	Health Care Provider	Administrator	Formal Leader
Site A	F	X		X		X
Site B	F	X		X	X	
Site C	F		X	X		

The MOTRAT was delivered directly to one informant and completed immediately. The MOTRAT was delivered directly to a second key informant's office with a stamped return envelope. The completed survey was received in the mail approximately one week later; however, one section was blank. The informant was contacted by email provided responses by email. The MOTRAT was delivered electronically to a third informant. It was completed and returned via an email attachment. The third key informant reported difficulty completing the survey because she was unsure whether she was evaluating the community or the

organization for which she worked in the community. She was instructed to complete it for the organization she worked for located in the community.

The study was evaluated by the Institutional Review Board (IRB) at OHSU and determined to be exempted as human research because of the study design. Data collected from key informants were assigned by location to "Site A," "Site B," and "Site C" in order to maintain informants' privacy.

Findings

The first clinical inquiry question examined the extent to which there was common readiness among the three rural communities as indicated by overall scores on the MOTRAT. None of the three sites met minimum readiness based on the total score of 147. Site B was the closest to readiness with a total score of 138. Sites A and C were 50 percent or more below Site B with total readiness scores of 71 and 46 respectively (see Figure 1, Table 4).
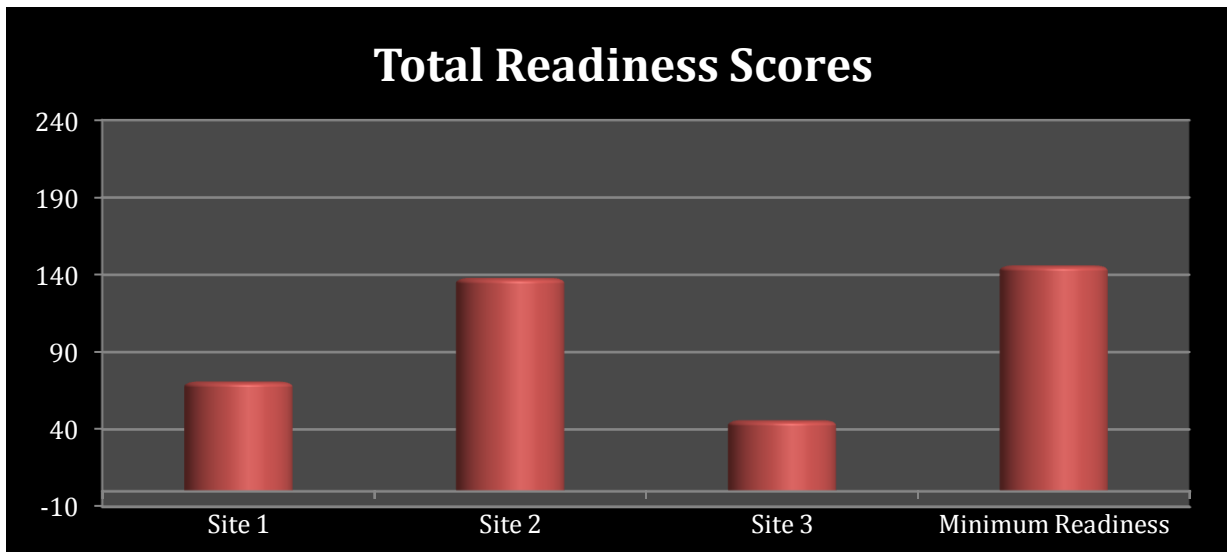

Figure 1. Minimum Readiness

The second clinical inquiry question compared the communities with each other regarding the dimensions of Core Readiness, Engagement and Planning Readiness, Workplace Readiness, and Technical Readiness. Among the three evaluated sites, there was not any single item in the MOTRAT that the communities scored the same.

The greatest similarity between the three sites was on the dimension of Core Readiness. Readiness was reflected by a minimum score of 6. Sites B and C met minimum criteria for Core Readiness; however, Site A missed the minimum cut off by 0.2 points and was within 1 point of Site C.

The minimum score for Engagement and Planning Readiness of 51.8 was not achieved by any of the three sites. Similar to Core Readiness, the score for Site B was significantly higher than the other sites—exceeding them by at least 28%. Sites A and C scored within 13.6% of each other; however, in contrast to Core Readiness, Site C was lower than Site A.

Table 4. Comparative Site Readiness for Telepsychiatry.

	Core Readiness	Engagement & Planning	Workplace	Technical	Total Readiness
Minimum Readiness	**6.2**	**51.7**	**72.9**	**15.3**	**146.1**
Site A	6	34	26	5	71
Site B	**9**	47	**77**	5	138
Site C	**7**	28	11	0	46

The MOTRAT section measuring Workplace Readiness was the most disparately rated sections. A minimum score of 64 indicated readiness in the

community. Site B met minimum readiness standards, whereas sites A and C

respectively scored 66.2% and 85.7% of Site B.

Technical Readiness at all three sites was either absent or the respondent

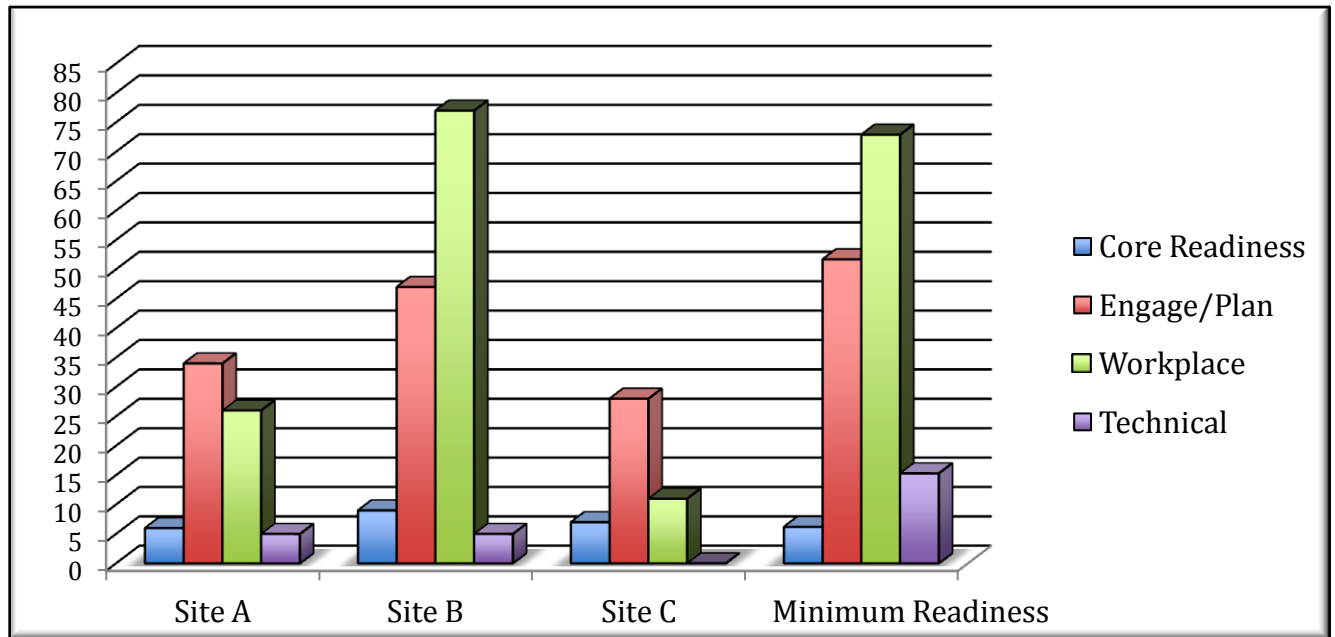was unable to report ("Didn't know").

Figure 2. Visual Comparative Site Readiness for Telepsychiatry

The third clinical inquiry question asked the extent to which each of the

communities met readiness needs specific to telepsychiatry. In Workplace

Readiness, two items addressed readiness for TP: "Your organization has

established additional structural changes to ensure physical privacy of patients

entering, exiting, and/or utilizing the clinic for tele-psychiatry purposes," and "Your

organization has established additional security measures in electronic or paper

charts to ensure access to mental health information by providers only." None of the

communities met minimum readiness. One informant responded "neutral" (neither

agreed nor disagreed with the statements) to both questions and another reported 0

or "Don't know" to both questions. The third respondent scored the questions "NA,"

which were scored as 0.

The fourth clinical inquiry question identified themes that characterized the

"other" responses from each dimension of readiness. Data included written

responses on the assessment tool and verbal feedback from the respondents.

Respondents from each of the three sites offered opinions about the need for TP, the

survey's sensitivity and specificity, and the method of administering the MOTRAT.

Comments were edited to protect the identity of the locations and respondents.

A general sentiment that TP would be a solution to the lack of psychiatric

providers was reflected in the following response:

"We would use Tele-Psychiatry if we had it available. Psych/mental health

providers and support is nearly non-existent [here]."

Respondents reported difficulty knowing the perspective from which to

complete the evaluation. Many items could not be evaluated because they assumed a

level of the organization's state of readiness that did not characterize the

respondent's workplace. For example, a Workplace Readiness item states: "Ensures

that workplaces are prepared for telepsychiatry technology & equipment: Your

organization facilitates the creative use of equipment by practitioners and patients."

Because the entity had not purchased equipment or decided to use telepsychiatry,

the respondent could not answer.

All respondents reported that the assessment would be difficult for one

person to complete if they were not responsible for or participating in certain

aspects of readiness. It would be difficult to respond, for example, if a key informant

ASSESSING COMMUNITY READINESS FOR TELEPSYCHIATRY

was a member of the city council and did not know about technical readiness. The following response captured this difficulty:

> It occurred to me that I think the real problem with this survey is that this is a survey that is not intended to be a self assessment of the facility, but rather a consultants [*sic*] assessment after interacting with the community and seeing what is going on. It doesn't seem very appropriate for the site to use it as a self-assessment tool, which seems to be what your [*sic]* trying to do. In other words if this was a consultant going into the community these might be reasonable things for them to try to assess but I don't think the answers of 0 to 5 (without a not applicable section, especially) really get at the question [of readiness].

Regarding the assessment of Core Readiness, another respondent reported, "Communities need to understand background of providers and options for care—difference between psychiatrist/NP mental health/psychologist etc." The respondent elaborated that some decision makers do not understand the differences in scope of practice and fees across different providers. Responding to the Engagement and Planning Readiness items, a respondent asserted, "Still figuring out what it takes to provide sustainable care…these communities don't know what sustainable looks like/is." Regarding the dimension of Workplace Readiness, a respondent stated that the scoring would change depending on the primary care provider running a facility: "very proprietary." Similarly, another respondent stated that, "this assessment will change with new providers."

Discussion

The purpose of this descriptive study was to evaluate the utility and effectiveness of using the MOTRAT to determine rural community readiness for telepsychiatry. Data from participants elucidated the value of the tool in its current form, and suggested alternative methods of administration that may be more effective. Four principle findings were identified and are summarized below.

First, these rural Oregonian communities have clearly understood there was a significant need for alternative methods of delivering psychiatric care. The MOTRAT accurately identified this need in each of the sites. Although limited, this finding reflects the current literature, and suggests the assessment items in the dimension of Core Readiness are useful and effective at addressing this readiness dimension. Future recommendations for the development of the MOTRAT include ensuring multiple informants in the organization/community respond to the dimension of Core Readiness to confirm this finding.

The results of the survey depended on the perspective of the respondent. Responses to the MOTRAT administered in the same community may vary either because an individual perceives items of readiness differently or because they have different expertise. Two respondents emphasized that other key informants/stake holders in their community would have been able to better assess particular sections of the survey. For example, one participant commented that, from her position, she was unaware of the amount or availability of technological resources. There may be value in having the responses of multiple key informants from pertinent positions of expertise combined to reflect a comprehensive or holistic

perception of community readiness. When multiple informants have competing perceptions, understanding how these came to be may facilitate improved communication and collaboration.

Recommendations for more accurately, or comprehensively assessing community readiness include (a) increasing the number of key informants who take the MOTRAT, (b) identifying key informants with expertise in a particular dimension of the MOTRAT to complete that section only and/or (c) administering the full MOTRAT to multiple key informants and content experts for each dimension. These recommendations are based on the assumption that there are relevant content experts in the community. Rural areas may not have local content experts or may not be able to identify experts.

Scoring on the MOTRAT will need to be addressed prior to re-testing. The current scoring provides a general assessment of readiness per item; however, a more specific scoring measurement will provide improved guidance in areas with insufficient readiness.

The use of a consultant to assess community readiness using the MOTRAT would be potentially more reflective of community readiness than a self-report survey. A consultant, by contrast, would base assessment scoring on the perspective of multiple stakeholders in the community, which may clarify a community's actual readiness.

Further, the context of rural communities complicates neutrality—particularly when resources exceed demand. Experienced consultants would identify traditional and non-traditional content experts. By knowing the content and

vernacular of specific areas of readiness, a consultant would be prepared to interact with local content experts and more accurately identify readiness. Consultants may prevent conflict between stakeholders by offering an opinion on readiness based on a broad-picture rather than one individual's responses. Moreover, a consultant remains an invited outsider. When areas of readiness need to be improved, recommendations come a consultant from outside the social milieu of the community.

Of course, a consultant would increase the cost of implementing a TP program. Potential losses to a community by a failed attempt at implantation in the form of time and resources would have to be considered to justify the expense of a consultant, or alternative methods of reimbursement explored. A consultant with a Doctor of Nursing Practice is well positioned to assess readiness for TP secondary to their clinical expertise and education in health care policy, IT, leadership, and program evaluation.

Limitations

Three communities were evaluated, which limits the diversity of responses about the MOTRAT specifically and suggestions about the tool and/or process generally. Despite this limitation, the descriptive design of the study allowed for, and yielded valuable direction for future assessment of readiness for telepsychiatry. Other limitations include the use of three individuals the author knew personally. Respondents not familiar with the author may have provided alternative responses. Each of the respondents was a healthcare provider and was more likely to have experienced the result of inadequate psychiatric care in their community.

Conclusion

Rural Oregon communities are facing smaller budgets coupled with decreased economic activity. The absence of rural psychiatric care does not preclude communities from incurring significant costs treating psychiatric illness. The findings of this study inform future assessment of rural organizations, which may decrease costs to communities and positively affect the lives of rural Oregon's mentally ill and their families.

The findings from this project stimulated more questions than provided answers. Assessing community readiness for TP in the future will include implementing recommended changes to the MOTRAT , and to whom and how the MOTRAT is administered. Continued implementation and subsequent evaluation provides a blue print for achieving an optimal means of assessing readiness for telepsychiatry.

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Appendix A

ORGANIZATIONAL TELEHEALTH READINESS ASSESSMENT TOOL

Using the five-point scale rate **your organization** on the following statements

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
0 = Don't Know

A. ORGANIZATIONAL CORE READINESS

Your organization:	SCORE
Is aware of, and able to clearly articulate needs	
Expresses and feels dissatisfaction with the ways it currently has available to deliver care (e.g. status quo)	
Other (please explain)	
(A) Sub-total	

B. ORGANIZATIONAL ENGAGEMENT & PLANNING READINESS

Your organization:	SCORE
Has organizational buy-in for telehealth	
Has individuals who are champions for telehealth (clinical/provider, senior administration, & community champions)	
Has leadership who are risk-takers and pioneers for reaching novel innovations	
Is aware of organizational dynamics between innovators and resistors	
Has the commitment and support of senior administrators	
Has access to sufficient ongoing funding from local, provincial and federal institutions	
Has established collaborative partnerships	
Has in place methods for telehealth communication/profiling/awareness, and is actively involved in promoting these	
Has examples and evidence of telehealth applications in similar contexts/environments/communities	
Exhibits healthy inter-organizational dynamics in telehealth promotion activities	
Is willing to consider short-medium- and long-term timelines for implementation	
Has established mechanisms of knowledge transfer among staff members	
Participates in a community consultation process	
Conducts ongoing needs assessments and analysis	

Has a strategic business plan including:
  ▪ A marketing, communication, and evaluation plan
  ▪ A cost benefit & cost effectiveness assessment, including benefits and risks
  ▪ Financial readiness for sustainability	

Other (please explain)	
(B) Sub-total	

C. ORGANIZATIONAL WORKPLACE READINESS (Administrative, Human, and Physical Structures)

Your organization:	SCORE
Ensures that workplaces are prepared for telehealth technology & equipment ▪ Establishes proper facilities (i.e., location, lighting, size, HVAC, and other **appropriate** equipment) ▪ Locates telehealth equipment where it is convenient for providers to use as a tool to deliver patient care ▪ Facilitates the creative use of equipment by practitioners and patients ▪ Provides administrative support for clinical decisions, functioning, & the process of using the telehealth system ▪ Has a standardized, well defined easy to use referral system ▪ Has a standard and consistent method of record keeping at both the receiving and referring site.	
Recognizes and addresses policies & procedures/professional & regulatory barriers: ▪ Ascertains that telehealth practices conform to health protection laws ▪ Ascertains that telehealth practices conform to professional regulatory policies ▪ Reviews existing policies, standards, and procedures to determine if telehealth is covered under them, if not, revises as appropriate ▪ Formulates and integrates written policies on reimbursement, liability, cross-jurisdiction use, and privacy issues ▪ Prepares related written procedure manuals ▪ Formulates policies for defining who gets privileges to use telehealth at the receiving and referring sites	
Establishes open lines of communication: ▪ Manages open communication, keeping all stakeholders well informed ▪ Participates in communication to facilitate team building ▪ Liaises with practitioners, patients, and the public as important players in the successful implementation of telehealth	
Addresses change management readiness: ▪ Has a change management plan in place to deal with organizational imput ▪ Has effective scheduling and integration of innovations into established practices	
Addresses human resources readiness: ▪ Has adequate and dedicated human resources to implement the strategic plan ▪ Employs a local telehealth coordinator ▪ Determines classification of roles and responsibilities in relation to specific telehealth application(s).	
Addresses training & continuing professional development (CPD) readiness: ▪ Prepares staff, and all end-users for initial and ongoing training ▪ Has a training and CPD plan in place related to telehealth ▪ Has past telehealth experience gained from projects or pilot programs & their evaluation	
Other (please explain)	
(C) Sub-total	

D. ORGANIZATIONAL TECHNICAL READINESS

Your organization:	SCORE
Has addressed the technical feasibility and technical requirement issues	
Has established interoperability of equipment & technology	
Has a consistent approach to verification of the fidelity of data transmission	
Has validated that the technology actually works	
Has access to comprehensive technical support that is available locally and on-call	
Other (please explain)	
(D) Sub-total	

Total Score: A+B+C+D = _____

SCORING:
130 – 140 (92 – 100%)   The organization is in a good position to implement telehealth successfully
86 – 129   (61 – 91.9%)   Certain items may adversely impact successful telehealth implementation.
0 – 85   (0 – 60.9%)   There are barriers to successful implementation that need to be addressed before
                    moving forward in implementation

Appendix B

**MODIFIED ORGANIZATIONAL TELEHEALTH READINESS ASSESSMENT TOOL
ASSESSMENT TOOL**

Using the five-point scale rate **your organization** on the following statements

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
0 = Don't Know

A. ORGANIZATIONAL CORE READINESS

Your organization:	SCORE
Is aware of, and able to clearly articulate needs	
Expresses and feels dissatisfaction with the ways it currently has available to deliver care (e.g. status quo)	
Other (please explain)	
(A) Sub-total	

B. ORGANIZATIONAL ENGAGEMENT & PLANNING READINESS

Your organization:	SCORE
Has organizational buy-in for telepsychiatry	
Has individuals who are champions for telepsychiatry (clinical/provider, senior administration, & community champions)	
Has leadership who are risk-takers and pioneers for reaching novel innovations	
Is aware of organizational dynamics between innovators and resistors	
Has the commitment and support of senior administrators	
Has access to sufficient ongoing funding from local, provincial and federal institutions	
Has established collaborative partnerships	
Has in place methods for telepsychiatry communication/profiling/awareness, and is actively involved in promoting these	
Has examples & evidence of telepsychiatry applications in similar contexts/environments/communities	
Exhibits healthy inter-organizational dynamics in telepsychiatry promotion activities	
Is willing to consider short-medium- and long-term timelines for implementation	
Has established mechanisms of knowledge transfer among staff members	
Participates in a community consultation process	
Conducts ongoing needs assessments and analysis	
Has a strategic business plan including:	
(a) A marketing, communication, and evaluation plan	
(b) A cost benefit & cost effectiveness assessment, including benefits and risks	
(c) Financial readiness for sustainability	
Other (please explain)	
(C) Sub-total	

C. ORGANIZATIONAL WORKPLACE READINESS (Administrative, Human, and Physical Structures)

Your organization:	SCORE
Ensures that workplaces are prepared for telepsychiatry technology & equipment:	
(a) Establishes proper facilities (i.e., location, lighting, size, HVAC, and other appropriate equipment)	
(b) Locates telepsychiatry equipment where it is convenient for providers to use as a tool to deliver patient care	
(c) Facilitates the creative use of equipment by practitioners and patients	
(c) Provides administrative support for clinical decisions, functioning, & the process of using the telepsychiatry system	
(e) Has a standardized, well defined easy to use referral system	
(f) Has a standard and consistent method of record keeping at both the receiving and referring site.	
Recognizes and addresses policies & procedures/professional & regulatory barriers:	
(a) Ascertains that telepsychiatry practices conform to health protection laws	
(b) Reviews existing policies, standards, and procedures to determine if telepsychiatry is covered under them, if not, revises as appropriate	
(d) Formulates and integrates written policies on reimbursement, liability, cross-jurisdiction use, and privacy issues	
(d) Prepares related written procedure manuals	
(e) Formulates policies for defining who gets privileges to use telepsychiatry at the receiving and referring sites	
Establishes open lines of communication:	
(a) Manages open communication, keeping all stakeholders well informed	
(b) Participates in communication to facilitate team building	
(c) Liaises with practitioners, patients, and the public as important players in the successful implementation of telepsychiatry	
Has taken steps to ensure increased privacy and anonymity for telepsychiatry patients:	
(a) Has established additional structural changes to ensure physical privacy of patients entering, exiting, and/or utilizing the clinic for telepsychiatry purposes	
(b) Established additional security measures in electronic or paper charts to ensure access to mental health information by providers only	
Addresses change management readiness:	
(a) Has a change management plan in place to deal with organizational imput	
(b) Has effective scheduling and integration of innovations into established practices	
Addresses human resources readiness:	
(a) Has adequate and dedicated human resources to implement the strategic plan	
(b) Employs a local telepsychiatry coordinator	
(c) Determines classification of roles and responsibilities in relation to specific telepsychiatry application(s).	
Addresses training & continuing professional development (CPD) readiness:	
(a) Prepares staff, and all end-users for initial and ongoing training	
(b) Has a training and CPD plan in place related to telepsychiatry	
(c) Has past telepsychiatry experience gained from projects or pilot programs & their evaluation	
Other (please explain)	
(C) Sub-total	

D. ORGANIZATIONAL TECHNICAL READINESS

Your organization:	SCORE
Has addressed the technical feasibility and technical requirement issues	
Has established interoperability of equipment & technology	
Has a consistent approach to verification of the fidelity of data transmission	
Has validated that the technology actually works	
Has access to comprehensive technical support that is available locally and on-call	
Other (please explain)	
(D) Sub-total	

Total Score: A+B+C+D = _____

SCORING:

Mean value:

134 - 144   The organization is in a good position to implement telehealth successfully
90 – 133   Certain items may adversely impact successful telehealth implementation.
0 – 89   There are barriers to successful implementation that need to be addressed before moving
            forward in implementation

Total item values:

207 - 225   The organization is in a good position to implement telehealth successfully
137– 224   Certain items may adversely impact successful telehealth implementation.
0 – 136   There are barriers to successful implementation that need to be addressed before moving
            forward in implementation

Per section:

A: Core Readiness

9.2 – 10   The organization is in a good position to implement telehealth successfully
6.1 – 9.1   Certain items may adversely impact successful telehealth implementation.
0 – 6   There are barriers to successful implementation that need to be addressed before moving
            forward in implementation

B: Engagement and Planning Readiness

78.2 – 85   The organization is in a good position to implement telehealth successfully
51.9 – 78.1 Certain items may adversely impact successful telehealth implementation.
0 – 51.8   There are barriers to successful implementation that need to be addressed before moving
            forward in implementation

C: Workplace Readiness

96.6 – 105 The organization is in a good position to implement telehealth successfully
64.1 - 96.5 Certain items may adversely impact successful telehealth implementation.
0 – 64   There are barriers to successful implementation that need to be addressed before moving
            forward in implementation

D: Technical Readiness

23 – 25   The organization is in a good position to implement telehealth successfully
15.3 – 22.9 Certain items may adversely impact successful telehealth implementation.
0 – 15.2   There are barriers to successful implementation that need to be addressed before moving
            forward in implementation

Appendix C

Excel data entry sheet

Community Telehealth Assessment Tool

	Site 1	Site 2	Site 3	
CLINIC				CLINIC

Core Readiness	Site 1	Site 2	Site 3	Core Readiness
1				1
2				2
OTHER (Y/N)				OTHER (Y/N)
Sub total				Sub total

Engagement & Planning	Site 1	Site 2	Site 3	Engagement & Planning
1				1
2				2
3				3
4				4
5				5
6				6
7				7
8				8
9				9
10				10
11				11
12				12
13				13
14				14
15a				15a
15b				15b
15c				15c
15 mean				15 mean
OTHER (Y/N)				OTHER (Y/N)
Sub total				Sub total

Workplace Readiness	Site 1	Site 2	Site 3	Workplace Readiness
1a				1a
1b				1b
1c				1c
1d				1d
1e				1e
1f				1f
1 mean				1 mean
2a				2a
2b				2b
2c				2c
2d				2d
2e				2e
2 mean				2 mean
3a				3a
3b				3b
3c				3c
3 mean				3 mean
4a				4a
4b				4b
4 mean				4 mean
5a				5a
5b				5b
5 mean				5 mean
6a				6a
6b				6b
6c				6c
6 mean				6 mean
7a				7a
7b				7b
7c				7c
7 mean				7 mean
OTHER (Y/N)				OTHER (Y/N)
Sub total				Sub total

Technical Readiness	Site 1	Site 2	Site 3	Technical Readiness
1				1
2				2
3				3
4				4
5				5
OTHER (Y/N)				OTHER (Y/N)
Sub total				Sub total

A+B+C+D				A+B+C+D