ACCEPTABILITY OF MENTAL HEALTH APPS FOR ABORIGINAL AND TORRES STRAIT ISLANDER AUSTRALIANS: A QUALITATIVE STUDY.

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Thesis submitted in partial fulfilment of the requirements for the degree of Master of Public Health

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NOTE

This thesis is presented in the form of a paper written for publication accepted, January 2016, to the Journal of Medical Internet Research with additional appendices. As the thesis is presented in this way with a literature review as the general introduction followed by a paper written for publication, there is some unavoidable repetition throughout in terms of background information and methodology.

For the purpose of this thesis, each chapter has been formatted consistently with one reference list presented at the end, as per university guidelines.
THESIS DECLARATION

The article presented in this thesis is the work of joint authorship. I am the primary author and have made the most substantial contribution to the work presented. Other authors have also contributed to the work presented and their contributions are detailed here: Mr. Robert Mills contributed significantly to the design, data collection, data analysis and interpretation and reviewed publications arising from this research; Associate Professor Tricia Nagel and Dr Kylie Dingwall provided extensive research supervision and contributed significantly to the design, data analysis and interpretation, and to drafting and developing the final written publications; Dr Anne Lowell provided research supervision and contributed to data collection, data analysis and reviewing publications written as a result of this research; Dr Judy Singer, Ms. Darlene Rotumah and Associate Professor James Bennett-Levy provided guidance on the design of the study and reviewed the Journal publication resulting from this research.

I hereby declare that the work submitted as a thesis for partial fulfillment of the degree, Masters of Public Health of the Charles Darwin University, is the result of my own investigations and all references to ideas and work of other researchers have been acknowledged.

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

I give consent to this copy of my thesis, when deposited in the University Library, being made available for loan and photocopying online via the University’s Open Access repository eSpace.

Josie Helen Povey  
July 2015

Mr Robert Mills  
July 2015
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ABSTRACT

Background: Aboriginal and Torres Strait Islander Australians experience high rates of mental illness and psychological distress compared to their non-Indigenous counterparts. Electronic mental health (e-mental health) tools offer an opportunity for accessible, effective and acceptable treatment. The AIMhi Stay Strong App and the ibobbly suicide prevention App are treatment tools designed to combat the disproportionately high levels of mental illness and stress experienced within the Aboriginal and Torres Strait Islander community.

Objective: This study aimed to explore Aboriginal and Torres Strait Islander community members’ experiences of using two culturally responsive e-mental health apps and identify factors which influence the acceptability of these approaches.

Methods: Using qualitative methods aligned with a phenomenological approach we explored the acceptability of two culturally responsive e-mental health apps through a series of three, three-hour focus groups with nine Aboriginal and Torres Strait Islander community members. Thematic analysis was conducted and co-researcher and member checking were used to verify findings.

Results: Findings suggest strong support for the concept of e-mental health apps and optimism for their potential. Factors that influence acceptability related to three key themes: personal factors, such as motivation, severity and awareness of illness, technological competence and literacy and language differences; environmental factors, such as community awareness, stigma and availability of support; and app characteristics, such as ease of use, content, graphics, access and security and information sharing. Specific adaptations, such as local production, culturally relevant content and graphics, a purposeful journey, clear navigation, meaningful language, options to assist people with language differences, offline use and password protection may aid uptake.

Conclusions: When designed to meet the needs of Aboriginal and Torres Strait Islander Australians, e-mental health tools add an important element to public health approaches to improving the wellbeing of Aboriginal and Torres Strait Islander people.
ACKNOWLEDGEMENTS

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CHAPTER ONE
LITERATURE REVIEW

INTRODUCTION
Aboriginal and Torres Strait Islander Australians experience mental illness at higher rates than non-Indigenous Australians (Hunter et al., 2012). Tragically, consequences including suicide, substance abuse and chronic illness contribute to the unacceptable life expectancy gap experienced by Aboriginal and Torres Strait Islander Australians compared to their non-Indigenous counterparts (Vos, Barker, Begg, Stanley, & Lopez, 2009). Despite the need, mental health services are limited and significant barriers to access exist. Innovative treatments are continually sought to address this burden of disease. Electronic mental health (e-mental health) strategies offer promising new directions for Aboriginal and Torres Strait Islander people. Currently, little is known about the attitudes of Aboriginal and Torres Strait Islander people to e-mental health approaches.

This chapter will review the literature relating to the acceptability of e-mental health approaches for Aboriginal and Torres Strait Islander Australians. Firstly Aboriginal and Torres Strait Islander communities’ mental health, barriers to care and principles of treatment will be discussed. Secondly, a description of e-mental health strategies, their effectiveness and acceptability will be presented. Lastly, two culturally responsive e-mental health strategies will be introduced, followed by an outline and direction for future research.

This review was undertaken by searching databases including AIATSIS, HealthDirect, CINAHL, ScienceDirect, Google Scholar, Cochrane Library and PubMed. Search terms included a combination of terms extrapolated from e-mental health, Indigenous/Aboriginal and Torres Strait Islander, therapy and acceptability/community perspective/attitude. The purpose of this review was to identify gaps in knowledge in the current literature to inform future research into e-mental health strategies for Aboriginal and Torres Strait Islander people in the Northern Territory (NT).
ABORIGINAL AND TORRES STRAIT ISLANDER AUSTRALIANS’ MENTAL HEALTH, ACCESS AND BARRIERS TO CARE

Aboriginal and Torres Strait Islander Australians experience significantly higher disease morbidity and mortality than non-Indigenous Australians (Andreasyan & Hoy, 2010). Mental illness contributes significantly to the overall burden of disease (Wang, Si, & Hoy, 2010). High levels of stress and substance abuse are attributable to a myriad of poor social determinants of health. The Australian Bureau of Statistics ([ABS], 2013) reports Aboriginal and Torres Strait Islander Australians are 3 times more likely than non-Indigenous Australians to experience high to very high levels of psychological distress. The most common stressors include death of a family member, serious illness, inability to get a job, mental illness, overcrowding, alcohol and substance abuse (ABS, 2013).

Significant barriers exist which prevent Aboriginal and Torres Strait Islander people from seeking assistance for mental illness. The ABS (2012) report found that 35% of Aboriginal and Torres Strait Islander people with high to very high levels of psychological distress identified difficulties in accessing health services. Aboriginal and Torres Strait Islander people are more likely to live in remote or very remote areas compared to non-Indigenous Australians (ABS, 2012). The centralisation of services, limited local staffing, high staff turnover and lack of specialist services provide a challenging environment for the delivery of effective health services (Allan, 2010). The need for patients to travel large distances to access specialist drug and alcohol or mental health care creates further distress and negatively affects clinical outcomes and recovery time (Nagel, 2003; Walker, Stomski, Price, & Jackson-Barrett, 2014). Highly transient populations and community stressors can further disrupt attempts, by clinician and patient alike, to develop genuine, respectful and effective therapeutic relationships.

The ABS (2012) identifies lack of trust and services not being culturally appropriate as significant barriers for Aboriginal and Torres Strait Islander people accessing mental health care. Differences in worldview cause significant delays in help seeking (Vicary & Westerman, 2004; Ypinazar, Margolis, Haswell-Elkins, & Tsey, 2007). Western medicine can be considered a last resort when traditional forms of cultural and spiritual healing have been pursued (Vicary & Westerman, 2004). The focus of
western treatments on problems, medicine and hospitalization can be a cause for distrust and concern (Vicary & Westerman, 2004; Ypinazar et al., 2007). In contrast, Aboriginal and Torres Strait Islander people rely on the interconnectedness of spiritual, cultural, identity, family and community, land/country and historical beliefs which form their holistic understanding of mental illness (Ypinazar et al., 2007).

Challenges in achieving effective communication and a lack of health professional reflective practice are identified as barriers to effective cross cultural mental health care (Walker & Sonn, 2010). Communication challenges are common between professionals and Aboriginal and Torres Strait Islander patients (Cass et al., 2002). Cass et al. (2002) found it rare that communication between health staff and patients from Arnhem Land, NT receiving treatment in an urban setting, achieved shared understanding. Lack of training in intercultural communication for health professionals, limited inclusion of Aboriginal and Torres Strait Islander worldviews and lack of involvement of trained interpreters were reasons identified (Cass et al., 2002). A range of treatment approaches have emerged in recent decades seeking to address these challenges.

TREATMENT APPROACHES IN ABORIGINAL AND TORRES STRAIT ISLANDER MENTAL HEALTH CARE

Within this extremely challenging backdrop, health workers require a mix of strategies that are culturally respectful, and promote flexibility and genuine curiosity (Hunter, 2014). Strengths based approaches are considered particularly important for use with Aboriginal and Torres Strait Islander people (Nagel, Hinton & Griffin, 2012). Mundel & Chapman (2010) highlight the need for treatments which identify the strength of individual and culture when working with Indigenous people in Canada. Furthermore Axleby-Blake et al. (2013) found that despite harrowing life circumstances, stories of incredible resilience and strength were common when discussing mental illness with Australian Aboriginal and Torres Strait Islander people. Recognising strengths and resilience is seen as an essential element of recovery focused mental illness treatment (Nagel, Hinton, & Griffin, 2012). Laliberte, Nagel, & Haswell (2010) identify the need for treatments to be focused within the context of family and kinships, rather than the traditional individualised approaches. This contextualises and draws on the
importance and strength of relationships which are central to the Aboriginal and Torres Strait Islander kinship system (Laliberte et al., 2010).

Treatment approaches which equalise power and facilitate genuine communication are noted to be beneficial (Walker & Sonn, 2010). Two-way learning, where local knowledge and worldview are incorporated into treatment is also an important approach to cross cultural mental health care (Hunter, 2014; Nagel, Robinson, Condon, & Trauer, 2009; Nagel & Thompson, 2007; Vicary & Westerman, 2004; Walker & Sonn, 2010). An additional consideration, given highly transient populations, high staff turnover and limited access to specialist services, is the use of high impact brief interventions to establish positive behaviour change (Laliberte et al., 2010).

Cognitive Behavioural Therapy (CBT) remains the gold standard non-pharmaceutical treatment approach to most common mental illnesses (Bennett-Levy et al., 2010). CBT is founded on concepts of human emotion and behaviour. ‘Traditional’ CBT has come under scrutiny when applied cross culturally. It has been described as a ‘culturally unaware’ and ‘potentially undermining’ form of therapy when used with Aboriginal and Torres Strait Islander people (Dudgeon & Kelly, 2014). However Bennett-Levy et al. (2010), Bennett-Levy et al. (2014) and Nelson et al. (2014) argue a modified form termed ‘low intensity CBT’, when applied in a culturally sound way, offers benefit. Low intensity CBT approaches are specifically designed to improve access, consumer choice, cost effectiveness, flexibility and capacity (Bennett-Levy et al., 2010). The work of Nagel et al. (2009) within their Australian Integrated Mental health initiative (AIMhi) found positive outcomes when culturally responsive low intensity CBT strategies are used with Aboriginal and Torres Strait Islander people. This unique research offers insight into the potential of culturally responsive, low intensity CBT approaches.

Acceptance Commitment Therapy (ACT) is also emerging as a clinically effective treatment for common mental health concerns (A-Tjak, Davis, Morina, Powers, Smits & Emmelkamp, 2015). ACT uses mindfulness and values based action strategies to improve psychological flexibility. In a meta-analysis including 39 randomised controlled trials (RCT) and 1821 patients, ACT was found to be more effective than
treatment as usual or placebo and there were no significant differences between effectiveness of ACT and CBT, suggesting that ‘ACT may be as effective in treating anxiety disorders, depression, addiction, and somatic health problems as established psychological interventions’ (A-Tjak et al., 2015, p. 30). There is some emerging academic literature exploring ACT’s application to Aboriginal and Torres Strait Islander mental health care, with a large scale RCT trial currently underway (Shand, Ridani, Tighe & Christensen, 2013). Shand et al. (2013) identified that ‘although ACT is rigorously behavioural and based on scientific validity of human cognition, it also addresses issues of spirituality, values and self, components that have been identified as crucial to successful Indigenous suicide prevention strategies’ (p. 397).

One of ACT’s core principles, mindfulness, is identified as a key strategy in some strengths based empowerment programs in mental health and drug and alcohol care with this population (White, 2015). White (2015) argues that mindfulness has origins in Indigenous Australian cultures, included in historically common practices such as hunting, survival and cultural connectivity, well before it was identified by Buddhist teachings and adopted into western medicine. Additionally, the practice of ‘deep listening’ has been identified as a principle of inter-personal relations central to the culture of Aboriginal and Torres Strait Islander people across the nation, reflecting some of the same strategies used in ACT (Ranzijn, 2008). The practice of ‘deep listening’ involves ‘an obligation to contemplate everything you hear, in real time, to self-reflect as you listen and to act on what you have registered’ (Ranzijn, 2008, p. 72). So although no studies to date have published findings on ACT’s effectiveness with Aboriginal and Torres Strait Islander populations, ACT’s core strategies are suggested by some to be aligned well with Aboriginal and Torres Strait Islander beliefs and traditions. Therefore ACT may offer an alternative or adjunct psychological treatment option to mental health care with Aboriginal and Torres Strait Islander people.

It is important to understand what constitutes best practice mental health treatment for Aboriginal and Torres Strait Islander people in order to improve outcomes. With the backdrop of such challenging physical, historical, cross-cultural and social context, practitioners need to be deeply reflective, analytical and possess skills of cultural competence (Walker & Sonn, 2010). In summary, available evidence suggests that
treatment needs to be strengths based, opportunistic, culturally sensitive and respectful, allow equal power, promote effective communication and be framed within Aboriginal and Torres Strait Islander understandings of mental illness. Effective and innovative treatments are continually sought to support better outcomes in challenging conditions. E-mental health strategies offer new opportunities in this field.

ENTER E-MENTAL HEALTH STRATEGIES: FUTURE APPROACHES TO COMMON AND COMPLEX PROBLEMS

E-mental health strategies are emerging as a safe, therapeutically effective, and acceptable treatment option for common mental health concerns (Andrews, Cuijpers, Craske, McEvoy, & Titov, 2010). E-mental health strategies include a wide variety of services with a vast array of characteristics. This ranges from the use of health information websites, which include information on depression or anxiety, to full online interventions which may include therapist mediated chat rooms or one to one therapy via videoconferencing. Applications (apps) on smartphones and virtual reality games are also newly emerging e-mental health strategies (Harrison et al., 2011; Palmier-Claus et al., 2013). Barak, Klein & Proudfoot (2009) defined four categories of online therapies, which include; web based interventions, online counselling and therapy, internet operated therapeutic software and other online activities. More broadly, and for the purpose of this discussion, e-mental health approaches include any intervention which utilises an electronic medium in the delivery of therapy/treatment (Department of Health and Aging, [DOHA], 2012).

The characteristics of e-mental health strategies vary greatly in terms of the role of the therapist and the level of computer and literacy skills required. Some are designed as user driven self-help tools while others are guided by therapists, either in real time or at designated follow up points via phone or internet (Barak, Klein & Proudfoot, 2009). Real time feedback can overcome barriers associated with motivation and risk (Musiat, Hoffmann, & Schmidt, 2012). Most use videos, pictures, audio, music or animation to assist in delivery. Some require continuous internet connection while others can be completed offline.

The type of therapy delivered is another characteristic which varies among available e-mental health strategies. CBT delivered via the internet is the most commonly
applied and researched e-mental health therapy in Australia (Andrews et al., 2010). Other examples of e-mental health approaches include the use of mobile phone apps which deliver programs based on CBT or monitor symptoms of patients with non-affective psychosis (Harrison et al., 2011; Palmier-Claus et al., 2013). Brief interventions delivered via mobile phones to young people who use multiple substances and people with alcohol related trauma have also shown promising results in decreasing risk taking behaviour (Arnaud, Broning, Drechsel, Thomasius, & Baldus, 2012; Kool, Smith, Raerino, & Ameratunga, 2014). In New Zealand, virtual reality games based on CBT principles have also been trialled with hospitalised young people offering positive results (Merry et al., 2012).

**Effectiveness**
The effectiveness of e-mental health strategies has attracted increased research attention in the past decade. Many Australian studies have reported internet delivered CBT based e-mental health strategies to be ‘as effective’ as face to face therapy for depression, anxiety and social phobia (Andrews et al., 2010; Andrews, Davies, & Titov, 2011; Wims, Titov, Andrews, & Choi, 2010). This is usually provided through online training modules for people with depression, anxiety, social phobia, pain or obsessive compulsive disorder (Andrews et al., 2010; Andrews et al., 2011; Eccleston et al., 2014; Titov et al., 2014; Wims et al., 2010). As promising as these results are, these findings cannot be generalised to all Australians.

Titov, Andrews, Kemp, & Robinson (2010) compared the characteristics of 774 people accessing online CBT with the characteristics of 454 clients at a specialist anxiety and depression outpatient clinic and 627 individuals identified in a national epidemiological survey. They found that people seeking internet treatment were similar in characteristics, including disease severity, to people attending the outpatient clinic. However, these results need to be interpreted with some caution. As the authors highlight, the outpatient clinic sample was from an inner city affluent area and would not be representative of clinics in other parts of Australia (Titov et al., 2010). They noted that the sample seeking treatment via the internet were more likely to be female, married, older and have higher educational qualifications than those in the national epidemiological survey (Titov et al., 2010). Further research is needed to understand
what contributes to the uptake, adherence and acceptability of online therapies for individuals and groups.

Uptake and Adherence
Many current CBT based internet treatments recommend 4-6 hours of weekly participation, require medium to high literacy levels, regular access to the internet and a high level of technological competence. Given these criteria it is not surprising that many studies report variable adherence and completion rates. Harrison et al. (2011) attribute their low adherence rates to poor explanation of tasks and limited understanding of their online mood tracking system. On the other hand, Andrews et al. (2010) within their meta-analysis of computerised CBT approaches analysing 22 studies, found a median adherence rate of 80%. That is, 80% of those who began the online therapy programs continued through to completion. This needs to be understood in context, as these studies only measure adherence of a group of self-selected individuals, and thus the findings do not generalise to the broader population. One key factor identified by Cavanagh (2010) and Neil, Batterham, Christensen, Bennett & Griffiths (2009) to enhance adherence and completion is the introduction of e-mental health approaches in a structured environment, such as a classroom or within a therapist supported setting.

There remains significant variation in uptake and adherence reported within the literature (Harrison et al., 2011; Melville, Casey, & Kavanagh, 2010). Although results on effectiveness are promising, it is important to note that e-mental health treatment is not accessible or acceptable for everyone. Understanding what drives uptake and adherence is an important next step for successful e-mental health implementation.

The Technology Acceptance Model (TAM) is a leading theory in the uptake of technology among users, cited in up to 40% of current non-health related literature (Holden & Karsh, 2010). It is based on the theory of reasoned action and describes three main factors which contribute to a person’s intention to use technology: 1) perceived usefulness, 2) perceived ease of use and 3) attitude toward technology. This theory has undergone several adjustments to make it more applicable to the uptake of health information technology (Holden & Karsh, 2010), including a greater focus on
characteristics of the individual user, such as health status, age and technology self-efficacy (Jeongeun & Hyeoun, 2012), and adjustments recognising the social context, such as social influences and facilitating conditions which support technology use (Chiu & Eysenbach, 2010). The field of health information technology uptake is evolving and theories continue to be adapted to understand what contributes to a person’s ability, interest and attitude toward new technology use in health care.

Acceptability
Although e-mental health treatments appear to work for some, the current challenge is understanding which approach works for who and why. Acceptability is a term often used in the literature to describe a person or group’s satisfaction with e-mental health approach/s (Gun, Titov, & Andrews, 2011). Recently there has been an increased emphasis on understanding people’s experiences when using e-mental health strategies (Schmidt & Wykes, 2012). E-mental health strategies possess a large array of characteristics which can enable or inhibit use (Schmidt & Wykes, 2012). Understanding which features promote acceptability of e-mental health strategies for end-users and health professionals is vital to ensure their effective implementation.

Large variation exists in reported levels of acceptability. Many studies examining acceptability have sampled people who have searched internet sites for treatment (Andrews et al., 2010). These self-selected individuals would have a tendency to find internet based treatment acceptable (Musiat, Goldstone, & Tarrier, 2014). Musiat et al. (2014) found that the majority of community members in their British survey would prefer face to face treatment over any other form of self-help or e-mental health treatment. Meanwhile Christensen, Reynolds, & Griffiths (2011) in their review of the factors affecting uptake of e-mental health strategies for young people, found that health professionals were unlikely to recommend e-mental health strategies to patients as they perceived them to have low adherence, be of varying and questionable quality and had concerns about misdiagnosis and risk. Importantly, acceptability of e-mental health approaches has been shown to increase significantly following use, increased awareness or training for both patients and health professionals (Gun et al., 2011).

Some of the key challenges to the acceptability of e-mental health approaches are ethical and legal concerns held by both community members and health professionals.
Barak et al. (2009) highlight several ethical issues relating to e-mental health use, including the ability of users to conceal their identity, difficulty providing emergency care if required, heavy reliance on technology, access issues related to the digital divide, difficulty in communicating accurate messages and feelings and cross-cultural misunderstandings. Other legalities which need to be considered include difficulties with fee collection, adherence to professional standards, professional negligence and privacy (Barak et al., 2009). At present the area of e-mental health suffers from a lack of consistent ethical and legal guidelines to protect patient and therapist alike, although such guidelines are now starting to appear (Barak et al., 2009).

**Accessibility**

E-mental health strategies have the potential to significantly increase access by overcoming barriers such as distance and cost. Furthermore the flexibility e-mental health affords, allows for greater access at times suitable to the person and the ability to provide services to people who wish to remain anonymous (Barak et al., 2009). Recognising this potential, in 2012 the Australian Government released its E-mental health Strategy for Australia, which includes a comprehensive commitment to improving access for all Australians (DOHA, 2012). This strategy highlights the convenience and efficiency (including cost effectiveness) of such approaches for individuals and services alike. The strategy supports training of health professionals and awareness raising within the community, in keeping with findings that acceptability increases significantly following use of or training in e-mental health tools (DOHA, 2012; Gun et al., 2011).

To date the vast majority of findings relating to the effectiveness, uptake, accessibility and acceptability of e-mental health approaches relate to non-Indigenous people. Currently two e-mental health therapy apps are being designed and trialled for use with Aboriginal and Torres Strait Islander people under the E-mental Health Strategy for Australia, Electronic Mental Health in Practice (eMHPrac) program (DOHA, 2012). These culturally responsive e-mental health tools are the AIMhi Stay Strong App and the ibobbly suicide prevention App (Dingwall, Puszka, Sweet & Nagel, 2015; Shand, Ridani, Tighe & Christensen, 2013). Anecdotal evidence and initial consultations suggest that there is community support for both approaches and studies of effectiveness and health professional acceptability have been conducted or are
underway (Dingwall et al., 2015; Shand et al., 2013). These apps and their associated research will add to the growing body of evidence surrounding the acceptability and effectiveness of e-mental health strategies.

**E-MENTAL HEALTH AND ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLE: ACCEPTABILITY, ACCESS AND INVESTMENT**

The access to and acceptability of e-mental health strategies for Aboriginal and Torres Strait Islander people is a pertinent topic given the current national interest in this area. E-mental health approaches have the potential to overcome significant barriers to care for Aboriginal and Torres Strait Islander Australians.

**Acceptability of e-mental health approaches for Aboriginal and Torres Strait Islander people**

Little is documented regarding the acceptability of e-mental health approaches to Aboriginal and Torres Strait Islander people or community perceptions of such approaches. Hunter, Travers, & McCulloch (2003) embarked on a proof of concept study to understand the possibilities of health information technology in remote Aboriginal and Torres Strait Islander communities. They found that facilitators of use included local production of content, implementation and support, non-text information, Indigenous voices and culturally appropriate graphics. Barriers to use included the use of departmental logos, suboptimal location of kiosks and limited integration into existing care. Other examples of health information technology use include Noble et al. (2014), who used touch screen questionnaires to collect health data with Aboriginal and Torres Strait Islander patients. They developed a questionnaire with a year seven reading level, included pictures where possible and limited text. Acceptability ratings were high. Over 90% of participants agreed that the instructions were easy to follow, the touchscreen computer was easy to use, they had enough privacy, questions were easy to understand and they felt comfortable answering all the questions. Both studies found that culturally responsive and locally generated e-health strategies have the best chance of success (Hunter et al., 2003; Noble et al., 2014).

General community attitudes to e-mental health approaches might also form an important part of acceptability for Aboriginal and Torres Strait Islander people.
Rennie, Crouch, Wright & Thomas (2011) when investigating access to technology in Central Australia, found that although understanding about e-health approaches was limited, general community attitudes to e-health were positive. While these results are not tailored to e-mental health they do offer some insight into general community acceptance of technology use in health care. Gibson et al. (2011) consulted First Nations people of Canada on their views of tele-mental health services and found perspectives ranged from interest and enthusiasm to hesitancy and concern. They found that increased access to services, facilitation of disclosure and usefulness were identified advantages. Interference with capacity building (no local trained workers) and concerns about privacy were identified as disadvantages. Overall 47% had a positive response to tele-mental health services, 21% neutral or undecided and 32% of responses were negative.

Access to technology for Aboriginal and Torres Strait Islander people

Access to technology is an important consideration when contemplating the practicality of e-mental health strategies. Aboriginal and Torres Strait Islander people generally have less access to technology than non-Indigenous people (ABS, 2012). They are also more likely to access technology in a public place introducing further concerns about privacy (Schmidt & Wykes, 2012). The ABS (2012) report highlights that only 20% of Indigenous households in remote areas and 53% of Indigenous households in non-remote areas have a computer connected to the internet. Some remote communities in the NT have no mobile phone coverage and some outstations lack functional land-line phones (Rennie et al., 2011). Often termed the ‘digital divide’ many note the importance of improved access as a matter of equity which requires urgent attention (Daly, 2005).

Access to reliable telecommunications is likely to improve health outcomes for Aboriginal and Torres Strait Islander people. Hunter, Travers, Gibson & Campion (2007) highlight the potential of innovative technology to reduce inequality in terms of health, education and digital engagement for Aboriginal and Torres Strait Islander people living in remote locations. Rennie et al. (2011) suggest that improved access to telecommunications could improve the lives of many Aboriginal and Torres Strait Islander people through allowing them to live in smaller communities and ‘maintain
connection with country and sacred sites, avoid problems endemic in larger towns and avoid marginalisation in larger towns where they do not have kinship ties’ (p. 10).

**Investment**

Whilst access issues still exist in remote areas, there is evidence that significant investment is being made. A key motivation for the multibillion dollar government investment into the National Broadband Network initiative is to allow the provision of electronic education and electronic health (e-health) services to rural and remote residents (Rennie et al., 2011). Furthermore investment in promoting uptake of national schemes, such as the satellite internet program for remote Aboriginal and Torres Strait Islander communities, is promising (Rennie et al., 2011). Increased access has led to increased use (McCallum et al., 2014). McCallum et al. (2014) found that mobile phone ownership rates in NT remote communities were over 85%. Furthermore the inclusion of mobile phone follow up in their RCT improved adherence to the trial.

While the above demonstrates that we know something of acceptability of the use of technology for health information, and access to technology within Aboriginal and Torres Strait Islander communities, no studies to date have explored perspectives of e-mental health strategies in this context.

**INTRODUCING TWO CULTURALLY RESPONSIVE E-MENTAL HEALTH TREATMENT APPLICATIONS**

There is evidence that treatment tools developed by Aboriginal and Torres Strait Islander people incorporating Aboriginal and Torres Strait Islander designs, knowledge and worldviews have the best outcomes (Hunter et al., 2003; Noble et al., 2014). Introduced in the following section are two culturally responsive e-mental health therapy applications, supported under the National eMHPrac program (DOHA, 2012).

**AIMhi Stay Strong iPad App**

The AIMhi approach began in 2003 following extensive consultations, surveys, audits, participatory action research and intervention studies (Nagel & Thompson, 2007;
Nagel et al., 2009). This resulted in the generation of a motivational care planning brief therapy tool and subsequent RCT in 2009. The results of this trial indicate a significant advantage following use of the tool with improvements in wellbeing and substance dependence compared with treatment as usual (Nagel et al., 2009). AIMhi resources have emerged as popular cross-cultural engagement and treatment tools for use with Aboriginal and Torres Strait Islander people and are currently used widely across the Northern Territory (Nagel et al., 2012). The AIMhi Stay Strong Plan is a therapist supported strengths based brief intervention utilising motivational interviewing and low intensity CBT techniques (Bennett-Levy et al., 2010). The AIMhi Stay Strong Plan follows a four step process, exploring family, strengths and worries, and resulting in goal setting and actions for change. The tool uses two metaphors to assist in the story telling component: a tree which is nourished by strengths and weakened by worries and football goal posts, which allow for the identification of small steps to a larger goal.

This care plan can act as a powerful tool in facilitating communication and engagement between Aboriginal and Torres Strait Islander patients and health professionals. The flexibility of the tool allows for the exploration of concerns and can be individually tailored to each patient (Nagel et al., 2012). The depth and effectiveness however is somewhat dependent on clinician skills. Extensive health practitioner training has been undertaken in the NT to facilitate practitioner skill development in the application of the care planning tools (Nagel et al., 2012).

Recently the AIMhi research team has translated the AIMhi Stay Strong Plan into an application for iPad. The AIMhi Stay Strong iPad App (AIMhi App) was designed directly from the paper based care plan and is currently being rolled out and evaluated in the NT (Dingwall et al., 2015). The App is designed to be therapist supported and implemented within a therapeutic interaction with a patient. The App assists health professionals to provide a structured mental health therapeutic intervention. Printing and email capabilities enhance information dissemination, both to the client and health information systems. The app uses colourful graphics to facilitate engagement and has limited text. Information is input through typing and drop down selection boxes, with the option of including a photograph if the client wishes. Animation assists in the delivery of the metaphors, with the tree strengthening and weakening as strengths and worries are input. Care plans can be
saved, stored, copied and re-accessed to facilitate an ongoing therapeutic monitoring tool. Importantly, the App, once downloaded, does not require continuous internet connection for use. The current AIMhi research focuses on training health professionals to use the AIMhi Stay Strong App and understand the barriers and enablers of use, including ratings of knowledge, acceptability and perceived effectiveness (Dingwall et al., 2015). The AIMhi Stay Strong App, can be downloaded from www.menzies.edu.au/aimhiapp.

**ibobbly suicide prevention Android App**

The ibobbly suicide prevention Android App (ibobbly app) was developed in the Kimberly region in Northern Western Australia (WA). The name ‘ibobbly’ was generated from a Kimberly greeting. The App aims to reduce depression, distress and suicidal thinking and increase help seeking for Aboriginal and Torres Strait Islander people aged 16-35.

The App is based on ACT which uses mindfulness and values-based action strategies. The App uses metaphors, imagery and stories to guide the user through the treatment. The imagery and background for the App was developed by local Kimberly Aboriginal and Torres Strait Islander artists and graphic designers (Shand et al., 2013). The voices in the App were provided through the Goolarri Media Company in Broome, WA. The development of the App involved strong collaboration between many local and national individuals, companies and organisations.

The App guides users through three self-assessment and three activity modules each represented by a circle on the home page. The self-assessment modules are designed to give users a snapshot of their current status and progress. All self-assessment modules ask the user if they are experiencing intrusive thoughts, including thoughts of suicide. If a person indicates they are having suicidal thoughts a help screen appears showing several 24 hour phone numbers, and users are encouraged to call for help. These include 000 Emergency, Lifeline and Kidshelp line.

Once the first self-assessment activity is complete the user is given access to the first activity module. Module one helps people become aware of their thoughts, feelings and behaviours, and gives users tools to manage upsetting thoughts. Module two assists users to manage their emotions using strategies including talking to someone, doing soothing activities and mindfulness exercises. Module three helps users to identify the characteristics they want to stand for and helps them set small, realistic
goals to move them in this direction. Each module is only accessible once the previous module is completed. The modules include interactive activities, drag and drop activities, stories and pop-up boxes which encourage users to reflect on their thoughts and feelings. An audio icon is included on every page to assist people who may have difficulty reading the text. Upon completion a summary page offers users an opportunity to reflect on the answers they have given, and focuses on the areas they indicated they could change.

The first version of the ibobbly App is being evaluated using a pilot study in Broome, WA. Fifty-four out of a planned 60 participants have completed or are enrolled in the trial. Although the pilot is not yet complete, some very preliminary analysis suggests that the group using ibobbly had reductions in psychological distress, depression and suicidal thinking (F. Shand, personal communication, October 20, 2014). Results will be published once the pilot study is complete. Future ibobbly research is focusing on a national RCT starting in 2015 to determine the effectiveness of the App in reducing psychological distress, depression and suicidal thinking for Aboriginal and Torres Strait Islander users (Shand et al., 2013). The ibobbly app is not yet publically available, however information can be downloaded from http://digitaldog.org.au/programs/ibobbly-black-dog-institute/.

Despite the development, implementation and continuing research into these apps and their applicability to Aboriginal and Torres Strait Islander people, no studies to date have explored Aboriginal and Torres Strait Islander community attitudes toward e-mental health approaches.

**METHODOLOGICAL CONSIDERATIONS**

There remains a gap in our understanding of how acceptable e-mental health approaches are for Aboriginal and Torres Strait Islander community members. Additionally, an awareness of what characteristics facilitate or inhibit e-mental health tool use for Aboriginal and Torres Strait Islander people would inform future development and adaptations. An important influence on an individual’s willingness to uptake health technology is the perspectives of their community and family members (Chiu & Eysenbach, 2010). Therefore seeking their views will provide an
insight into general community attitudes, acceptance and the support available to potential users.

**Research aims and approach**

This study aimed to explore Aboriginal and Torres Strait Islander community members’ experiences of using two culturally responsive e-mental health apps and to identify factors which influence the acceptability of these approaches. Therefore the specific research questions were twofold:

1) What are Aboriginal and Torres Strait Islander community members’ experiences and perceptions of using two culturally responsive e-mental health apps (AIMhi & ibobbly) in Darwin, NT?

2) What factors influence the acceptability of e-mental health tools for Aboriginal and Torres Strait Islander people in Darwin, NT?

Within a non-indigenous context, understanding community attitudes toward e-mental health strategies has taken qualitative and quantitative form within the literature. Many quantitative studies have utilised surveys (both online and paper based), uptake and adherence data, questionnaires and various outcome measures, including rating technology comfort (Gun et al., 2011; Musiat et al., 2014). Qualitative methods have included semi-structured in-depth interviews and focus groups (Kool et al., 2014; Lucassen et al., 2013). Currently no research has been published which specifically explores Aboriginal and Torres Strait Islander community attitudes toward e-mental health approaches.

Given the research questions require in-depth understanding of users’ experiences qualitative inquiry was considered most appropriate. Qualitative research focuses on understanding human experiences within the context of their lives and supports multiple realities, understanding that people’s experiences differ according to context and experience (Liampertong, 2009). A phenomenological approach aims to understand the lived experience of a person or several people in relation to a phenomenon of interest (Liampertong, 2009). As we aimed to understand personal experiences of using e-mental health apps, within the context of people’s lives, and the factors which influence acceptability, this study was aligned with a phenomenological approach.
Methodology

Qualitative methods used within the literature to explore community acceptability of e-mental health strategies include in-depth interviews and focus groups. The only study found which explored Indigenous communities’ attitudes toward technology use in mental health, in this case tele-mental health in Canada, did so utilising in-depth interviews (Gibson et al., 2011). Focus groups were used by Lucassen et al. (2013) with lesbian, gay and bisexual youth from varying ethnic backgrounds to explore their views of using computerised self-help programs to treat depression. Focus groups are useful when multiple viewpoints are required on a specific topic (Liamputtong, 2009).

Given that patient and health professional attitudes significantly improve following training in, or familiarisation with, e-mental health strategies (Gun et al., 2011), research regarding community member acceptability should include a period of familiarisation to available e-mental health approaches. Familiarisation also allows participants the opportunity to identify aspects of these tools which enhance or inhibit use. This type of research can most easily be conducted in a focus group setting where sessions include familiarisation with an e-mental health tool, as exemplified by the work of Lucassen et al. (2013).

Conducting a series of focus groups, with the same participants attending multiple groups, could enhance the depth of data and improve participant’s engagement in the group process, providing more in-depth dialogue. This approach was successfully used by other researchers investigating Australian Aboriginal and Torres Strait Islander people’s attitudes toward e-mental health tools, which they have termed ‘learning groups’ (Judy Singer, personal communication, August 11, 2014; Singer, Bennett-Levy, Rotumah & Lewis, in preparation).

Focus groups have several other benefits. Wibeck, Dahlgren, & Öberg (2007) discuss the opportunity to use focus group research to understand ‘not only what the participants are talking about, but also how they are trying to understand and conceptualise the issue under discussion’ (p. 249). This can be achieved by not only analysing the content of what is spoken, but also how participants react to, build on or discourage each other’s comments. This information could therefore provide some
insight into the social influence and facilitating conditions referred to by Chui & Eysenbach (2010) when considering e-mental health tool uptake.

Focus groups have been used with Aboriginal and Torres Strait Islander populations with positive results when local community people are invited to set the agenda (Willis, Pearce & Jenkin, 2005). Focus groups, conducted in a series, have the potential to provide in-depth rich descriptions of what characteristics promote and inhibit use of e-mental health tools for Aboriginal and Torres Strait Islander people. Furthermore, they could gather information regarding acceptability and attitude toward such approaches, and demonstrate how others may influence an individual to change their opinion. For these reasons a series of focus groups, beginning with familiarisation with e-mental health apps, was considered the most valuable and practical approach to address the research questions in this study.

**Sampling**

Purposeful sampling of participants with a range of personal characteristics, for example differing age and gender, can further encourage a wide variety of experiences and viewpoints. This type of purposeful sampling, known as maximum variation sampling is often used within qualitative research and aims to ‘capture and describe the central themes that cut across a great deal of variation’ (Liamputtong, 2009, p. 13). Sampling considerations within focus group research require careful consideration ‘as the emphasis is on group discussion, the composition of the group plays a major role in the interaction process’ (Liamputtong, 2009, p71). Liamputtong (2009) highlights three points of consideration regarding the selection of participants for focus groups: consideration of social and cultural homogeneity/heterogeneous (culture, age, gender, religion etc.), shared experiences and the familiarity of participants to each other. Liamputtong (2009) highlights that ‘even if a group is heterogeneous, but has shared experiences, the discussion can be very successful since the participants feel they have something in common’ (p. 72). It was therefore felt that differing ages and genders were appropriate given our participant’s shared similar cultural backgrounds and the experience of using e-mental health apps.

Another consideration, given the relatively small Aboriginal and Torres Strait Islander population in Darwin and close kinship ties, was that some participants would know
each other, even if they were not sourced through snowballing recruitment methods. This was considered unavoidable and would need to be assessed at the time as to the impact on the group process. Although research texts often advocate for groups of strangers in focus group settings, this is not always permissible or practical (Liamputtong, 2009). Awareness of these factors can assist in determining their influence on group process and findings.

CONCLUSION
The mental health and wellbeing of Aboriginal and Torres Strait Islander Australians is influenced by a complex interaction of historical, social, emotional, physical and contextual factors. E-mental health approaches have the potential to improve access to appropriate and culturally safe mental health care for Aboriginal and Torres Strait Islander people. Currently, the vast majority of research associated with e-mental health effectiveness and acceptability relates to non-Indigenous people. Research exploring what constitutes acceptable e-mental health approaches for Aboriginal and Torres Strait Islander people is required. Furthermore, an understanding of what factors influence acceptability would assist in future development and implementation. A series of focus groups with Aboriginal and Torres Strait Islander community members, which include familiarisation with e-mental health apps, offers a practical and appropriate way to understand Aboriginal and Torres Strait Islander people’s experiences of e-mental health apps and factors which influence the acceptability of these approaches. The specific methods and processes used in the study, including the recruitment strategy, inclusion/exclusion criteria and focus group structure are described in detail in chapter two.
CHAPTER TWO
JOURNAL ARTICLE

ACCEPTABILITY OF MENTAL HEALTH APPS FOR
ABORIGINAL AND TORRES STRAIT ISLANDER
AUSTRALIANS: A QUALITATIVE STUDY.

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Acceptability of mental health apps for Aboriginal and Torres Strait Islander Australians: A qualitative study.

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ABSTRACT

Background: Aboriginal and Torres Strait Islander Australians experience high rates of mental illness and psychological distress compared to their non-Indigenous counterparts. Electronic mental health (e-mental health) tools offer an opportunity for accessible, effective and acceptable treatment. The AIMhi Stay Strong App and the ibobbly suicide prevention App are treatment tools designed to combat the disproportionately high levels of mental illness and stress experienced within the Aboriginal and Torres Strait Islander community.

Objective: This study aimed to explore Aboriginal and Torres Strait Islander community members’ experiences of using two culturally responsive e-mental health apps and identify factors which influence the acceptability of these approaches.

Methods: Using qualitative methods aligned with a phenomenological approach we explored the acceptability of two culturally responsive e-mental health apps through a series of three, three-hour focus groups with nine Aboriginal and Torres Strait Islander community members. Thematic analysis was conducted and co-researcher and member checking were used to verify findings.

Results: Findings suggest strong support for the concept of e-mental health apps and optimism for their potential. Factors that influence acceptability related to three key themes: personal factors, such as motivation, severity and awareness of illness, technological competence and literacy and language differences; environmental factors,
such as community awareness, stigma and availability of support; and *app characteristics*, such as ease of use, content, graphics, access and security and information sharing. Specific adaptations, such as local production, culturally relevant content and graphics, a purposeful journey, clear navigation, meaningful language, options to assist people with language differences, offline use and password protection may aid uptake.

**Conclusions:** When designed to meet the needs of Aboriginal and Torres Strait Islander Australians, e-mental health tools add an important element to public health approaches to improving the wellbeing of Aboriginal and Torres Strait Islander people.

**Keywords:** mobile applications; mental health; indigenous population; therapeutics; cognitive behavioral therapy; acceptance commitment therapy; culturally competent care

**Introduction**

**Aboriginal and Torres Strait Islander Mental Health and Service Access**

Poor social determinants of health contribute to higher rates of psychological distress for Aboriginal and Torres Strait Islander people (3 times) compared to non-Indigenous Australians [1]. Tragically, consequences such as suicide also occur at higher rates - twice that of non-Indigenous Australians [2]. Younger Aboriginal and Torres Strait Islander Australians are at the greatest risk with suicide rates 5.9 (female) and 4.4 (male) times higher than non-Indigenous Australians aged 15–19 years [3]. Despite this, 35% of Aboriginal and Torres Strait Islander people with high to very high levels of psychological distress report difficulties accessing health services [1]. Barriers include: ineffective communication, differences in worldview from western treatment models, stigma and distance to appropriate services [4].

Treatment approaches which equalise power and facilitate genuine communication are favoured [5]. Two-way learning, incorporating local knowledge and worldview into treatment is most likely to be effective [6,7,8]. Access to such services in rural and remote areas is limited and technological innovation provides an important opportunity to bridge geographic and sociocultural divides.

**Electronic Mental Health (e-Mental Health): The possibilities…**

E-mental health approaches use electronic media for the delivery of therapy/treatment [9] and are emerging as a safe, therapeutically effective, and acceptable treatment option for
common mental health concerns [10]. They have the potential to increase access by
overcoming barriers such as distance and cost, and improve flexibility by being available
at times suitable to the person, with relative anonymity if desired [11]. Recognising these
benefits, in 2012, the Australian Government released its National e-Mental Health
Strategy including a comprehensive commitment to improving access for all Australians
[9].

Internet delivered Cognitive Behavioural Therapy (CBT) has been shown to be ‘as
effective’ as face to face therapy for depression, anxiety and social phobia [10,12,13].
However, these findings cannot be generalised to all Australians. Many online CBT
treatments recommend 4-6 hours of weekly participation, and require medium to high
literacy levels, regular access to the internet and a high level of computer and internet
competence. Given these criteria, it is not surprising that many studies report variable
adherence and completion rates [14,15] raising questions about satisfaction with e-mental
health approaches [16]. Understanding what drives acceptability is an important next step
for successful e-mental health uptake.

Technology in the Aboriginal and Torres Strait Islander health context
Despite the potential appeal of e-mental health approaches, the vast majority of
effectiveness, accessibility and acceptability findings to date relate to non-Indigenous
Australians. Aboriginal and Torres Strait Islander people generally have less access to
technology than non-Indigenous Australians [17]. Significant investment by the Australian
Government is being made to increase access through programs such as the National
Broadband Network [9]. Increased access has led to increased use, with mobile phone
ownership rates estimated between 56-85% in some remote Northern Territory (NT)
communities [18,19].

Locally produced e-health strategies which use culturally appropriate graphics and videos,
limited text and Aboriginal and Torres Strait Islander voices reportedly have the best
chance of successful implementation [20,21].

Introducing two culturally responsive e-mental health tools: AIMhi and ibobbly
Two culturally responsive e-mental health tools have recently been developed with local
input; the AIMhi Stay Strong iPad App and the ibobbly suicide prevention App [22,23].
The Australian Integrated Mental Health Initiative (AIMhi) began in the NT in 2003 and sought to incorporate local Aboriginal and Torres Strait Islander knowledge and worldviews into treatment. Extensive community consultation resulted in the generation of a culturally responsive brief therapy (AIMhi Stay Strong Plan). This brief therapy was tested in a randomised controlled trial (RCT) in 2009. Results showed significant improvements in wellbeing, substance use and self-management following the therapy [24]. The AIMhi Stay Strong Plan is a therapist supported strengths based brief intervention integrating motivational interviewing and low intensity CBT techniques [25]. It follows a four step process, exploring family, strengths and worries, prior to goal setting. The goal setting phase integrates the strengths and worries discussion into specific lifestyle changes chosen by the client and adapted to their values and socio-cultural context [24].

The AIMhi Stay Strong App translated the paper based care plan into an electronic format. The App uses colourful graphics audio and animation with limited text. Information is input through selecting icons, typing text, and drop down selection boxes, with an option of including a photograph of the client. Care plans can be saved, stored, copied, emailed, printed and re-accessed to facilitate an ongoing therapeutic monitoring tool. Once downloaded the App does not require continuous internet connection for use.
The ibobbly suicide prevention App (ibobbly) was developed in northern Western Australia (WA) for people aged 18-35. The App, based on acceptance and commitment therapy, uses mindfulness and values-based action strategies. The App is a self-help tool and includes three self-assessment and three activity modules. Self-assessment modules ask the user if they are experiencing intrusive thoughts, including thoughts of suicide, if so they are directed to call 000 Emergency, Lifeline or Kidshelp line. Three activity modules use interactive activities, stories and videos, aiming to help users manage upsetting thoughts and emotions, identify ideals and set small, realistic goals. An audio icon on every page assists people with limited literacy. A summary page prompts reflection. Once downloaded, the App does not require continuous internet connection.

The first version of ibobbly has been evaluated through a pilot study in the Kimberley region, WA. Sixty one participants have completed the trial. Preliminary analysis suggests that the group using ibobbly had reductions in psychological distress, depression and suicidal thinking (Personal communication, F. Shand, May 27, 2015). Results will be published soon. A national RCT will begin in 2015.
The Australian Government’s e-Mental Health Strategy seeks to increase availability of e-mental health services and provide training and support to primary, allied health and Aboriginal and Torres Strait Islander Health Workers through the e-Mental Health in Practice (eMHPrac) Project [9]. The present study is linked with the eMHPrac project. E-mental health services may provide an opportunity to deliver structured, cost effective and accessible mental health services to Aboriginal and Torres Strait Islander people, however their acceptability is not well understood. This study aimed to explore Aboriginal and Torres Strait Islander community members’ experiences of using two culturally responsive e-mental health apps and identify factors which influence the acceptability of these approaches.

**Methods**

We used a qualitative design, aligned with a phenomenological approach, to explore the experiences and perspectives of participants in relation to the apps. A series of three focus groups were held with participants who identified as members of the Aboriginal and
Torres Strait Islander community in Darwin, NT. The design was based on a larger study conducted in northern New South Wales [26]. The design, sampling and recruitment strategy were discussed with the Aboriginal researcher and an Expert Reference Group that guides other e-mental health projects in the NT to ensure local relevance. Ethics approval was granted via the Human Research and Ethics Committee at Menzies School of Health Research, including Aboriginal and Torres Strait Islander subcommittee.

**Recruitment**

Purposive sampling was used, aiming to recruit 6-8 Aboriginal and Torres Strait Islander community members. Local service providers (education, health and community) were asked to provide nominations based on inclusion/exclusion criteria. Eligible participants were aged at least 18 years, able to attend all three, three-hour groups, willing and capable of talking in a group setting in English, did not have a florid or severe level of mental illness, identified as Aboriginal or Torres Strait Islander, had basic familiarity with computers and were not currently employed as a health worker. Prospective participants provided demographic information and addressed the above criteria through an expression of interest form. The research team selected participants for maximum variation, aiming for even numbers of male/females and a wide range of ages.

**Data Collection**

Three focus groups were held in a period of one week in December 2014. The groups were facilitated by a female non-Indigenous researcher and a male Aboriginal researcher. Both facilitators have experience working with Aboriginal and Torres Strait Islander people with mental illness, one as a remote public service clinician and one as a mentor and e-mental health co-trainer. Each focus group started with a statement requesting confidentiality from group members, risk management strategies, a short introductory video and a brief demonstration of how to use each app. Participants were then asked to use the Apps, individually (ibobbly) or in pairs (AIMhi). The difference in process reflected the different developer recommendations; the AIMhi App is a therapist-guided intervention, while the ibobbly App is designed as a self-driven tool. The sessions then reviewed participants’ experiences of using the Apps and factors they thought may influence acceptability. Participants were reimbursed for their time, transport and other expenses using an $80 shopping voucher per three hour session. Written informed consent
for participation and voice recording was obtained from all research participants. The
sessions were voice recorded and back up field notes were taken, including researcher
reflections and observations.

**Data Analysis**
The first author led the analysis in consultation with the Aboriginal researcher. Audio
recordings were transcribed by the first author and data from all sources (transcripts, field
notes) were entered into *NVivo qualitative data analysis software* (QSR International Pty
Ltd Version 10, 2012). Initial inductive analysis identified emerging themes which were
further refined through collaborative analysis between the first author and the Aboriginal
researcher. This strengthened the authenticity of findings as the analysis process was
informed by an Aboriginal perspective. A thematic map was developed and discussed
within the research team. A member checking group was run five months following the
initial focus groups, involving three members of the initial groups. These members were
selected as they varied in age and gender, showed interest and enthusiasm and were
available. Reimbursement was equivalent to the initial focus groups. The aim of the
member checking session was to review the thematic map and main findings with
participants, who confirmed that these reflected their experiences and perspectives related
to acceptability of the Apps. It is likely data saturation was achieved given that the
methodology chosen resulted in a data set which was both rich (detailed and nuanced
commentary) and thick (several hours of interactive discussion). Triangulation of data
sources, co researcher checking and member checking strategies were used to enhance the
trustworthiness of the findings.

**Results**

**Participants**
Ten expressions of interest were received via four service providers. A total of nine people
(3 male, 6 female) were accepted into the focus groups. One female was excluded to
ensure more equal gender distribution. Ages ranged from 18-60 with a mean age of 33. All
participants identified as Aboriginal or Torres Strait Islander, resided in the local area and
identified English as the main language they spoke at home. Eight of nine (88%) participants
provided an email address, seven of nine (77%) identified they had access to the internet at home and two of nine (22%) owned a smart phone. Eight of nine (88%) identified they were interested in the topic.
Nine participants attended the first focus group (100%), eight the second (88%) and six the third (66%). The Aboriginal researcher was only able to attend the first group and member checking group. Reasons given for non-attendance included funeral attendance, family and work commitments.

**Overview and Thematic Map**

All participants expressed enthusiasm and optimism for the concept of an app and the progressiveness of improving mental health and wellbeing using apps:

> I like the app idea; I think it is fantastic, I think it is great to move with the times  
> (56yo Female)

Specific benefits identified were the opportunity to reach larger audiences, the ability to provide immediate access to help, ability for an individual to have greater independence and the possibility of anonymity:

> Just being able to intervene in a timely manner and help someone through their difficult struggle (60yo Female)  
> I think for the individual it might be an increased level of independence and privacy. You know they can look at the app without having to speak to someone (50yo female)

Three main themes emerged related to the acceptability of e-mental health tools: factors related to the person, the environment and the Apps (see Figure 1).
Figure 3. Factors affecting acceptability of e-mental health apps for Aboriginal and Torres Strait Islander People in Darwin, NT.

**Characteristics of Person**

*Illness factors* including a person’s awareness of their mental illness and motivation to change were suggested as potential influences on help-seeking and app use:

...if they did have a mental illness, and they were not really aware of it, there would be no reason for them to use the app (60yo female)

It is just a matter of the motivation and like wanting to get better and everything (18yo female)

Both apps were considered to be most appropriate for people with less severe mental illnesses:

So it could be a good thing for people who have some minor mental health things to help them get along. If you have that there, like Stay Strong, that might help
them or encourage them to overcome it. You know - that don’t have really serious mental health issues (AIMhi, 50yo female)

Historical factors were seen to cause mental ill health and influence acceptability of the apps to participants. The negative impact of colonisation on the wellbeing of Aboriginal and Torres Strait Islander people was highlighted in the discussion, along with uncertainty about the role of apps in addressing such concerns:

I am someone who can sit here and say, I have got a problem, with all that, and there are people who just do whatever to try and get out of it, because they can’t talk about it. I wanna go back to country, I want my song, I want my dance, I want my ceremony, I want my country, they can’t talk about it, and how does it happen. How does this (AIMhi App) help you deal with those type of things? (56yo Female)

Two participants expressed a sense of helplessness in preventing suicide. This impacted upon their perception of the utility of the Apps:

Suicide though, suicide is a very different thing, to other things, it's very different isn’t it, a state of mind, you know what questions could you ask someone who is in that state of mind (AIMhi, 56yo Female)

You know it is a big claim calling it a suicide prevention app, maybe another name. Another term for that, I don’t think it is really going to prevent suicide; it is just a tool that someone can use, to go through their emotions and self-assess where they are at (ibobbly, 60yo Female)

Technological competence was identified as influencing the acceptability of e-mental health apps. One older participant noted:

You know you got some young people who said, yeah it’s pretty easy to use, and they are very more computer literate, and some older people that find it difficult to go back, it is across the board but you need to look at the app (AIMhi) to be user friendly I suppose (50yo Female)

Literacy and Language differences were identified by some participants as potential barriers to app use. Some participants stated that these tools may not be appropriate for their family in remote communities:
My people are from Alice Springs. So yeah, if it is like mob that can’t understand English language, they won’t understand anything, you will have to teach them like pretty much everything I got taught at school (19yo Male)

**Characteristics of Environment**

Community Awareness of available e-mental health tools was reported to be very limited. Inclusion in the research increased participant’s awareness:

*I - on Wednesday - had no idea this existed. I did have a look on the website and seen a bit and thought, oh yeah that must be it* (AIMhi, 50yo Female)

Suggested strategies to overcome a lack of community awareness included promotion in schools, advertising in newspapers, local radio, television ads and promotion in health centres by health professionals.

Community involvement in development was identified as important, with some participants questioning potential uptake in other communities:

*I think it is great that it is the community who have pushed for the tool to be created; it will be interesting to see how it maps out in that community... I think there is a real need for it, especially that way [Northern WA] and here in the NT ... And if it is successful in that community because the community made it, it would be interesting to see, you know sharing it with other areas* (ibobbly, 30yo female)

Stigma was seen as a barrier for people accessing help:

*Well we have to get that stigma out of the way. We have got to deal with that because that is one of the biggest problems and it is a very serious problem* (60yo female)

One participant noted that apps have the potential to:

*Get around shame job* (26yo Male)

Availability of support was identified as an influence on uptake and effective use of e-mental health apps. Participants identified that the clinician supported nature of the AIMhi App would mitigate some challenges related to motivation, literacy and familiarity with technology. When asked if you need to know how to use an iPad to use the AIMhi App, one participant noted:
Not if you are working with a clinician. If you are doing it on your own you would have to have knowledge of how to use it (60yo female)

Suggestions for other ways of integrating apps into care pathways included their use as a screening tool, communication aid, immediate help option, self-help tool or in conjunction with face to face help.

The need to link the Apps to other supports, particularly emergency help, was also identified. The following are comments on the help box on the ibobbly App:

I think it is good that it is there (18yo female)

Yeah if someone has access to a phone, they can talk to someone. But yeah, it’s not human, the question, it’s not like someone is actually asking it. If someone was actually asking it, it would be more meaningful. (19yo male)

Online videoconferencing, instant messenger and websites were suggested as alternatives and participants felt these could provide a personal touch which may improve outcomes. Participants discussed potential constraints regarding availability of these services due to credit, internet or phone access, and suggested any recommended services needed to be free to access from mobile phones.

**Characteristics of Apps**

*Ease of Use* was identified as a main factor in facilitating engagement with the Apps. Participants who found the Apps hard to navigate were less likely to use the App or recommend it to others:

Yeah I don’t know, this is my opinion and everyone is entitled to their opinion, but I don’t see it working - no. Not for any age group. But that is just my thing. I got totally lost, totally confused. (ibobbly, 56yo female)

Recommendations included clear navigation buttons, a homepage or “dashboard” which is easily understood and the use of checklists or clearly marked progress bars to indicate progress through the Apps.

*Content* gaps discussed (in one or other of the apps) included colonisation, intergenerational trauma, identity, methamphetamines, cyberbullying and the influence of peers. Participants recommended additions to the Apps to prompt consideration of these topics.
Participants also identified the need for the Apps to have a clear and purposeful journey, where individuals were virtually supported through a journey or story which was relevant to them and ended with resolution:

I thought it would take me on a journey, but I didn’t see that at all. You know what is your problem, how can we help, what can you do, but I didn’t feel that (ibobbly, 56yo female)

Participants recommended approaches which allowed clients to define their own problems and solutions:

If you word it so people feel comfortable, so I am going to put that in, but only if they are invited, only if they want to say more about themselves, not preaching, not dictating... (56yo female)

Clear, concise, relevant language was acknowledged as important. Words which could be difficult to understand needed to be supported by explanations or short video clips, as discussed in the following example in reference to the word ‘resilience’ within ibobbly:

I only really in the last couple of years, found out what resilience means ... I sorta relate it to, when I am working and like stressed out; I say my resilience is low, whereas when I am going with the flow I am very resilient. Is that what it means?... Maybe if you have a breakdown of someone giving an example of a particular word. (30yo female)

The inclusion of Aboriginal and Torres Strait Islander languages was considered to enhance engagement and understanding:

Some people might want to use their own language instead of saying deadly. It would be ideally, pie in the sky dreaming, that your language comes up, or you write it in, instead of deadly like ‘manymak’ or ‘gumul’ (ibobbly, 56yo female)

Graphics and animation were perceived as supporting motivation. Culturally relevant graphics, voices, animation and optional short video clips may assist in engagement with the content, improve understanding and overcome literacy issues. Recognising the diversity of Aboriginal and Torres Strait Islander communities, participants identified the
need for regionally specific graphics or language to be described including meanings and interpretations to aid wider acceptability.

Some participants were concerned the metaphors may be interpreted differently by people with low literacy or had concern about the degree to which the metaphors align with user interests (e.g. only relate to males, when a football analogy was used to introduce goal setting in AIMhi App). Modification suggested included personalisation of the graphics and metaphors to enhance relatability.

App access was deemed to be improved by availability, not only on tablet devices, but on all brands of smartphones. Cost was perceived to negatively influence access and could be addressed through free download of e-mental health apps for individuals and the option of offline use once downloaded, to preserve credit.

Security and information sharing was not discussed by participants until prompted by the facilitators. There was some concern expressed about storage of personal health information on the internet. However, most participants noted that other personal information being seen, would concern them more than information on either app:

Wouldn’t bother me at all, photos and messages and emails and things would bother me more (60yo female)

Password protection and the ability to share app information with health professionals and personal electronic health records were also considered important. One participant suggested that the collection of statistics for service planning would be a logical inclusion in any e-mental health tool:

Well I think that is. Not names, just information. I think it is necessary isn’t it. Isn’t that the whole idea? (60yo female)

Discussion

Principal Results
This is one of the first studies to explore the factors which influence acceptability of e-mental health apps for Aboriginal and Torres Strait Islander community members. This study identifies characteristics of person, environment and e-mental health apps which
influence acceptability. Although no other technology acceptance models currently exist which focus on e-mental health or are tailored to an Indigenous population, our findings have similarities to the Health Information Technology Acceptance Model [27]. This model identifies similar attributes of person, community and technology (e-tool) as influences upon the acceptability and uptake of health information technology.

Personal characteristics reported by our participants to influence acceptability include illness factors (severity of illness, motivation to change, awareness of mental illness), historical factors, technological competence and literacy levels. Our participants’ perceptions that e-mental health approaches are more acceptable for people with less severe mental illnesses are consistent with a similar belief that is widely held by health professionals and community members alike [16,22]. However, others have found e-mental health treatment may also be acceptable for people with more severe longstanding illnesses than often assumed [28]. Further research is therefore warranted to examine e-mental health tool acceptability for Aboriginal and Torres Strait Islander people with more severe illnesses.

The possession of the skills necessary to make full use of e-mental health tools affects their uptake and adherence [29]. In addition, limited instruction, technological issues, inexperience with mobile internet browsing and a lack of motivation have been reasons identified for discontinuation [14]. In line with these findings participants in this study reported motivation, technological competence and literacy and language differences as likely to influence acceptability. Participants perceived that apps have broad applicability to people of all ages and varied skill groups, provided they were suited to the target audience. Aboriginal and Torres Strait Islander people, generally have lower educational attainment and literacy as well as less access to technology than non-Indigenous Australians [17,30] therefore specific app adaptations responding to the needs of the target group will aid uptake.

Within our study, environmental characteristics perceived to impact uptake included community awareness, stigma and availability of support. The ability to successfully navigate the Apps was a direct influence on our participants’ perception of the content, perceived journey and overall experience. Importantly, when support was given, either by the facilitators or other group members, participants’ experiences improved. This offers
insight into the potential role friends and family could play in supporting e-mental health tool use in a community setting. Participants suggested that clinician support, which includes Aboriginal Health Workers and primary health care workers, may overcome barriers related to poor literacy, limited ability with technology and/or motivation. Other studies have found that introduction of e-mental health tools in a structured environment (e.g. schools) or with therapist support, enhance adherence [29,31]. The intention of e-mental health tools is not to replace face to face services, rather to complement or offer alternative treatment options for people wanting to access mental health care [9]. Our findings support this goal with participants identifying a clear preference for e-mental health apps to integrate with established treatment pathways rather than stand alone.

Our participants identified community involvement in development as a good strategy for improving acceptability, adherence and uptake of e-mental health apps in a location specific community. This accords with the findings of others and strengthens the evidence for collaborative development of e-health tools [20,21]. Recognising the diversity of Aboriginal and Torres Strait Islander communities, our participants identified the need for regionally specific graphics or language to be described; including meanings and interpretations to improve acceptability in other parts of Australia. Such adaptations are particularly relevant given the potentially nationwide availability of e-mental health apps through internet sharing.

The importance of app design and characteristics should not be underestimated. E-mental health programs need to be attractive to the user and present themselves as a good match to the person’s needs [29]. Others have found that relevant and interesting content and flexible accessibility were reasons identified for use and continuation of e-mental health programs [14]. In keeping with these findings our participants highlighted the need for apps to be easy to use, contain relevant content and instructions on navigation, have culturally relevant language and graphics, incorporate a clear purposeful journey ending in resolution, include options to support people with language differences, and allow for offline use and password protection. Incorporation of Aboriginal Languages was considered to enhance engagement. Participants highlighted the potential barriers of developing apps in every Aboriginal language therefore suggested alternative ways to incorporate language, such as options for voice recording/playback and text box entry.
Security is considered by many to be ‘paramount and drive all other considerations’ when designing interventions [14, 23, 32]. In contrast our participants expressed concern about security only when prompted and felt dissemination of other information stored on their phones (eg. Emails, photos) would cause greater concern than information stored on either App. This could partly be attributable to the apps themselves as neither stores personal details (full name, date of birth, contact details). Participants felt that password protection was important, but needed to be balanced with usability, as some found the regular inputting of passwords inhibited flow and interest. Others have received similar feedback supporting the need for careful consideration of the balance between security and usability[33].

Our participants considered that lack of compatibility across devices (smartphone/tablet) and platforms (apple or android), high data charges and limited mobile coverage could be barriers to use. Others have identified similar barriers, however suggested that with targeted investment in increasing mobile networks, decreasing usage costs and increases in technology these issues will become redundant [14]. Nevertheless given that rural and remote regions where Aboriginal and Torres Strait Islander often reside tend to lag behind in terms of such advances [34], such considerations are particularly important in the design of culturally responsive tools.

Limitations
The size of this study was small with only nine participants drawn from one location. Five of nine participants and the Aboriginal researcher knew each other prior to being included in the groups. This occurred by chance and did not appear to impact on participant’s willingness to express their views. Nevertheless, the purposive selection process (targeting those with fluency in English and established computer literacy) may have introduced bias resulting in a group more likely to favour the acceptability of these tools.

Three members of the research team were involved in the development of the AIMhi App, including the Aboriginal researcher thus introducing another potential source of bias toward acceptability. Finally, three of the nine participants were not within the target age range for the ibobbly App (18-35) suggesting that comments relating to acceptability of this app need to be interpreted with caution. Despite these limitations the study allowed
active participation by all participants who presented a range of perspectives which have not yet been heard in relation to current innovations in technology and mental health.

**Conclusions**

E-mental health apps could be an acceptable way of enhancing services to Aboriginal and Torres Strait Islander people through attention to design which incorporates local community perspectives and thoughtful adaptation according to the target group. Further research with Aboriginal and Torres Strait Islander people to explore effectiveness of e-mental health tools is needed, particularly with a broader target population which recognises diversity of culture and considers variations in literacy, language, background and type of wellbeing concern.

E-mental health tools represent an opportunity to promote mental health awareness, to enhance early intervention strategies and to promote access to evidence based treatment. When designed to meet the needs of Aboriginal and Torres Strait Islander people e-mental health tools add an important element to public health approaches aimed to improve the mental health and wellbeing of Aboriginal and Torres Strait Islander Australians.

**Acknowledgements**

We would like to thank the participants involved in this study for sharing their views, enthusiasm and energy. We would like to acknowledge Ms Stefanie Puszka, who provided extensive technical support and the ibobbly team, Dr Fiona Shand and Ms Rebecca Ridani who provided ibobbly tablets for use in this research. We would also like to acknowledge the Top End Mental Health Service, Northern Territory Department of Health, for providing financial support to make this project possible.

**Conflicts of Interest**

None Declared

**References**


28. Titov N, Andrews G, Kemp A & Robinson E. Characteristics of Adults with Anxiety or Depression Treated at an Internet Clinic: Comparison with a National Survey and an Outpatient Clinic. PLoS ONE 2010; 5(5): 1-5. doi: 10.1371/journal.pone.0010885


CHAPTER THREE
IMPLICATIONS OF FINDINGS AND DIRECTIONS FOR FUTURE RESEARCH

This is one of the first studies to explore Aboriginal and Torres Strait Islander community attitudes toward e-mental health approaches. Our findings suggest that e-mental health apps could be an acceptable way to improve mental health services to Aboriginal and Torres Strait Islander people. E-mental health services could assist to improve mental health literacy, to promote access to early intervention and evidence based treatment and to provide an opportunity to deliver services to people who wish to remain anonymous. With careful consideration of design and content and when tailored appropriately to the target audience, apps may offer an acceptable alternative or adjunct treatment option for Aboriginal and Torres Strait Islander people.

The implications of our findings are twofold. Firstly, when considering the use of e-mental health approaches for specific patients, health professionals need to consider the fit between the users’ skills, illness and experiences, the environment and support available and the e-mental health tool and its characteristics. Consideration of these factors will allow for the best outcomes and enhance engagement and uptake. Along with clinical judgement, the factors identified in this study as influences on acceptability (see figure 1.1) provide a health professional with a list of considerations when determining the appropriateness of e-mental health for a specific patient or group.

Secondly, when developing e-mental health apps for Aboriginal and Torres Strait Islander people our study has identified specific attributes of apps which need to be considered. Community involvement in design and implementation should be considered a necessity. Sustained and meaningful engagement between developers and the community in which the e-mental health tool is intended to be used will ensure the best chance of success. Additionally, this study has highlighted specific characteristics which need to be considered when designing e-mental health apps for Aboriginal and Torres Strait Islander people. These include:
• The content of the app needs to be relevant to Aboriginal and Torres Strait Islander people and address specific concerns of the target audience. For example when designing an app for youth, including content on peers, cyberbullying and identity could be beneficial. Awareness of the challenges faced by the specific target audience will aid in development and/or selection of the right tool.

• Language needs to be clear, concise and include explanations of words which may be difficult to understand. If possible, the inclusion of Aboriginal and Torres Strait Islander languages, or prompts and options to input one’s own preferred language could enhance relevance and engagement.

• Word counts need to be limited, with options to assist people with poor literacy, such as audio buttons, pictures or short video clips.

• E-mental health apps need to include a clear, purposeful and meaningful journey throughout, which assists users to find some resolution. This journey needs to be supported by appropriate and relevant graphics and animations.

• E-mental health apps need to allow users to identify their own problems and solutions. Ideally, apps should be able to be individually tailored to the specific needs of the person, as identified by them. For example, the user selects topics of interest or challenges and is then prompted to think of solutions, potentially with some supporting information or examples of what others have done.

• Graphics which are regionally specific need to be accompanied by explanations of meaning and interpretations, if the intention is to share the app with other geographical areas or on a sharing platform, such as an App store.

• E-mental health apps need to be easy to use and include clear instructions on how to navigate the app.

• E-mental health apps intended to be downloaded and used by individuals on their own phones/tablets, should allow for offline use once downloaded and ideally be free of charge to download.

• Availability on various devices (phones and tablets) and on multiple platforms (Android and iTunes) will enhance accessibility.

• Password protection of the e-mental health app and its contents is essential.
• E-mental health apps need to be integrated into established care pathways. Apps which are intended to encourage access to mental health services, like the ibobbly App, need to have clear links to crisis help, either via phone, videoconferencing or messenger services. These services need to be free of charge to access.

The potential directions for future research are plentiful. Questions remain about the acceptability and effectiveness of e-mental health approaches. Research into Aboriginal and Torres Strait Islander community attitudes and factors affecting the acceptability of e-mental health tools could be extended to include people with more diverse characteristics, including varying wellbeing concerns, geographical locations, literacy skills and language backgrounds. One such direction could aim to understand the acceptability of e-mental health approaches to Aboriginal and Torres Strait Islander people living in remote communities. Either a phenomenological or participatory action research approach would be appropriate depending on the specific aims of the community as determined by key community members/groups. A process of community consultation and involvement in the planning of any such research would be required. The specific aims could include understanding users’ experiences, adapting or creating e-mental health resources to meet the needs of the community, and/or developing a community implementation plan. This implementation plan may include strategies to increase access, promote awareness, identify and develop key community/familial contacts to increase availability of support, or include local language/graphics depending on the needs identified by the community.

Effectiveness of e-mental health approaches focusing on Aboriginal and Torres Strait Islander people is also yet to be determined and research in this area could include clinical trials comparing e-mental health with usual care, as well as comparison between different e-mental health approaches. The current RCT being undertaken by the ibobbly research team (Shand et al., 2013), and a planned RCT of the AIMhi App testing effectiveness in those with chronic kidney disease in decreasing psychological distress (Tricia Nagel, personal communication, July 18, 2015), will provide insight into the effectiveness of these approaches. Positive results would further support the uptake and implementation of these tools and strengthen the evidence base in this emerging field.
In summary, when designed to meet the needs of Aboriginal and Torres Strait Islander people, e-mental health tools have the potential to add an important component to public health approaches aimed to improve the mental health and wellbeing of Aboriginal and Torres Strait Islander people.
APPENDICES

APPENDIX ONE – EXPRESSION OF INTEREST FORM

Expression of Interest

‘Improving mental health and wellbeing using apps’ Learning Groups Darwin

Thank you for completing an Expression of Interest form for the ‘Improving mental health and wellbeing using apps’ learning groups. The learning groups have been developed as a three week course. It is important that you are aware that in order to be eligible to join the program, you need to be available to attend the whole course. As this is a significant commitment we would like to make sure that you are clear about the time and energy that will be required.

Learning Group Details

Place:

Dates:
- Thursday __th Nov
- Thursday __th Nov
- Thursday __th Dec

Time: 9:00 am – 12:00 pm (3hrs)

Total Time: 9hrs

In our selection process we want to make sure that we include people from a range of ages, as well as a mix of men and women. Your application will be considered by the project team with these factors in mind.

Thank you for completing the attached form and we will get back to you soon.

If you have any questions, please contact:

Josie Povey or Tricia Nagel
Josie.povey@menzies.edu.au Tricia.nagel@menzies.edu.au
0418786484 (08) 89227944

This form is for you to keep
Focus Group
Expression of Interest Form

Name: ____________________________________________

Phone number: ______________________________________

Referred by: _______________________________________

So that we can find out more about you prior to the Learning Groups, please answer the following questions:

1. Where do you live? (Suburb/community)

__________________________________________

2. Is English the main language you speak at home?

Yes  No

If No
What is the main language you speak at home?

__________________________________________

3. Are you comfortable talking in a group in English?

Yes  No

4. Do you have transport?

Yes  No

5. What type?
   a. Private
   b. Public

6. How old are you? __________________________

7. Are you able to attend on the following days from 9:00am - Midday

   Thursday 20th Nov  Yes  No
   Thursday 27th Nov  Yes  No
   Thursday 4th Dec   Yes  No
8. Part of the meetings will include a group discussion:
   - Are you comfortable to speak in a group situation (between 6 – 8 people)?
     Yes No
   - Are you comfortable if this discussion is audio recorded?
     Yes No

9. Do you have internet access at home?
   Yes No

10. Do you have a smart phone or iPhone?
    Yes No

11. Are you interested in the use of Apps and other new technologies?
    Yes No

12. Right now, have you got the time to commit to a three week program
    Yes No
APPENDIX TWO - FOCUS GROUP STRUCTURE AND QUESTION GUIDE

<table>
<thead>
<tr>
<th>Focus group Structure</th>
<th>Meet and Settle</th>
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<tbody>
<tr>
<td><strong>Focus Group One:</strong></td>
<td>Introductions – researchers and participants</td>
</tr>
<tr>
<td></td>
<td>Develop credentials – What do you know and why are you interested – aim to even power</td>
</tr>
<tr>
<td></td>
<td>Orientation of process of focus groups – discuss structure, processes, confidentiality, contacts, risk management</td>
</tr>
<tr>
<td></td>
<td>Introduction to first e-mental health resource (AIMhi) aimed to be approx. 1hr. Show short video.</td>
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<td>o Give participants time to play and explore</td>
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<td>o Use in pairs as a role play</td>
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<td></td>
<td>Break (15 minutes)</td>
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<tr>
<td></td>
<td>Discussion – Questions below – Aimed to be approx. 1 hr.</td>
</tr>
<tr>
<td></td>
<td>Conclusion</td>
</tr>
</tbody>
</table>

| Focus Group Two:      | Quick Thoughts from last week – include/link to Questions below |
|                       | Orientation of process of focus groups – discuss structure, processes, confidentiality, contacts, risk management |
|                       | Introduction to second e-mental health resource (ibobbly) aimed to be approx. 1 hr. Show short video. |
|                       |   o Give participants time to play and explore |
|                       |   o Use individually |
|                       | Break 15 minutes |
|                       | Discussion – Questions below – Aimed to be approx. 1 hr. |
|                       | Conclusion |

| Focus Group Three:    | Orientation of process of focus groups – discuss structure, processes, confidentiality, contacts, risk management |
|                       | Quick revision of the both the e-mental health apps– Aimed to be |
approx. 1 hr. Discussion on specific characteristics of apps.

- Break (15 minutes)
- Discussion – Questions below – Aimed to be approx. 1 hr.
- Conclusion

<table>
<thead>
<tr>
<th>Focus Group Question Guide</th>
<th>(e-mental health strategy = AlMhi or ibobbly)</th>
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<tbody>
<tr>
<td><strong>Focus Group One and Two:</strong></td>
<td>What was your experience of using e-mental health tool?</td>
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<tr>
<td></td>
<td>Was e-mental health tool of interest to you?</td>
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<tr>
<td></td>
<td>Was it useful/valuable? Why? Why not?</td>
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<td>Was it easy/difficult to access, to use and to find your way around? What made it easy/difficult?</td>
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<td></td>
<td>What do you like/not like about the e-mental health tool?</td>
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<td></td>
<td>Would you recommend e-mental health tool to a friend or family member? If so, who? Why?</td>
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<td>What kind of people do you think it might be helpful for? E.g. Younger, older, education, literacy etc.</td>
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<td></td>
<td>Who wouldn’t it be helpful for?</td>
</tr>
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<td></td>
<td>Are there some people who shouldn’t use e-mental health tool?</td>
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<tr>
<td></td>
<td>Would you change anything about the e-mental health tool? If so, what?</td>
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</tbody>
</table>

**Focus Group Three:**

What do you think might be some of the benefits of these types of tools? E.g. Increased access, cost, better outcomes etc.

What might be some of the barriers? E.g. Physical, access, emotional, health professional uptake etc.

Can you suggest any ways to overcome these barriers?

Do you have any concerns about e-mental health tools? If so, what are they? E.g. Risk, isolation, people not getting help from clinics, family not involved etc.

Anything else you would like to discuss regarding e-mental health?
Improving mental health and wellbeing using Apps: Acceptability for Aboriginal people in the NT

Participant Information Sheet (This is for you to keep)

What is the research about?
We would like to know what Aboriginal people in Darwin, Northern Territory think about using electronic resources like tablet apps to treat mental health problems. We are going to run a series of three 3-hour learning groups in Darwin. Two culturally adapted mobile phone apps will be introduced and compared. The apps will be the Stay Strong iPad app (made in the NT) and the It's Bobby suicide prevention app (made in Northern WA).

Who can participate?
We are looking for 8-8 community members of varying age and gender who are:
- Interested in the topic — using apps to treat mental illness
- Over 18
- Identify as Aboriginal
- Able and willing to participate in group discussions
- Able to attend three 3-hour learning groups in Nov-Dec 2014
- Basic skills in using computer and/or tablet device

Who should you contact to find out more?
If you have any questions about the study or if you wish to withdraw your consent at a later date, contact:
Josie Povey (Top End): Josie.povey@menzies.edu.au or Ph. 0413786464
Tricia Nagel (Top End): Tricia.nagel@menzies.edu.au or Ph. (08) 8945 8449

When and where will the learning groups be?
To apply you need to be able to attend three learning groups spread over three weeks. The groups will be held from 9am-Midday on:
- **th Nov 2014
- **th Nov 2014 and
- **th Dec 2014

Learning groups will be held at… You need to be able to attend all three learning groups.

Discovery for a healthy tomorrow
Will I be reimbursed for my time?
Yes. The learning groups are a three week course. It is important you can attend all three sessions. You will be given an $30 Coles or Woolworth voucher per 3hr session. You will be given the voucher after attending each session. If you attend all three groups you will receive a total of $240 of vouchers.

What will I need to be involved?
You will need to be able to attend all the groups. You will require your own transport to get to the learning groups. You will not need an iPad or android device. These will be supplied to you at the start of each session.

What do I do now?
If you would like to be included in the learning groups please fill in the Expression of Interest form.

What if I am not selected?
Unfortunately we have a limited number of spaces. If you are not successful in gaining a place in our learning groups, please let us know if you would like to be contacted in the future about another electronic mental health study.

Who should you contact to make a complaint about the study?

Dr. End: Human Research Ethics Committee of the NT Department of Health and Menzies School of Health Research t: (08) 89227022 or ethics@menzies.edu.au

What happens to your information?
The information that you provide will be used to inform training and implementation of electronic mental health tools in the NT. It may also be used to make changes to the Apps to make them easier to use or more applicable to our region.

A report will be prepared and the data may be published in relevant academic journals. However, please be assured that your confidentiality will be maintained. Your name and any other information that may identify you will not be published in any reports or presentations.

All information will be stored in locked filing cabinets and password-protected systems at Menzies School of Health Research. Following the conclusion of the project, information will be stored for up to five years and then securely disposed of by shredding any hardcopies and deleting computer files.

Ethical issues
Ethical clearance for this research has been received from:
The NT Department of HealthMenzies School of Health Research Human Research Ethics Committee (Clearance #)

Withdrawal of consent
If you wish to withdraw your consent, please contact Josie Povey or Assoc Professor Tricia Nagel on the contact details over the page. As we intend to audio record the learning groups, it will be very hard to delete your specific audio recordings. We will make every effort to not include your information should you wish to withdraw.
Improving mental health and wellbeing using apps: Acceptability for Aboriginal people in the NT

Consent Form

This form means you can say No

I freely give my consent: (please tick Yes or No)

To participate in the learning groups to provide feedback on e-mental health Apps

For the learning group to be audio-recorded

To complete an expression of interest form with basic demographics

By signing this form, I understand:

- The information provided about the study in the information sheet and from the researchers
- That it’s OK to say NO to participation in this project and that, if I say YES, I can change my mind later.
- That all information I provide will be kept confidential.
- The possible benefits and risks of being involved.

Participant
Name

Email (if you don’t have one, that is fine)

Phone

Signature

Date

Independent Witness
Name

Signature

Date

Questions or concerns
Please feel free to contact Josie Povey at josie.povey@menzies.edu.au or ph. 0418786484 or Tricia Nagel at Tricia.Nagel@menzies.edu.au or ph. (08) 8922 7944 if you have any questions about the study.

If you have any concerns or complaints about your rights or the conduct of the study you may contact the Ethics Administration Officer of the relevant ethics committee:

- Top End: Ethics Administration Officer, Human Research Ethics Committee of the NT Department of Health and Menzies School of Health Research on ph: (08) 89227922 or ethics@menzies.edu.au.

Please complete the Expression of Interest form.
## APPENDIX FOUR - FINAL ETHICS REPORT

### HUMAN RESEARCH ETHICS COMMITTEE
of Northern Territory Department of Health
and Menzies School of Health Research

**ANNUAL PROGRESS AND FINAL REPORT FORM**

- Ethics approval for the research study is ongoing but will lapse if the progress report is not received by the anniversary of the approval date or the report is deemed to be unsatisfactory by the Ethics Committee. The Ethics Department will send a reminder email when reports are due.

- All relevant sections of this report must be completed otherwise the report will be considered invalid.

- Please email the completed electronic progress report and relevant attachments to ethics@menzies.edu.au and forward a hardcopy to the Ethics Administrator, Menzies School of Health Research, PO Box 41096, Casuarina NT 0811

### PART A: PROJECT DETAILS

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<tr>
<td>1</td>
<td>HREC File Reference No.</td>
<td>2014-2276</td>
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<tr>
<td>2</td>
<td>Project Title</td>
<td>Improving mental health and wellbeing using apps: Acceptability of two culturally adapted e-mental health strategies for Aboriginal people in Darwin, Northern Territory.</td>
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<tr>
<td>3</td>
<td>Principal Investigator</td>
<td>Josie Povey</td>
</tr>
<tr>
<td>4</td>
<td>Project Commencement Date</td>
<td>September 2014</td>
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</table>
| 5 | Project Completion Date | Current approved completion date: 30th June 2015  
Do you wish to extend your completion date: □ Yes  □ No  
New completion date: |
| 6 | Project Coordinator/Contact | Name: Josie Povey  
Position: Masters Student/ Remote Mental Health Professional  
Qualifications: Bachelor of Occupational Therapy  
Organisation/Affiliation: CDU/Menzies School of Health Research/ Top End Mental Health Service  
Postal Address: *****  
Phone Number: 0418786484  
Email Address: josie_povey@hotmail.com |
| 7 | Research Team Members | Have there been any changes to the Investigators or Project Team Members since the approval of this research study? □ Yes  □ No |

Version 2, dated 01 April 2015

Page 1 of 6
If yes, please detail:

Name: Anne Lowell
Position: Principal Research Fellow
Qualifications: Ba of Applied Science, PHD
Organisation/Affiliation: Charles Darwin University
Postal Address: School of Health, Charles Darwin University
Phone Number: 89466257
Email Address: anne.lowell@cdu.edu.au

PART B: STATUS OF PROJECT

☒ Completed (Note: Please attach a Final Report – refer to Part D of this document).
☐ In Progress (Note: Please attach a Progress Report – refer to Part D on this document).
☐ Abandoned prematurely (Please attach an explanation).
  Reason:
☐ Not yet commenced but it is appropriate to keep ethics approval current.
  Reason:
☐ Will not commence and it is appropriate to terminate ethics approval.
  Reason:

PART C: RESEARCH CONDUCT

<table>
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<tr>
<th>Compliance</th>
<th>Is the project being conducted in compliance with the approved protocol of the ethics application?</th>
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<td>☒ Yes ☐ No</td>
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  | If NO, please provide details of any protocol deviations or violations in your summary. |

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<th>Has the conduct of the project been in accordance with the general conditions stated in the NHMRC Statement on Human Experimentation and Supplementary Notes and with the approved protocol?</th>
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<td>☒ Yes ☐ No</td>
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<th>If NO, has approval for amendments to the protocol been previously sought from the Committee?</th>
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<th>If NO, please attach relevant documentation and</th>
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<td>Question</td>
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<td><strong>2 Amendments</strong></td>
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<td><strong>3 Adverse Events i.e. Serious Adverse Events (SAE) including Sudden and Unexpected Serious Adverse Events (SUSAR)</strong></td>
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<td><strong>4 Privacy and Confidentiality</strong></td>
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<td><strong>5 Issues of Ethical Significance</strong></td>
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<td>Part D: Reporting</td>
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<td><strong>1. Publications</strong></td>
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<td><strong>3. Activity Summary</strong></td>
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<td><strong>4. Other Attachments</strong></td>
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**Part E: Signatures and Declarations**

- I confirm that this project has been conducted as originally approved by the Human Research Ethics Committee of the Northern Territory Department of Health and Menzies School of Health Research (and subject to any changes subsequently approved as amendments).
I confirm that this project continues to be conducted in compliance with the NHMRC National Statement on Ethical Conduct in Human Research (NHMRC, 2007).

I confirm that this report accurately reflects the status of the above research project.

Principal Investigator Name:

Signature: ................................................................. Date:

Have your contact details changed? If YES, please provide new details below:

Postal Address:

Phone Number:                      Email:

Please forward an electronic copy to: ethics@menzies.edu.au

AND please forward the original to: Ethics Administrator, Menzies school of Health Research, PO Box 41096, Casuarina NT 0811.

Progress report
Project aim: To understand what influences the acceptability of electronic mental health apps for Aboriginal and Torres Strait Islander people.

Project activities:
* 3 focus groups were run in Dec 2014, with nine, eight and six participants respectively
* Data analysis was complete and a thematic map generated by May 2015
* A member checking group was run with three participants of the original groups to verify findings in May 2015
* A 1 hr presentation was delivered to 20-30 health professionals of the Top End Mental Health Service on the apps and research results on 12th June 2015.
* A newsletter type document was sent to participants and service providers who provided nomination of participants, including research results in June 2015.
* The final thesis will be submitted by end of July 2015

Please forward an electronic copy to: ethics@menzies.edu.au

AND please forward the original to: Ethics Administrator,
Menzies School of Health Research,
PO Box 41096,
Casuarina NT 0811.
APPENDIX FIVE – NEWSLETTER TO PARTICIPANTS AND SERVICE PROVIDERS REPORTING RESULTS

ACCEPTABILITY OF MENTAL HEALTH APPS FOR ABORIGINAL AND TORRES STRAIT ISLANDER AUSTRALIANS: DARWIN, NT.

The AImHi Stay Strong iPad App & The bobby app suicide prevention Android App

Introduction and aims
Electronic mental health (eMH) services provide an opportunity to deliver structured, cost effective and accessible mental health services to Aboriginal & Torres Strait Islander people. However, little is known about what Aboriginal & Torres Strait Islander people think about mental health. We aimed to understand Aboriginal & Torres Strait Islander community members' experiences of using two currently available mental health apps and what factors they think may influence an individual's willingness to use these apps. This newsletter will give a quick summary of what we did and what we found.

The Apps we used: AImHi & bobby
Two apps were used in this study, both were developed with input from Aboriginal communities in the NT and WA respectively. The AImHi Stay Strong iPad app aims to help health professionals deliver evidence-based mental health interventions for Indigenous clients. The case plan, based on low intensity CognitiveBehavioural Therapy, follows 4 steps: the identification of people who need help, treatment plans, self-help, and goal setting. Help text and audio instructions are included. A summary of the Stay Strong Care Plan can be saved, emailed and printed to keep a record. The bobby app suicide prevention Android App is aimed to help peopleaged 18-35 reduce their suicidal thinking. Based on acceptance and commitment therapy and mindfulness strategies, the app includes an emotion assessment and 5 activity modules. The app is designed to be downloaded and used by an individual on their own phone. All text within the app has audio buttons in English to assist people with poor literacy.

Methods & Participants
Three 3-hour focus groups were held with 9 (5 female, 3 male) Aboriginal and Torres Strait Islander community members, six attended all three groups. We showed a short video on each app and allowed participants to use them. We then asked participants about their experience of using the apps, characteristics of the apps and why they thought the app would be most appropriate. Participants were reimbursed for their time with $50 shopping vouchers per 3-hour group. The groups were facilitated by a non-Indigenous female researcher and an Aboriginal male researcher who was able to attend one of the three groups. Three sessions were conducted by both facilitators. Group members ranged in age from 18-50, with an average age of 33. Participants were recruited via nominations from local service providers. All but one participant provided an email address and two of nine owned a smartphone or tablet. We sent a member checking group in May 2016 to check our findings with three members of the original group.

Findings
- This is one of the first studies exploring Aboriginal and Torres Strait Islander community members' views about mental health apps.
- All participants were positive about the concept of an app to improve mental health and well-being and excited by their potential.
- Our participants identified factors that influenced acceptability, which related to three key themes: personal factor, such as motivation, severity and awareness of illness; technological competence and accessibility level; environmental factors, such as community awareness, stigma and availability of support; and apps characteristics, such as ease of use, content, graphics, access and security.
- Participants identified that apps should be locally produced or adapted, include culturally relevant content and graphics, include a purposeful journey, and goal setting, clear navigation, meaningful language, options to assess people with poor literacy, options for offline use and password protection.
- When designed to meet the needs of Aboriginal and Torres Strait Islander people, mental health apps add an important element to public health approaches to improving wellbeing.
- A more comprehensive evaluation including other locations and environments (e.g., remote communities, schools, urban contexts) would be needed to generalise findings and develop recommendations.

What we have done and where to from here...
- We have given feedback to the developers of AImHi and bobby apps and both are looking to incorporate this feedback into future versions.
- Findings were presented at a conference in Cairns in May 2015.
- The apps and research findings were presented to doctors, nurses, and allied health professionals and staff at Top End Mental Health Services, Darwin NT in June 2015.
- A journal article has been submitted to the Advances in Mental Health journal and we are waiting to find out if it has been accepted.

References and Acknowledgements
APPENDIX SIX

POSTER

Citation:

The acceptability of improving mental health and wellbeing using apps to Aboriginal Australians: An analysis of a series of three focus groups, Darwin NT

The ALMhi Stay Strong iPad App & The ilobby suicide prevention Android App

Jodie Povey, Robert Mills, Kylee Dingwell & Anne Loveloe, Top End Mental Health Services, Menzies School of Health Research

Background info

Evidence-based mental health (E-MH) services provide an opportunity to deliver structured, cost effective and accessible mental health services to Aboriginal people. They can offer greater flexibility of services, being available at times suitable to the client and can offer anonymity if required. E-MH is about mental healthcare supported by electronic processes and communications using devices such as mobile phones, tablets or computers. Acceptability is a term used to describe a persons or groups satisfaction with an E-MH approach. Many E-MH services are available, and evidence is emerging as to their effectiveness and acceptability. To date, the majority of these findings are with non-Aboriginal or Torres Strait Islander people. E-MH tools have a large array of characteristics which can enable or inhibit use. Some require continuous internet connection and recommend 4-6 hours per week use, others use minimal words and contact duration. It is important to understand what factors influence the acceptability of E-MH tools to Aboriginal people to allow effective development and implementation.

The Apps: ALMhi & ilobby

Two apps were used in this study, both were designed with extensive input from Aboriginal communities in the NT and WA respectively. The ALMhi Stay Strong iPad App is designed to facilitate the delivery of evidence based mental health interventions for indigenous clients by service providers. The therapist supported care plan, based on low intensity CBT, follow 4 steps, the identification of people who keep them strong, strategies and goal setting. Help text and audio instructions are provided to reduce the impact of low computer or English literacy. A summary of the Stay Strong Care Plan can be saved, printed and printed to keep a record. The ilobby suicide prevention Android App is aimed to help people aged 15-35 reduce their suicidal thinking. Based on acceptance and commitment therapy and mindfulness strategies, the app includes 3 self-assessment and 3 activity modules. This app is designed to be downloaded and used by an individual on their own phone. If they identify they are experiencing suicidal thoughts a help page appears directing them to call for help. All text within the app has audio buttons in English to assist people with poor literacy.

Methods & Participants

Three 3 hour focus groups were held with 9 Aboriginal community members initially. 3 attended all three groups. Each group included a period of familiarization with an app, followed by discussion on participants experience of using the apps, characteristics of the apps and who they thought the app would be most appropriate for. Participants were reimbursed for their time via a $50 shopping voucher per 3 hour group. The groups were facilitated by a non-Indigenous female researcher and an Aboriginal male researcher was able to attend one of these groups. The facilitator conducted the three facilitators, Group members ranged in age from 18-60, with an average age of 33. Six females and three males were in the group. Participants were recruited via nominations from local service providers. All but one participant provided an email address and one of nine owned a smartphone or iPhone. Thematic analysis revealed three main themes which influence acceptability.

Results

Accessibility of eMH tools for Aboriginal People in Darwin NT

Characteristics of App

User satisfaction

Pleasant interface

Ease of use

Functionality

Community awareness

Content, style, wording and layout

Graphs and animations

Images and sounds

Ease of use

User interface design

Security/Information sharing

Characteristics of Community/Therapy interaction

Community awareness

Content, style, wording and layout

Graphs and animations

Images and sounds

Ease of use

User interface design

Security/Information sharing

Characteristics of Mental Health Care

Psychological factors - motivation to engage previously未曾 engaged, understanding of mental health

Community factors - involvement, local health, cultural maximization of resources, access to technology

Support and encouragement messages, communication, integration into care

Context, topics, wording and layout

Graphs and animations

Images and sounds

Ease of use

User interface design

Security/Information sharing

Conclusions

This is the first study exploring Aboriginal community attitudes toward eMH tools.

All participants were positive about the concept of an app to improve mental health and wellbeing.

Important characteristics of apps include relevant content, a purposeful journey which ended with resolution, clear navigation, simple language, options to read people with poor literacy, culturally relevant graphics, words and language with descriptions of meaning, offline use and password protection.

Findings support the need for a public health approach when implementing E-MH tools within Aboriginal communities, including local assessment and strategies targeting uptake on a personal, community and health tool level.

A more comprehensive evaluation including other locations and environments (e.g. remote communities, schools, urban settings) would be needed to generate findings and build recommendations.

References and Acknowledgements


We would like to acknowledge the individuals and organizations who supported this project: The Top End Mental Health Service, Department of Health, Northern Territory Government for providing financial assistance.
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ABS – see Australian Bureau of Statistics


Williams (Eds.), *Oxford Guide to Low Intensity CBT Interventions* (pp. 227–233). Oxford: OUP.


Neil, A. L., Batterham, P., Christensen, H., Bennett, K., & Griffiths, K. M. (2009). Predictors of adherence by adolescents to a cognitive behavior therapy website


Tangentyere Council and Central Land Council (2007). *Ingerrekenhe Antirrweme: Mobile Phone Use Among Low Income Aboriginal People, A Central


