Why validation is not enough: setting the scene for the implementation of the Kimberley Mum's Mood Scale

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Abstract

Background The two part Kimberley Mums' Mood Scale (KMMS) has been developed and validated as a culturally appropriate perinatal depression and anxiety screening tool for Aboriginal women living in the sparsely populated Kimberley region of North West Australia. As part of implementation, aspects of user acceptability were explored to improve clinical utilisation of the KMMS. **Methods** Eighteen health professionals involved in perinatal care participated in an online survey or a qualitative semi-structured interview. Ten Aboriginal women (who held administrative, professional or executive roles) were subsequently interviewed in depth to further explore aspects of KMMS user acceptability. **Results** Many of the health professionals were not using the second part of the KMMS (a psychosocial yarnning tool). Time constraints and a perception that the KMMS is only appropriate for women with literacy issues were identified as significant barriers to KMMS uptake. The Aboriginal women interviewed considered the KMMS to also be important for literate Aboriginal women and placed high value on having the time and space to yarn to health professionals about issues that are important to them. Implementing the KMMS across the Kimberley region requires robust training of health professionals and strategic engagement with health services to ensure those clinical environments are able to understand the rationale and significance of the KMMS and be engaged in its successful implementation. **Conclusion** Routine perinatal mental health screening that is efficacious and acceptable to Aboriginal women is an important public health priority. Identifying and addressing barriers to implementation contributes to our understanding of the complexity of improving routine clinical practise.

Background

Good perinatal mental health is important for all women, their children and extended families(1-7). In Australia 1 in 5 women are reported to suffer from anxiety or depression in the perinatal period (3); the reported rate is higher again for Aboriginal women (1, 8-10). Routine screening is understood to be an effective clinical strategy in identifying and responding to mental health concerns during the perinatal period (3). The Australian Government launched the inaugural National Perinatal Depression Initiative (2008-2013) which recommended screening women throughout the perinatal period using the Edinburgh Postnatal Depression Scale (EPDS) (11). Health professionals in the Kimberley supported the move to formalise screening but had concerns that the language and concepts used in the EPDS were not appropriate for Aboriginal women in the remote Kimberley region of North West Australia, and therefore unintentionally disengaged them from the screening process (7).

Following an extensive consultation and co-design period, the Kimberley Mum's Mood Scale (KMMS) was developed to better address the needs and context of perinatal mental health screening for Kimberly Aboriginal women (7). The KMMS is a two part tool designed to be verbally administered. Part 1 of the

KMMS adapts the EPDS (12) using language and graphics determined via the consultation process. Part 2 involves yarning (13, 14) as a method for health professionals to explore selected psychosocial risk and protective factors with women (15, 16). Part 1 and Part 2 are interpreted by the health professional to determine the women's overall risk of depression and/or anxiety. Results from the validation study with 91 women demonstrated that the KMMS is capable of identifying women with moderate or severe risk of depression and/or anxiety when assessed against a blinded reference standard assessment (sensitivity 83%; specificity, 87%; positive predictive value, 68%)(17). The validation study also demonstrated the KMMS was accepted by the women and their health professionals (17).

The development of the KMMS is part of a broader movement driven by Aboriginal communities, health professionals and researchers to have clinical screening tools that account for and are responsive to the needs and context of Aboriginal patients. This includes studies that are examining the validity of 'mainstream' screening tools with Aboriginal populations (18, 19); adaptation studies which validate an 'Aboriginal version' of an existing tool (17, 20, 21); and the development and validation of new Aboriginal specific screening tools (22-24). These and other emerging endeavours (25) inform our understanding of what acceptable clinical screening practises look like for Aboriginal Australians.

Several studies detailing the development and validation of Aboriginal specific screening tools have been published (17, 19, 21-25), few studies however, report on the process and outcomes of clinical implementation (26, 27). Without this lens of enquiry it is impossible to understand if the overall objective for developing Aboriginal specific screening tools, namely health equity, is achieved. The Dynamic Sustainability Framework (28) is a discrete model within the implementation science discipline (29, 30). It is premised on the constancy of change and that the sustainability of an intervention "lies in the measured, negotiated, and reciprocal fit of an intervention within a practice setting and the practice setting within the larger ecological system" (28). Assessing the acceptability of the tool for health professionals and patients is identified as a fundamental component in successful implementation.

User acceptability is a multi-faceted construct that investigates, if and how, recipients or administrators of a healthcare intervention consider it to be appropriate (31, 32). Constructs in the assessment of user acceptability include: tool content (language, structure, format etc.); process of screening (emphasis on the type/quality of relationship between the administering health professional and the patient)(32); intervention coherence (understanding the rationale behind the tool); affective attitude/ethicality; and

burden/opportunity costs (31). The **Dynamic Sustainability Framework** provides a structure for understanding and actioning user acceptability feedback and thus enhancing clinical implementation of Aboriginal specific screening tools. The Kimberley region obtained resources to implement, revalidate and evaluate the KMMS in a real world setting. Using the Dynamic Sustainability Framework this paper explores user acceptability of the KMMS through the lens of health professionals and a select group of Aboriginal women to identify and ultimately address barriers that restrict clinical uptake.

Methods

User acceptability lends itself to a methodological approach of phenomenology (18, 26, 31, 32). We sought to understand the construction of narratives, experiences and perceptions (33) of health professionals as they relate to the KMMS via semi structured interviews and on line surveys. This was a real world quality improvement measure to identify and address user acceptability concerns. KMMS training records were reviewed from 2015-2017 (after the KMMS validation study and before additional resources were obtained for the implementation study). During this time two Maternal Child Health professionals (Kimberley Aboriginal Medical Services and Western Australian Country Health Services – Kimberley) delivered KMMS training to 89 professionals. Of these 74 were health professionals and 48 were known to be working in a Kimberley health service. These 48 health professionals were emailed and asked if they had administered the KMMS in a Kimberley health service. Those who said yes were invited to take part in an anonymous 10 question online survey or a de-identified interview to discuss their experiences and perceptions of the KMMS.

Eighteen of the 48 health professionals (37% response rate) participated in the process: ten chose to participate via the online survey and eight via in-depth interviewing (Sample frame A). Dependant on the location of the Health Professional the interviews either took place face to face (n=6) or via the telephone (n=2). Data was descriptively coded (34) using NVivo 11 and thematically analysed by the project team over a series of workshops.

During the analysis it became clear that health professionals were concerned that the KMMS was only appropriate for Aboriginal women who had low literacy levels or spoke English as a second language. It was therefore important that we developed a second sample frame of educated and highly literate Aboriginal women to explore perceptions of user acceptability. Using purposive sampling we approached

ten Aboriginal women living in Broome who at the time of the study held an administrative, professional or executive role (inclusive of maternity leave status) and asked them to participate in the study. This inclusion criteria for the sample was used as a proxy for 'educated and literate' women. All ten women (Sample frame B: Professional Kimberley Aboriginal Women) participated in face to face in-depth interviews, semi structured open ended questions were utilised to explore constructs of KMMS user acceptability. All participants provided informed consent prior to participating in the study. The data was descriptively coded (34) by the team using NVivo 11 and thematically analysed. Interview schedules for Sample Frame A and B can be viewed at Appendix A.

This project was endorsed by the Kimberley Aboriginal Health Planning Forum Research, Evaluation and Data Subcommittee and has approval from the Western Australian Aboriginal Health Ethics Committee (Project 781) and the Western Australian Country Health Human Research Ethics Committee (RGS 206).

Actioning data results

The results from Sample Frame A and Sample Frame B had direct and immediate implications for the next steps of the KMMS implementation project. The findings from Sample Frame A and B have been summarised and in consultation with the project team ranked for implementation significance and then actioned. The implementation results are reported on under the Dynamic Sustainability Framework headings of intervention (KMMS tool), practise setting (context) and ecological system. The data from the sample frames have been interpreted as T1 assessments (T0 refers to the assessments undertaken at the time of the validation study; Figure 1)(28).

Results

Sample Frame A

The respondents identified as Midwives (7), Child Health Nurses (5), GP (1), Psychologist (1), and Nurse Manager (1). Three respondents did not identify their role. On average the respondents had been in the Kimberley for three years and had used the KMMS between five and 10 times and none identified as Aboriginal.

Perceived appropriateness of the KMMS

Overall health professionals were generally accepting of the KMMS. The language, pictures and style were described as 'appropriate' and 'approachable' for their patients.

Four health professionals had concerns with the KMMS. These concerns were focussed around a perception that the KMMS is only suitable for women who have low literacy levels:

A third of respondents qualified their support for implementation of the KMMS based on a perception that the KMMS was not appropriate for all Kimberley Aboriginal women. These respondents questioned the use of the KMMS with 'educated', or 'highly literate' Aboriginal women. Two health professionals did not support implementation of the KMMS into routine clinical practice, citing that the EPDS was sufficient in screening for perinatal depression and anxiety.

Some women will find the use of simple words and pictures insulting, especially those with a higher education. Health Professional 10

Yes. The KMMS for women who need it, however we must be sure not to put all women in the same basket as having problem understanding or speaking English... Health Professional 6.

The majority of health professionals disclosed using Part 1 of the KMMS without Part 2. Part 1 was seen as 'quick', 'casual' and 'friendly'. One health professional suggested validating Part 1 as a 'stand-alone tool' stating this would greatly improve the uptake of the KMMS across the region.

Most health professionals identified value in having a targeted conversation with a woman about her perinatal mental health and wellbeing and expressed that many Aboriginal women faced multiple and complex stressors during the perinatal period. However Part 2 of the KMMS was often viewed as 'aspirational' as opposed to 'realistic'. Health professionals reported having insufficient time to complete Part 2, primarily due to competing clinical demands.

I feel the depth of questions is very important but the reality is time constraints when the priority is child health assessments and immunisations. Health Professional 5

Time is a huge constraint if you have broken down the barriers then it is going against everything to rush the conversation. As I said before the lack of services and referral options is disheartening There is no counsellor here for months. I ask her to open up but what can I do? There is no safe home, I can't make any promises. I look to the family and family based

supports but I feel I have little choices to offer her. Often the family are struggling with their own things - grandmas get old, sisters have kids. It can be hard sometimes to find family who have space and current capacity. Health Professional 16.

Two health professionals stated they did not 'like' Part 2 and questioned the rationale behind certain domains. These health professionals felt the KMMS positioned them as 'counsellors' and put them in a situation where they were exposed to complex information that was often confronting and without immediate resolution. One health professional likened Part 2 to opening up 'Pandora's Box', the other stated it was a 'waste of time'. These respondents participated via the online survey so it was impossible to further unpack or contextualise these results.

In contrast, Health professionals who identified as routinely using Part 2 described the tool as 'powerful' and stated the process of completing a KMMS enhanced rapport with patients. These professionals mentioned psychosocial care as a routine clinical practise and felt there were 'natural and respected limits' around the assistance they could provide.

Generally I think women are keen to share some of their problems with us as nurses even though we cannot solve these issues as such but we can listen, we can advise them where to seek help and how we can assist as a support for some of their problems. Health Professional 9.

The majority of health professionals supported implementation of the KMMS across the Kimberley. The KMMS was identified as a valuable 'approach' to managing health and wellbeing during the perinatal period. A small group identified the KMMS as a pillar in their delivery of clinical care.

Absolutely [support implementation of the KMMS across the Kimberley]. I believe it is appropriate tool, and a vital foundation in identifying risk and opening the dialogue into how it can be explored and managed. It is the building block of my relationship with my pregnant women. Health Professional 7

Sample Frame B: Professional Kimberley Aboriginal Women

The women who participated in the study were between the ages of 23-45, they all had children in their immediate care and all worked in Aboriginal Community Controlled Organisations or in Aboriginal Community Controlled Health Services. All participants had grown up in Broome or surrounding areas in

the West Kimberley and had long term connections to the Broome Aboriginal community through family and kinship ties.

Views and experiences of perinatal depression and anxiety

Half of the participants spoke about their own or a close family member's experience of perinatal mental health. It was widely agreed that the topic is not often discussed, even between close family members or friends. If it is discussed, it was usually after a lengthy passage of time. 'Shame', the unknown consequences of having and/or disclosing a mental health disorder were identified as significantly contributing to the silence.

I guess they don't really show it. I know my cousin had a baby like a year ago, and she only recently just told me that she had depression after.... We didn't even know. A lot of people just hide it I guess. Participant 5.

Well everyone knows that Indigenous people have that big shame factor, but I think there is the unknown as well. You know if they have postnatal depression what does that mean to them? What does it mean for their families or their partners? No-one really knows... Participant 4.

Respondents spoke of how Aboriginal women in the Broome community will talk about feeling 'not right', 'stressed out' or 'wild' and that these terms were often proxies for a range of complicated feelings including depression and anxiety. It was noted that mental health concerns in pregnancy for Aboriginal women do not exist in a vacuum but rather they are situated in the broader life experiences of the woman. Pregnancy was regarded as a time where existing stressors or vulnerability was heightened for women.

Perceived appropriateness of KMMS

Nine out of 10 women when asked about the appropriateness of the words and language constructs in Part 1 of the KMMS identified them as appropriate. Participants discussed the simplicity of the language and use of visual aids as the rationale for their answer. The other respondent felt that one question was leading but still felt that overall KMMS Part 1 had better language than the EPDS.

I think the language is a lot better than the other one, whatever it is called? Participant 3.

It's simple and it's easy to understand, yeah, I think that the language is quite good... I reckon that they are the right questions to be asking. Participant 10.

I can't sleep because I am sad or think too much. But it might just be, I can't sleep for another reason. Like, you're sort of just putting the answer in my mouth... but yeah, that sort of stuff [pointing to the EPDS question 'things have been getting on top of me'], you wouldn't get a clear answer. The Kimberley one will give you clear and more accurate answer. Rather than that question, because I would probably be like, nothing is on top of me. Participant 2

All participants discussed referring to the words in Part 1 of the KMMS rather than visuals. When asked about visuals, the majority of participants identified them as being useful for women who could not read or had English as a second language.

Part 2 of the KMMS was highly valued by participants. They stated the topics in Part 2 encourages a woman 'to think about her life' and be viewed 'holistically' by her health professional. It was suggested that 'yarning' engages women and encourages them to open up. Participants strongly identified that Part 2 could be of high benefit to the social and emotional wellbeing of a woman.

Interviewer 1: How about if this [KMMS] was given to you at a routine antenatal appointment [hands the participant a copy of the KMMS Part 1 and Part 2 tool], would you prefer the EPDS [hands participant a copy of the EPDS] were given to you?

Interviewee: me, I would prefer the mood scale, but more the, is it, part two [participant located part two and points to it]? Yeah this one where you are having a conversation that is what I prefer.

Interviewer 1: Can you tell me why?

Interviewee: I suppose when you are filling out documents like I have done in the past, I could easily fake everything that I want, just to put up a front. But if you are having a general conversation with someone you probably would get more out of them. Someone could easily mark that [Part 1] and say like 'oh those are my answers' but then when you are having a conversation

with them it can turn out that it is completely different to what they have put down. Having the space to unpack things is really important. Participant 5.

All participants identified culturally appropriate tools as important in the delivery of appropriate health care and recognised the KMMS as culturally secure. Reasons for this included the simplicity of the language in Part 1 and the yarning component of Part 2.

When something looks at all of me, when it's holistic like, that's when I know it is culturally ok. For our mob health is holistic, it looks at social and emotional wellbeing. This [the KMMS] does that. It gets the midwife to think about all of me, you know, not just my blood pressure and all that.

Participant 9

One respondent cautioned that while the KMMS looks culturally safe it needs to be delivered in a culturally secure way by trained staff.

I mean there also has to be that education with who is delivering it as well because anything could look good on paper but again like I said communication, relationships, all depends on the way you approach it and again it's not just a tool..." Participant 7.

Relationships, trust and rapport were heavily emphasised in the interviews. Participants spoke about Midwives, Aboriginal Health Workers and Child Health Nurses as all having a potential role in administering the KMMS. What was prioritised was the relationship between the woman and her health professional, specifically the woman's ability to feel comfortable. Confidentiality of information collected during the KMMS was another prominent theme. Participants spoke of how women might be concerned that information they shared during the KMMS could be accessed by child protection services and subsequently 'used' to justify removing their child/children. Participants spoke of concerns with information being 'shared' back to the Aboriginal community which could result in relationship problems and family feuding.

Everyone is different so I think it depends on the person and their relationship. They have to feel comfortable with that person. Some prefer to have someone they know, some people don't, and others would need someone like an Aboriginal Support Worker sitting in there just to explain or to be a presence in the room, just to feel safe. Yeah, as long as they have the option there, then they

can tell you, because everyone will be different. The important thing is you feel safe, to be able to speak your mind, without judgement and knowing that it's confidential. Participant 9.

All participants were supportive of the KMMS being introduced across the Kimberley as the primary screening tool for Aboriginal women. They noted that some women might not be comfortable in discussing their stories, and others might want to talk but not have the words for it. Many participants expressed that for some Aboriginal women it could be the first time they had a space to reflect on their life and this could be both confronting and therapeutic. The domains of childhood experiences and relationships were identified as particularly sensitive. Participants warned that these domains should be flagged but gently and with sensitivity focusing on the 'universal' nature of the questions to put women at ease of being 'singled out'. The participants uniformly agreed that was important for maternal and child health staff to be approaching social and emotional wellbeing and mental health of perinatal women as routine clinical practise. This narrative, holistic approach, was important in the care of Aboriginal women before and after birth, and all participants theoretically viewed the KMMS as an acceptable feature of their own perinatal care. Notwithstanding that, two participants stated they would not have disclosed a great deal to their health professionals.

Actioning data results

The interviews identified a wide range of aspects pertinent to the implementation process. These findings are classified under the Dynamic Sustainability Framework (26) headings of intervention, practise setting and ecological system (Table 1). The most critical of these results have been addressed with reference to the specific sample frames, the other aspects relating to user acceptability have been summarised in Table 1 along with the corresponding implementation action identified by the research team.

Discussion

Our findings show that despite broad support for the KMMS from both health professionals and Aboriginal women, implementation of the KMMS into clinical care across the Kimberley has been ad hoc and inconsistent. This study highlights the tension between the rationale for developing a culturally secure two-part tool and the approach currently taken by health professionals to administer the tool.

Aboriginal Australians conceptualise health as holistic, encompassing social, emotional, community and cultural dimensions (35). Aboriginal women involved in the development (7) and validation (17) of the KMMS and this study (Sample Frame B) have suggested that the 'holistic' approach of the KMMS, inclusive of having time and space with a health professional to yarn about psychosocial risks and protective factors makes this approach to screening culturally secure. Delivering culturally secure primary health care to Aboriginal patients is a persistent topic linked to health equity (36-39).

Relationships, accessibility of information and having sufficient time with a health care provider are key characteristics of culturally appropriate care. For Aboriginal women in the perinatal period, culturally secure primary health care is correlated with improved rates of clinical engagement which in turn is associated with enhanced maternal and child health outcomes (40). Conversely, Aboriginal women with perinatal mental health disorders are reported as having infrequent attendance at routine antenatal appointments (9). Given the high levels of perinatal mental health disorders for Aboriginal women (1, 8, 10) and continuing adverse health outcomes for Aboriginal women and their babies (40, 41) culturally safe screening is an important clinical component of perinatal care.

Results from health professionals suggest the time taken to administer the KMMS (inclusive of the psycho social yarn) is a significant barrier to them implementing this culturally secure screening. The clinical screening tools that these health professionals are used to are typically brief and operate in a 'closed system' environment (42) where a patient is audited, via an inventory of questions, against known criteria of a disease or disorder. Patients then choose from a set of predefined answers, which are linked to numerical scores. Risk is determined by tallying the numerical scores, with the overall number directly correlating to classification of risk (i.e. high, medium, low) (41).

Consistent with tool development within the wider population, brevity remains highly valued in the development of Aboriginal specific screening tools (25, 26, 43). The screening tools have also generally maintained a closed system approach to screening (21, 22, 44-47). The use of closed system approaches to assessing risk is questionable for populations with complex and/or diverse needs as these groups have typically been excluded from the population based studies in which the risk criteria was determined from and validated with (42). Many Aboriginal specific social and emotional wellbeing or mental health screening tools have been designed with (or by) Aboriginal people and recognise the role of culture in determining the criteria of mental health disorders (46). However culturally specific psychometric tests

have not been completed at a scale that allows for a consistent and standardised determination of Aboriginal specific criteria of depression, anxiety or social and emotional ill health.

The Here and Now Assessment (24) and the KMMS (Part 2) are the only Aboriginal specific screening tools we are aware of that adopt an 'open' approach to determining risk. Both tools adopt a yarning approach (13, 14) to foster a patient led narrative of risks and protective factors. These tools rely on the health professional synthesising the results to determine a risk profile. This approach to determining risk lends itself to use in a cross cultural context in which population levels of trauma are high (ref) and the mainstream criteria of depression and/or anxiety may not be appropriate to a patient's cultural or situational framework. The process of yarning, engagement and rapport building with a patient while inductively and iteratively building a risk profile is in keeping with approaches of culturally appropriate provision of care (ref) and has been identified by women in this and the previous KMMS studies as such.

At a regional level the KMMS has been endorsed by the Kimberley Aboriginal Health Planning Forum as the recommended perinatal screening tool for all Aboriginal women across the region (48), recognising both its clinical efficacy and high levels of user acceptability. The four year implementation project provides us the resources to refine the KMMS and revise training to improve the intervention coherence (31) and better align the KMMS to health services and health professional's commitment to delivering culturally appropriate care. An example of this relates to the findings from the health professionals who identified a perception that the KMMS was not appropriate for 'educated' Aboriginal women. This belief impacted on health professionals offering the KMMS universally to all Aboriginal women. The findings of this study have been widely disseminated back to health professionals, emphasising that the findings from Sample Frame B were positively dispositioned towards the KMMS. We will continue to monitor and report on the implementation of the KMMS over the life course of the project.

This was a real world study designed to take place quickly so we could identify and action results salient to the implementation of the KMMS. With this lens in mind we attempted to provide accessible and timely ways for busy health professionals to participate in the study, however the two strongest critics of the KMMS responded via the survey and we felt that our understanding of their experiences and perceptions of the KMMS was limited by the static survey format.

With regards to Sample Frame B two limitations require mention, the first is that all participants were sourced from Broome (the largest regional town in the Kimberley and where the project team work and live). The generalisability of these results for other professional Aboriginal women across the Kimberley is unknown. The decision to have a Broome sample was pragmatic and based on time, availability and cost. The findings, however, were consistent with the development of the KMMS (7), which was primarily developed in the East Kimberley, and the validation of the KMMS (17), which included women from 15 communities across the Kimberley.

Conclusion

The successful implementation of the KMMS into routine clinical care has the potential to be of benefice to Aboriginal women's perinatal 'wellness'. We highlight the importance of understanding and addressing the perspectives of both the administrators and the potential recipients of screening approaches when implementing new screening processes. This study also identifies the need for ongoing monitoring and evaluation of user acceptability as an important pillar of sustainable implementation.

Abbreviations

EPDS- Edinburgh Postnatal Depression Scale, KMMS- Kimberley Mum's Mood Scale

Declarations

Ethics approval and consent to participate

This project was endorsed by the Kimberley Aboriginal Health Planning Forum Research, Evaluation and Data Subcommittee and has approval from the Western Australian Aboriginal Health Ethics Committee (Project 781) and the Western Australian Country Health Human Research Ethics Committee (RGS 206). Informed consent was obtained from participants prior to participation in the study.

Consent for publication

Written informed consent for publication was obtained.

Availability of data and materials

The datasets generated and analysed during the current study are not publicly available due to the possible identifying nature of the participants when their transcripts are viewed in full. The Kimberley is a

small region and we have been careful to maintain the confidentiality of our participants. Requests for additional data can be made to the corresponding author and will be assessed on grounds of reasonableness.

Competing interests

The authors declare they have no competing interests

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Author contributions

EC designed, interviewed, coded and analysed the participant data and led the development of the manuscript. ES contributed to interviewing, coding and analysis of data for Sample Frame B. DA and JVM assisted in the development of the manuscript. All authors read and approved the final manuscript.

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Tables

Table 1: Overview of Implementation of the Kimberley Mum’s Mood Scale using the Dynamic Sustainability Framework

Intervention			
Theme	Findings	Actions	Results (as of March 2019)
Risk assessment	<ul style="list-style-type: none"> Steps on how to make a final risk assessment were not clear 	<ul style="list-style-type: none"> Re analysis of KMMS validation study to identify 'logic' behind risk assessment 	<ul style="list-style-type: none"> Manual revised Training revised Presentation at Kimberley Maternal Child Health Forum October 2018 on KMMS risk assessment
Graphics (Part 1)	<ul style="list-style-type: none"> Ambiguous (noted by Aboriginal women and health professionals) 	<ul style="list-style-type: none"> Consulted with staff and Aboriginal women regarding new graphics 	<ul style="list-style-type: none"> KMMS Graphics updated in Manual
Alignment to EMR	<ul style="list-style-type: none"> Not on ACCHS EMR 	<ul style="list-style-type: none"> Engaged with MMEx (ACCHS EMR) 	<ul style="list-style-type: none"> KMMS listed as a clinical item under ANC/MCH care plan Training revised to ensure health professionals are aware of how to input KMMS data into EMR
Practice setting (context)			
Theme	Findings	Actions	Results (as of April 2019)
Involvement of Aboriginal staff	<ul style="list-style-type: none"> Few Aboriginal staff have been trained as administrators of the KMMS Health professionals and Aboriginal women see a role for Aboriginal staff 	<ul style="list-style-type: none"> Discussed findings with clinics 	<ul style="list-style-type: none"> Six Aboriginal health professionals have been involved in Administrator training across the Kimberley region out of a total of 19 *Note training is ongoing across the Kimberley
Training	<ul style="list-style-type: none"> Training not sufficient; whole of clinic training needed and more detailed training for those delivering the KMMS 	<ul style="list-style-type: none"> Project team re-designed training 	<ul style="list-style-type: none"> Training offered in two parts: <ul style="list-style-type: none"> <i>Orientation to the KMMS</i> (50 minutes) designed to be delivered at clinical in-service meeting to all staff. Key areas: overview of perinatal mental health, and development and implementation of the KMMS <i>KMMS Administrator training</i> (1.5 hours) designed to be delivered to staff using the KMMS. Training focuses on the development of the KMMS, it's acceptability for Aboriginal women, why Part 2 is important, how to complete Part 2, how to 'assess' risk, role of clinicians in providing psycho-social support, clinical and non-clinical support pathways

Other clinical constraints	<ul style="list-style-type: none"> · Time · Other family members present · Competing clinical demands · Quality of the relationship with patient and her health professional (raised by Aboriginal women) · Patients concerns about confidentiality/ sensitivity of KMMS information and patient's 'shame' to engage with KMMS (raised by Aboriginal women and Health professionals) 	<ul style="list-style-type: none"> · Discussed concerns with Project Investigators · Regional advocacy around importance of perinatal wellness and impacts on primary health care engagement (ongoing) · KMMS implementation: monitoring time taken to complete KMMS and how health professionals manage family/children being present at appointments (ongoing) 	<ul style="list-style-type: none"> · KMMS guidelines state that the KMMS should not be completed at first ANC visit (due to time constraints), it is recommend booking an extend follow up appointment with the woman. However the training also identifies that the KMMS can be built on over subsequent routine visits recognising that additional appointments may not always be achievable · Training and manual refined to emphasise the importance of building rapport, using open ended questions, active listening and information for patients around the parameters of confidentiality and next steps
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Ecological System

Theme	Findings	Actions	Results
Practitioners: values regarding Part 2	<ul style="list-style-type: none"> · KMMS not appropriate for educated women · Part 1 is good (language and style) · Part 2: <ul style="list-style-type: none"> o Not our role to be a counsellor o Women value the yarn/builds rapport/can promote engagement during perinatal period o No referral options for follow up 	<ul style="list-style-type: none"> · Interviewed a sample of professional Aboriginal women; they said the KMMS is appropriate for them · Re-analysis of KMMS validation data to demonstrate efficacy of Part 2 in determining risk (ongoing) · Service mapping of key social support services across the Kimberley 	<ul style="list-style-type: none"> · KMMS adopted by the KAHPF as the recommended perinatal depression screening tool for Aboriginal women · Training updated to reflect findings from 'professional' Aboriginal women and emphasise the involvement of Aboriginal women in development of the KMMS · Presentation at Kimberley Maternal Child Health Forum October 2018 to discuss findings from Professional Aboriginal women · Training and manual updated: role of health professionals in providing psycho-social support and the importance of Part 2 in the determination of risk · Regional service list / referral options spreadsheet developed and disseminated to health professionals at training

	o Takes too long		
Aboriginal women: values regarding KMMS	<ul style="list-style-type: none"> · High levels of perinatal mental health concerns amongst family and friends · KMMS language is appropriate · Holistic/culturally secure 	<ul style="list-style-type: none"> · Reporting findings back to health professionals · Refine user acceptability evaluation methodology for KMMS implementation study 	<ul style="list-style-type: none"> · Training and manual revised · Presentation at Kimberley Maternal Child Health Forum October 2018 · User acceptability evaluation methodology submitted to ethics as an amendment

KMMS = Kimberley Mum's Mood Scale, EMR = Electronic Medical Record, ACCHS = Aboriginal Community Controlled Health Service, MMEX = a type of EMR used by Kimberley ACCHS, ANC = Antenatal Care, MCH = Maternal and Child Health care

Appendix A: Interview Schedule

Theme	Sample Frame A (Health professionals) Survey	Sample Frame A (Health professionals) Depth Interview Schedule	Sample Frame B (Aboriginal women) Depth Interview Schedule
Perceptions of postnatal depression and anxiety/ perceptions of prevalence		ü	ü
Efficacy and appropriateness of perinatal depression and anxiety screening tools (EPDS and KMMS)	ü	ü	ü
KMMS timing and frequency	ü	ü	ü
Administration of the KMMS	ü	ü	ü
Cultural security/ appropriateness	ü	ü	ü
Support for implementation of the KMMS across the region	ü	ü	ü
Training		ü	
KMMS improvements	ü	ü	ü
Staff role/ time in the Kimberley	ü	ü	

Figures

Figure 1

The dynamic sustainability framework. Illustrating the goal of maximizing the fit between interventions, practice settings, and the broader ecological system over time (represented by T0, T1,...,Tn), each of which has constituent components that may vary. Used in full with author's permission (28).