Health, Healing and Empowerment

Epidemiology for community policy makers

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Originality statement

I hereby declare that this submission is my own work and to the best of my knowledge it contains no materials previously published or written by another person, or substantial proportions of material which have been accepted for the award of any other degree or diploma at ANU or any other educational institution, except where due acknowledgement is made in the thesis. Any contribution made to the research by others, with whom I have worked with is explicitly acknowledged in the thesis. I also declare that the intellectual content of this thesis is the product of my own work, except to the extent that assistance from others in the project's design and conception or in style, presentation or linguistic expression is acknowledged.

Signed: 

Date:21 October 2022

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I acknowledge the Traditional Owners of Country and pay respects to the ancestors past and present.

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Thesis Abstract

This thesis comprises a collection of three studies in applied epidemiology including a data analysis and epidemiological study, an outbreak investigation, and an evaluation of a wellbeing data collection tool and system. Each study is conducted from a social epidemiological viewpoint, examining how social and cultural structures influence people's health and wellbeing. Participatory processes and strengths-based methods of analysis are applied and discussed throughout the thesis.

The first study is an evaluation of the Family Wellbeing Program, a community empowerment program developed in partnership with Aboriginal and Torres Strait Islander peoples that has been widely delivered to Aboriginal and Torres Strait Islander communities across Australia for close to 30 years. Empowerment is a concept commonly incorporated in Aboriginal and Torres Strait Islander health and wellbeing programs. To date there has been limited quantitative analysis of the program including links to health and empowerment outcomes. Using data from Mayi Kuwayu, the National Study of Aboriginal and Torres Strait Islander Health and Wellbeing (n= 9,843) the study examined associations between personal control, life satisfaction, general health, family wellbeing and cultural wellbeing outcomes for Family Wellbeing participants (n=718) versus non-participants (n=9,125).

The second study analyses an outbreak of COVID-19 in a predominantly culturally and linguistic diverse group to identify risk factors for transmission and public health implications. An outbreak investigation and a retrospective cohort study design was used to understand the characteristics of the outbreak and risk factors of transmission. Data on age, sex, country of birth, main language spoken at home, cultural/ethnic background, household size, symptoms and their onset, quarantine and isolation periods, close contacts, vaccination status, and hospitalisation were collected. Household secondary attack rates were calculated. This study was undertaken through placement with the Australian Capital Territory (ACT) Health

The final study is a psychometric validation study of an Assessment Tool used by Yorgum Healing Services, an Aboriginal Community Controlled Organisation that provides Aboriginal people and their families with a wide range of culturally secure, community based healing services that utilise a trauma informed approach to positively impact their social and emotional wellbeing services. Yorgum have developed a client assessment tool built around the Aboriginal Family Worldview Model that they operate. The study examines utility of the tool using a psychometric validation, and evaluates implementation of the tool as a wellbeing monitoring system.

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Glossary of Terms

AFWM	Yorgum Aboriginal Family Worldview Model
ANU	Australian National University
CDC	Centre for Disease Control and Prevention (United States)
CHO	Chief Health Officer
CI	Confidence Intervals
CPFS	Child Protection (Western Australia Department of Communities)
DAP	Data Analysis Plan
EFA	Exploratory Factor Analysis
FWB	Family Wellbeing Program
HECC	Health Emergency Coordination Centre (Australian Capital Territory Health Directorate)
MAE	Masters of Applied Epidemiology
Mayi Kuwayu	Mayi Kuwayu, the National Study of Aboriginal and Torres Strait Islander Wellbeing
MKDGC	Mayi Kuwayu Data Governance Committee
OR	Odds Ratio
PR	Prevalence Ration
RR	Risk Ration
Stolen Generations	Aboriginal and Torres Strait Islander people who were forcibly removed as children from their families and communities through race-based policies set up by both State and Federal Governments from 1910 to the 1970
Thiitu Tharrmay	Aboriginal and Torres Strait Islander Research Reference Group
WHO	World Health Organization

Chapter 1. Introduction

Introduction

This thesis is concerned with the practice of developing health information with, and for, Aboriginal and Torres Strait Islander communities. The World Health Organization (WHO) defines health as a 'state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity'[1]. Aboriginal and Torres Strait Islander definitions of health expand this further to incorporate elements of culture and collectivism. One commonly used definition provides that 'Aboriginal (sic) health means not just the physical well-being of an individual but refers to the social and emotional and cultural well-being of the whole community'[2, p.9 3]. To understand Aboriginal and Torres Strait Islander health, and conversely the experiences of poor health or health inequality (such as high levels of chronic disease and psychological distress and poor access to health services), the violence of colonisation and ongoing systemic disparities that continue to occur must be considered [4]. By extension, health researchers concerned with health inequality must recognise the inherent power imbalances within which they operate and seek methods by which Aboriginal and Torres Strait Islander communities are empowered by research processes.

Heralded as a new approach to overcoming inequality, the revised National Agreement on Closing the Gap was launched in 2020[5]. The new agreement recognises that structural change is needed in the way that Aboriginal and Torres Strait Islander policies and programs were delivered and that Aboriginal and Torres Strait Islander voices must be at the centre of such reforms. Included in the 19 targets were the health and wellbeing targets that 'everyone enjoys long and healthy lives' and 'high levels of social and emotional wellbeing' [5]. One of the critiques of the original agreement, put in place in 2008, had been the reliance on measures of health and wellbeing relevant to non-Indigenous populations, an approach said to emphasise deficit and statistically obscure real progress [6]. Such measures, for example the life expectancy gap between Indigenous and non-Indigenous Australians, are still present in the new agreement. However, it has presented new policy opportunities, with the introduction of previously absent cultural targets for areas such as land and language, and an emphasis on the leadership and engagement of Aboriginal and Torres Strait Islander organisations in decision making. Within this context there is an important opportunity for the field of epidemiology to contribute to the improvement of methods of health and wellbeing measurement, research and evaluation, that reinforce the structural change and community leadership committed to in the agreement.

There has been a movement among Indigenous health researchers in colonised countries, including Australia, to reform health research that better reflect the health priorities and needs of communities (see [7-10]). For this thesis I refer to three of the strategies put

forward by Smylie et. al. to transform health and social data, and data systems, into tools that support community empowerment[9].

1. *Community-centric approach*: a partnership approach that emphasises the community as policymaker and ensures that Ownership, Control, Access and Possession (OCAP) of information sits with the community.
2. *Changing what we measure*: described as developing data for solutions rather than social gaps. This requires changes to what is measured and how, strengths-based analysis, development of indicators with communities and holistic measurements that incorporate social and cultural measures are all examples of how this strategy can be implemented.
3. C*ross-community, cross-sector partnerships and alliances*: this approach shares resources across groups experiencing social exclusion, this has the added benefit of increasing political leverage and preventing a divisive approach to engagement and resourcing amongst communities.

Themes that I argue are reflected in the studies presented in this thesis.

Thesis structure and requirements

The table below outlines how the core competencies of the Masters of Applied Epidemiology (MAE) have been met by the various studies and projects outlined in the chapters.

Requirements	Ch 1. Abstract and Introduction	Ch 2. Family Wellbeing program Evaluation	Ch 3. Outbreak Chapter	Ch 4. Yorgum Validation and Info System Eval	Ch 5. Teaching Chapter
Design and conduct an epidemiological study		✓			
Analysis of a public health dataset		✓			
Investigate an acute public health problem			✓		
Establish or evaluate a health information system				✓	
Literature review		✓			
Report to a non-scientific audience		✓			
Advanced draft of a paper for publication		✓			
Abstract and oral presentation for national scientific conference		✓			
Lessons from the field					✓
Prepare and conduct case study for first year students					✓

The *Family Wellbeing Program Evaluation* (Chapter 2) is an epidemiological study that involved a cross-sectional analysis of Mayi Kuwayu data to examine health and empowerment outcomes associated with Family Wellbeing exposure. Through the development of the study, and the analysis and the dissemination of findings, the competencies for an epidemiological study, analysis of a public health data set, literature review, report to non-scientific audience, advanced draft of a paper for publication and abstract and presentation for a scientific audience were met. The evaluation was a community-led project, and a cross-community and cross-sector partnership, where multiple communities and research and evaluation bodies were engaged.

Chapter 3, *What's the Risk?*, is an outbreak investigation using a retrospective cohort study design to understand the characteristics of the outbreak and risk factors of transmission of COVID-19 in a predominantly culturally and linguistic diverse group. The study sought to identify risk factors and public health implications. This study met the competency of an investigation of an acute public health problem. It also provides discussion on the use of different measures and analysis around understanding risk in an outbreak setting.

The *Yorgum Validation and Information System Evaluation* (Chapter 4) applies a mixture of psychometric validation and health information system evaluation methods to analyse the consistency, acceptability and simplicity of a client assessment tool developed by an Aboriginal Community Controlled Healing Organisation. It meets the competency for establishing or evaluating a health information system competency and demonstrates a community centred partnership designed to generate evidence for an Aboriginal service on healing practices and tools being implemented.

The *Teaching Chapter* (5) addresses the lessons from the field and first year teaching competencies. These were a session on NodeXL, a social network analysis tool used in my outbreak study, and a case study on strengths-based approaches to an outbreak response in an Aboriginal community.

Placement

My field placement was with Mayi Kuwayu, the National Aboriginal and Torres Strait Islander Wellbeing Survey[11], located in the National Centre for Aboriginal and Torres Strait Islander Wellbeing, at the National Centre for Epidemiology and Population Health at the Australian National University. The study examines the links between culture and wellbeing and is the first major study of its kind. It has been established by and for Aboriginal and Torres Strait Islander people. The study is governed by Indigenous Data Sovereignty principles[12] and

through the placement I was able to gain experience of Indigenous governance models for research, Indigenous consultation and engagement methods, and partnerships for research. For my outbreak investigation I undertook a placement with the Case Investigation Team at the Australian Capital Territory (ACT) Health Emergency Coordination Centre (HECC) established in response to a COVID-19 outbreak in 2021. My learning and observations are discussed further in each of the relevant chapters.

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Chapter 2. Family Wellbeing Program Evaluation

Acknowledgements

I would like to acknowledge the Family Wellbeing Research Project Partners including the National Centre for Family Wellbeing at James Cook University and the member organisations of the Yarrabah Leadership Forum. I also acknowledge the Family Wellbeing participants and trainers whose experiences and testimonies underlie the analysis within this project.

Prologue

This epidemiological study and data analysis consists of an impact evaluation of the Family Wellbeing program using data from Mayi Kuwayu, the National Aboriginal and Torres Strait Islander Wellbeing Study. The Family Wellbeing Program is an empowerment program designed with Stolen Generation survivors that has been run in communities for over 30 years. Whilst empowerment is a commonly used theme in Aboriginal and Torres Strait Islander health programs to date there have been limited quantitative analyses of outcomes.

The Study is the first major output of an Aboriginal and Torres Strait Islander led research partnership, that includes both research institutes and Aboriginal and Torres Strait Islander controlled organisations. As such the project also provided insight into how Aboriginal and Torres Strait Islander communities, such as Yarrabah, are engaging with research to build their own models of local decision making [1].

The analysis was undertaken as a cross sectional study, with a question asking about participation in the program embedded into the Mayi Kuwayu survey providing a large sample of survey respondents who had participated in the program (the exposure group). It provides an example of how the design and collection of holistic data on health and wellbeing, including cultural factors, can expand the application and understanding of epidemiological studies.

Meetings with the Yarrabah Leadership Forum and the Family Wellbeing Research Partnership in 2021 and 2022.

Study Development and Consultation Process

My role in developing the project included development of a research proposal, a literature review, data analysis plan (DAP), preliminary analysis, consultation and review of the analysis, development of a manuscript and a presentation.

The literature review was conducted to refine the research problem and establish the empowerment and health outcome framework used in the analysis. This involved both searches for literature on quantitative studies of health empowerment theory and Aboriginal and Torres Strait Islander people and communities, and citation mining from published studies on the Family Wellbeing program.

As a community led project consultation was undertaken throughout the study. To ensure the study accorded to the Indigenous Data Sovereignty principles governing the Mayi Kuwayu study applications were submitted to the Mayi Kuwayu Data Governance Committee for use of the data at the start of the project and for final approval of the manuscript. The preliminary analysis was presented to research partners and co-authors from James Cook University, Yarrabah Leadership Forum and Apunipima Cape York Health Council for feedback (Appendix A), and again distributed as a draft manuscript. The final draft of the manuscript was presented to Thiitu Tharrmay, the Aboriginal and Torres Strait Islander Research Reference Group attached to the Aboriginal and Torres Strait Islander Health Research Program at ANU, for their consideration of policy implications and dissemination opportunities.

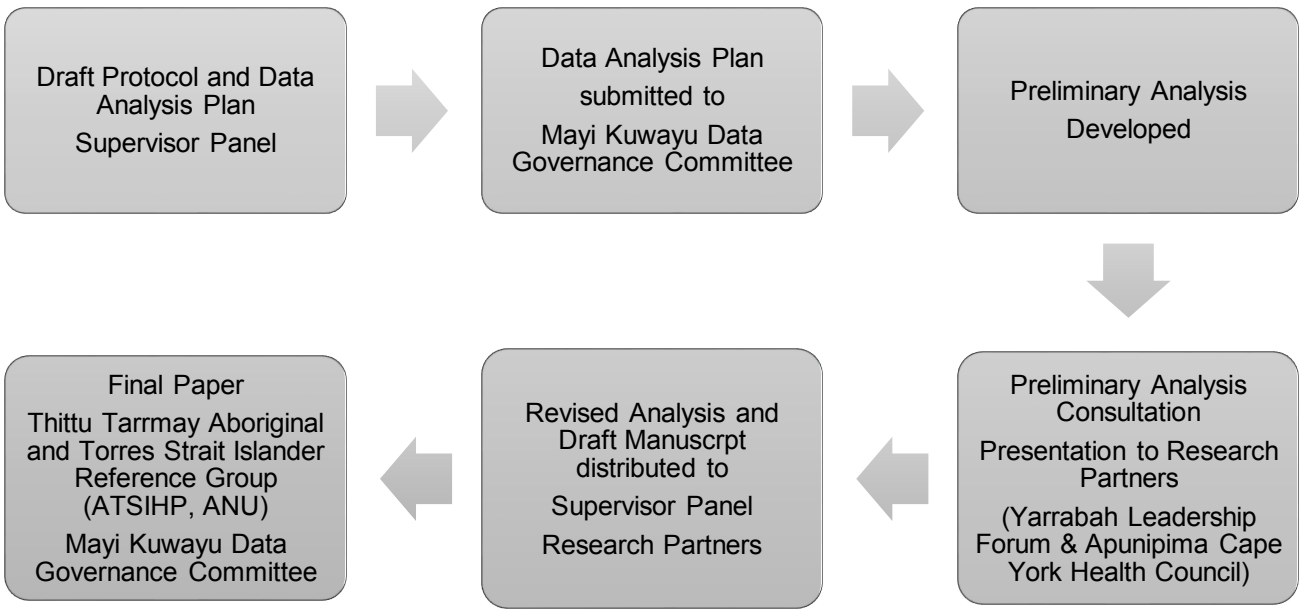

Figure 1. Development and Consultation

Dissemination of Study Findings

Dissemination of the study findings is ongoing at the time of writing this thesis, and has so far occurred through presentations of both the preliminary findings and final analysis to research partners, including Deloittes Access Economics for use of the findings in an economic analysis, submission of the draft manuscript for publication and submission of an Abstract to Aboriginal and Torres Strait Islander studies focused conferences. The analysis will also inform an ongoing evaluation of several program sites for the Family Wellbeing Program including Yarrabah, Cape York and Maningrida.

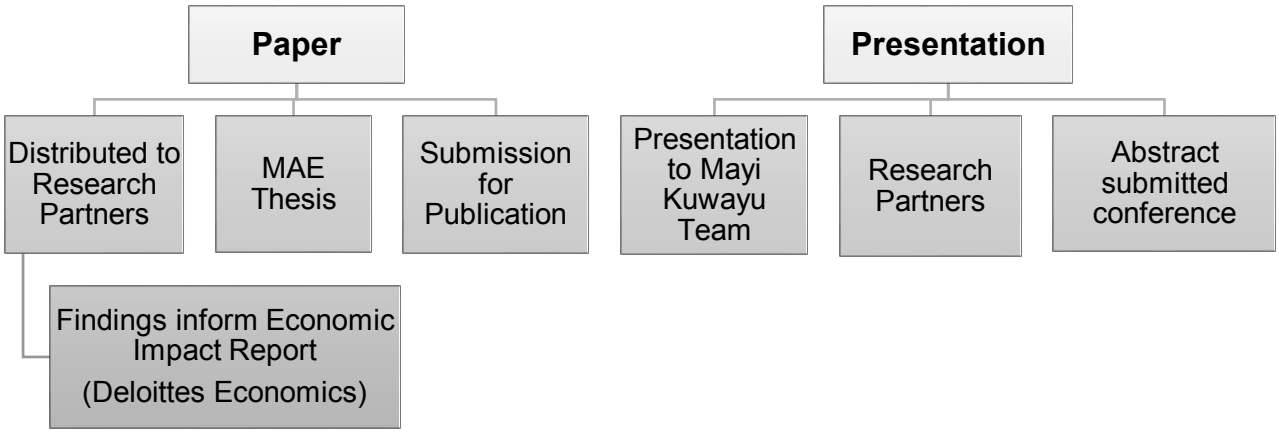

Figure 2. Dissemination of Study Findings

My Learnings

This was the largest and most involved of the projects that I undertook as part of the MAE, and through which I learnt the most about key research processes including the development and submission of manuscripts, being part of a research partnership and delivering scientific presentations. Through the process of repeated presentations to stakeholders and research partners I became more confident delivering a scientific presentation. Our engagement and collaboration with participants and program providers helped in both adapting the analysis and testing if the findings and conclusions spoke to the lived experience of participants and communities. It was also valuable to learn more about how research is being engaged with by communities and the processes being used to govern Indigenous led research.

Study

Submitted to BMC Public Health as **'***Exposure to the Family Wellbeing program and associations with empowerment, health, family and cultural wellbeing outcomes for Aboriginal and Torres Strait Islander peoples: A cross-sectional analysis'*

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Abstract

Background: Empowerment is a concept commonly incorporated into Aboriginal and Torres Strait Islander health and wellbeing programs. The Family Wellbeing Program (FWB) is an empowerment program developed in partnership with Aboriginal and Torres Strait Islander peoples that has been widely delivered to Aboriginal and Torres Strait Islander communities across Australia for close to 30 years. To date, there has been limited quantitative analysis of how this program may be linked to health and empowerment outcomes.

Methods: Cross sectional analysis of Mayi Kuwayu, the National Study of Aboriginal and Torres Strait Islander Wellbeing, baseline data (n= 9,843). Binary regression models were performed to calculate Prevalence Ratios (PRs) and 95% Confidence Intervals (CIs) to examine the association between personal control, life satisfaction, general health, family functioning and cultural wellbeing outcomes for Family Wellbeing participants (n=718) compared to non-participants (n=9,125)

Results: Compared to non-FWB participants, FWB participants are more likely to be female (67.1% versus 58.4%), be aged 35-54 (41.8% versus 32%) and live in a remote area (17.7% versus 10.4%). FWB participants were more likely to have experienced both prison and youth detention Non-FWB (3.5% versus 1.4% of Non-FWB) and reported being removed from their families as children (Stolen) (7.0% versus 4.1% Non-FWB).

Significant associations were observed between FWB participation and a 13% increase in higher family functioning, a 74% increase in higher cultural wellbeing and a 21% in higher levels of local decision making in the local community compared to non-FWB participation. There was also significantly higher reporting of precursory health outcomes amongst the FWB participants such as quitting alcohol (26.4% versus 20.4%), regular exercise (67.7%

versus 66.3%), quitting smoking (33.4% versus 31.9%) and educational attainment at the Year 12 level or above (57.8% FWB versus 53.2% in the Non-FWB).

Conclusion: There are significant associations between Family Wellbeing program and higher organisation and community level empowerment outcomes and some precursory health risk factors. Including physical exercise, alcohol use and smoking; and educational attainment among FWB participants compared to non-FWB participants. The results may suggest that community level relational and cultural indicators are highly relevant to an Aboriginal and Torres Strait Islander community empowerment model, while the process of when and how individual or psychological empowerment outcomes occur in such a model needs to be explored further.

Background

Empowerment theory has become a common concept in public health since the World Health Organisations' 1986 Ottawa Charter recognised 'the process of enabling people to increase control over, and to improve, their health' as vital to creating global health equity [2]. Central to empowerment theory is the recognition of power or powerlessness as a core social determinant, thus there is concern with not only the outcomes of good health and wellbeing, but also the processes of control over the determinants by which good health is achieved [3, 4]. Observation and analysis of these processes and outcomes occurs across three broad levels, personal or psychological empowerment, organisational empowerment and community empowerment [4-6]. While individual behaviours and attributes relating to agency and self-efficacy are commonly associated with empowerment, the theory is much broader and also concerned with the participatory action processes that galvanise individuals towards community action, and the structures that may support or impede them [3-7].

Wallerstein's work on empowerment as a health enhancing strategy asserts that understanding the role of social protective factors is key to developing effective theory of change models that can reduce ill health brought about by social inequity [4]. This approach challenged what was seen as a reductionist approach to empowerment in public policy and media where emphasis was placed on personal agency and self-efficacy, expressed as a lack of personal responsibility or drive, instead of highlighting broader social problems. Wallerstein argued for the term 'community empowerment' emphasising the participatory processes and social justice approach underlying the concept (p.74, [4]). Whilst community empowerment theorists have pointed out that consideration must be made to variations in protective factors by population, geography and time [4, 8], and pointed to the dynamic nature of the processes and by which they relate [6], it remains a model still largely reliant on the social-determinants to explain inequity. There is however a growing body of work on the limitations of social determinants to explain health inequity for Indigenous Peoples, that calls for a greater emphasis on culture in the understanding of health risk and protective factors [9-13]. Therefore, gaps remain in the adaption of community empowerment models.

The Family Wellbeing program (FWB) was developed in 1993, conceived in consultation with a group of survivors of the stolen generations, it is a group learning program that addresses stages of personal, family and community empowerment. Initiated as an employment and training program it has been adapted and delivered for a range of community identified needs and audiences; including suicide prevention, family violence, inmate education and parenting support [14]. Commonly delivered as a train the trainer

model whereby organisation staff participate in the course and are then able to apply the skills and knowledge to work settings and interactions with service users. Those service users then often will also participate in the training program. The FWB has been delivered in 60 known sites across Australia with more than 5,400 participants [14, 15]. Existing studies and evaluations of the FWB have analysed the applicability of empowerment used in the program to Aboriginal and Torres Strait Islander contexts [16-18], the demand driven transfer of the program across sites and services [14] personal empowerment outcomes [18, 19], the impact of research attached to the program and its application as a suicide prevention intervention[20]. Findings of these studies have included improvements in personal empowerment outcomes amongst FWB participants [18], the program as a mechanism for local action and organisation (community empowerment) [20] and the possible limitations of empowerment frameworks to Aboriginal and Torres Strait Islander world views that emphasise cultural and spiritual connections[16]. These studies have been qualitative and therefore limited quantitative studies of FWB participation on health and wellbeing outcomes have occurred [17, 18].

This analysis examined the relationship between exposure to the FWB on health, wellbeing, cultural and empowerment outcomes.

Materials and Methods

Mayi Kuwayu: The National Study of Aboriginal and Torres Strait Islander Wellbeing (the Mayi Kuwayu Study) is a longitudinal study that has been designed to quantify the links between social and cultural determinants, such as cultural expression, community decision making and family connection, to health and wellbeing [9, 10]. The Mayi Kuwayu study is the largest prospective cohort study of Aboriginal and Torres Strait Islander peoples in Australia. The study is open to participation by Aboriginal and Torres Strait Islander adults aged 16 and over and commenced recruitment in October 2018. Participants were recruited via mixed methods, including postal questionnaire (identified through the Medicare Enrolment Database), in-community recruitment, community partners, or online questionnaire, from October [21]. All Mayi Kuwayu Study data included in the current analysis were based on self-reported responses, with the exception of remoteness, which was derived from postcode.

This cross-sectional analysis is conducted using the third release (R.3) of the Mayi Kuwayu baseline data (*n* = 9,843), and includes all responses received between October 2018-December 2020.

The measures of culture and wellbeing have been developed through extensive research led by Aboriginal and Torres Strait Islander people including extensive partnerships, consultation and field testing with communities [9, 10, 22, 23].

Governance and ethics

The Mayi Kuwayu study is overseen by an Aboriginal and Torres Strait Islander governance group consisting of peak Aboriginal and Torres Strait Islander health organisations. In addition, all data use is assessed according to Indigenous Data Sovereignty principles and approved by an independent Indigenous Data Governance committee, known as the Mayi Kuwayu Data Governance Committee (Approval Reference No. D210511). This research was approved by the MKDGC *(including the manuscript - pending)* and conducted with ethics approvals from relevant Aboriginal and Torres Strait Islander organisations, and from national, state and territory Human Research Ethics Committees (HRECs).

Variables

Exposure variable (FWB participation)

Family Wellbeing participants are identified through Mayi Kuwayu question. *'Have you ever participated in: Family Wellbeing Program'*.

Outcome variables

Outcome variables used in the study were selected based on analysis of the literature, including previous evaluations of the program [17, 18, 24] and feedback from program providers. They are designed to provide indicators across personal, organisational and community empowerment, and health outcomes (see Appendix B).

Personal empowerment

Personal empowerment was measured with responses to the question, "how much are you in control of your life?"', with response options "A lot", "A fair bit", "A little bit" and "Not at all". These were then categorised as a (0) not at all (not at all) and (1) little - a lot (a lot, a fair bit and a little bit). Life satisfaction was measured according to responses to the question, "How satisfied are you with your life?", with response options "a lot", "a fair bit", "a little bit" and "not at all". These were then categorized as a (0) not at all (not at all) and (1) little to a lot (a little bit, a fair bit, a lot). General health was measured according to the question "How would you rate your general health?"; response options were "poor", "fair", "good", "very good" or "excellent". Responses were categorised as (0) poor-fair (poor and fair) and (1) good–excellent (good, very good or excellent).

Family functioning was measured according to a composite score of responses to a set of nine questions asking “In my family…”, “We get together and cope in the hard times”, “we celebrate special days/ events”, “we talk with each other about the things that matter”, “we are always there for each other”, “we manage money well”, “we have common interests”, “people are accepted for who they are”, “we have good support from mob”, “we have family knowledge and traditions that we pass on to our children”. With response options “not at all” (1), “a little bit” (2), “a fair bit” (3) to “a lot” (4), and “unsure” (0). Responses were summed (range: 0–36), and participants were categorized as having (0) low- moderate family functioning (score 0–29) or (1) high family functioning (score 30–36). Responses to the nine questions were summed for participants with complete data only; participants missing responses to any of the questions were coded as missing. All outcome measures above were coded as binary to enable the regression analysis.

Organisational empowerment

For organisational empowerment a composite score of the cultural knowledge and practice subset was created, that includes questions relating to contribution to community and participation in community-based events. The score was made up of responses to ten questions, summed together to generate a total cultural wellbeing score ranging from zero to 40. The questions asked “How much time do you spend…” 1. “With someone who has cultural knowledge (elder or knowledge holder)?” 2. “Learning and using knowledge from Aboriginal/Torres Strait Islander Law (or Lore)?” 3. “On country?” 4. “Getting or eating bush tucker (includes traditional foods and fishing)?” 5. “Learning culture, kinship and respect?” 6. “Making art, music or painting?” 7. “Passing on cultural knowledge?” 8. “Participating in social events related to Aboriginal/Torres Strait Islander people (such as NAIDOC week, Sorry Day events, cultural festivals, corrobboree, marches or rallies)?” 9. “Contributing to your community (such as participating in community meetings, organising events, volunteering, healing, being on committees or boards)?” 10. “Receiving Aboriginal/Torres Strait Islander healing methods (such as traditional healers, bush medicine)?”. With response options "Not at all" (1), "A little bit" (2), "A fair bit" (3) and "A lot" (4). Responses for the 10 questions were summed together to generate a total cultural wellbeing score ranging from zero to 40; participants missing any data were coded as missing. A binary category was created of (0) low cultural wellbeing (scores of less than or equal to 15) and (1) high cultural wellbeing (scores between 15 and 40).

Community empowerment

Decision making was measured by the question “in the Aboriginal and/ or Torres Strait Islander community where I live now local Aboriginal and Torres Strait Islander people make

community decisions" with response options "Not at all", "A little bit", "A fair bit", "A lot" and "Unsure". Responses were coded and categorised to (0) not at all (Not at all) and (1) A little – a lot (a little bit, a fair bit, a lot), unsure was coded as missing.

Health seeking and health risk factors and wellbeing variable

Drug and/ or alcohol problem was measured by response to the question that asked, "has a doctor ever told you that you have…drug or alcohol problem" with responses "no" and "yes". Participants were also asked "do you drink alcohol?" with responses categorised as "current drinker" (yes), "ex-drinker" (I drank in the past but don't drink now) and "never drinker" (I have never been a drinker). Current smoker was measured with response to question "Do you smoke?", with response categories "current smoker" (yes, I currently smoke), ex-smoker" (I smoked in the past but don't smoke now) and "never smoker" (I have never been a smoker). Current smokers were also asked "do you want to quit smoking?" with five response options that were categorised as "not at all or unsure" (not at all, unsure) and "a little to a lot" (a little bit, a lot, a fair bit). Exercise in the past week was measured with a question about exercise in the past week where participants were asked to select the days that they did 30 or more minutes of exercise (Monday – Sunday) the responses (1 for each day selected) were summed into three categories "none" (0), "1-2 days" (1-2) and "3 or more" (3-7).

Demographic variables

Eight demographic variables were used in the study including gender, age, location, and education. Following consultation with FWB providers we added measures for incarceration, income, being removed as a child (Stolen[1]) and household overcrowding, as these were priority groups for the program over the last 30 years. Gender was coded according to response of "male" or "female", with "other" coded as missing due to the small number of responses. Age was recoded into three age categories "16 to 34 years", "35 to 54 years", and "55+ years". Education was recoded into two categories "Year 10 or below" (no school, primary school, some high school, and year 10) and "Year 12 or above" (Year 12, certificate or diploma and university). For the location variable the categories were collapsed to, "regional" (inner regional and outer regional), "remote" (remote and very remote) and "major cities" (major cities). Incarceration was measured from participant response to the question "Have you ever been in prison or youth detention?", with categories created for "no prison or

[1] The Mayi Kuwayu survey notes on this section explain that the 'Stolen Generations (also known as Stolen Children) are Aboriginal/ Torres Strait Islander people removed from their families by government agencies.

youth detention" (no), "prison" (yes, prison), "youth detention" (yes, youth detention), "youth detention and prison" (participants who selected yes for both youth detention and prison), participants in the "prison and youth detention category" were omitted from the single response "prison" and "youth detention" categories. Family financial status was measured from response to the question of "which words best describe your family's money situation?" with the six response options collapsed to the categories of "we have enough" (we have a lot of savings, we have some savings and we have just enough to get us to the next payday) and "we don't have enough" (we run out of money before payday, we are spending more than we get), the response of unsure was coded as missing. Participants were asked 'Is where you live crowded?' with five response options collapsed to "Not at all" (not at all) and "a little to a lot" (A little bit, a fair bit, a lot), the response not relevant was coded as missing. Stolen generation was measured with response to the question "were any of these people Stolen? With response options of "I was Stolen" or "I was not Stolen".

Statistical analysis

A descriptive analysis is provided of the socio-demographic variables (Table 1), health risk factors and behaviours (Table 2) and empowerment outcome (Table 3) presented as percentage and number (%, n) overall and by FWB exposure. A Chi-square statistic was calculated to test for significant differences between FWB exposure and the categories of each demographic variable.

Logistic regression was performed to examine the association between FWB participation and each outcome. Prevalence Ratios (PRs) and 95% Confidence Intervals (CIs) are presented for each exposure/outcome association. Models are presented unadjusted and adjusted accounting for gender, age, location and being an ex-drinker as these were a priory conceptually thought to be linked to both exposure and outcome variables. A sensitivity analysis was conducted to address possible contamination within the analysis with Family Wellbeing Services [25] run by the Queensland Government. Analysis that included, and then excluded, all Queensland Family Wellbeing participants was run. The sensitivity analysis showed no material change in the results. Participants with missing data on each outcome of interest were excluded from the study. Analysis was conducted using Stata 16 [26].

Results

Participant characteristics

Of the total study population (9,843), 718 indicated participating in the FWB program and 9,125 did not indicate participation in FWB. Around 6 in 10 (59.5%) were female and the predominant age category was 55+ (40.9%). Close to half of the study respondents lived in a regional area (47.6%), with 41.1% residing in a major city and 10.9% residing in a remote area.

There were a number of significant differences observed between FWB and non-FWB participants including by gender with around two-thirds (67.1%) of FWB participants being female (versus 58.4% Non-FWB), being in the middle age group 35-54yr category (FWB 41.8%, versus 32% Non-FWB participants). Regional areas were the most common area of residence for both FWB (49.4%) and Non-FWB (47.4%), however more of the FWB group resided in remote areas (17.7%) compared to 10.4% of non-FWB participants. Less than one third of FWB participants (32%) lived in a major city (versus 41.8% non-FWB).

Family wellbeing participants reported a significantly higher level of educational attainment of (Year 12 or above education FWB 57.8% versus 52.8% Non-FWB). There was no difference in family financial status between the two groups. A significantly higher level of overcrowding was reported by FWB participants (21.6% versus 16.3% Non-FWB).

There were significant differences in reporting of incarceration and stolen generations between FWB and non-FWB participants with 7% of FWB participants reporting being stolen or removed as children compared to 4% of Non-FWB participants. Most FWB participants (83.3%) reported no experience of incarceration (versus 88.6% non-FWB). Overall FWB participants reported a significantly higher level of both prison and youth detention (3.5% versus 1.4% non-FWB).

Table 1. Demographic characteristics of Mayi Kuwayu Study overall and by FWB/ non-FWB exposure

	Toal (n=9,843)	FWB participant (n=718)	Non-FWB participant (n=9,125)
		% (n)	
Gender ^			
Male	37.9 (3,729)	30.6 (220)	38.5 (3,509)
Female	59.5 (5,858)	67.1 (482)	58.9 (5,376)
Missing	2.6 (256)	2.2 (16)	2.6 (240)
Age group (years)^			
16-34	23.1 (2,270)	16.2 (116)	23.6 (2,154)
35-54	32.7 (3,222)	41.8 (300)	32.0 (2,922)
55+	40.9 (4,024)	39.4 (283)	41.0 (3,741)
Missing	3.3 (327)	2.7 (19)	3.4 (308)
Location^			
Major City	41.1 (4,048)	32.0 (230)	41.8 (3,818)
Regional	47.6 (4,681)	49.9 (358)	47.4 (4,323)
Remote	10.9 (1,072)	17.7 (127)	10.4 (945)
Missing	0.4 (42)	0.4 (<5)	0.4 (39)
Education^			
≤Yr 10	44.8 (4,408)	40.0 (287)	45.2 (4,121)
≥Yr12	53.2 (5,234)	57.8 (415)	52.8 (4,819)
Missing	2.0 (201)	2.2 (16)	2.0 (185)
Family financial status			
We have enough	73.6 (7,243)	72.6 (521)	73.7 (6,722)
We don't have enough	15.9 (1,561)	17.1 (123)	15.8 (1,438)
Missing	10.6 (1,039)	10.3 (74)	10.6 (965)
Is where you live crowded^			
Not at all	74.5 (7,329)	69.1 (496)	74.9 (6,833)
A little to a lot	16.7 (1,645)	21.6 (155)	16.3 (1,490)
Missing	8.8 (869)	9.3 (67)	8.8 (802)
Incarceration^			
No	88.2 (8,685)	83.8 (602)	88.6 (8,083)
Prison	8.3 (820)	10.7 (77)	8.1 (743)
Youth Detention	1.8 (181)	2.0 (14)	1.8 (167)
Prison & Youth Detention	1.6 (157)	3.5 (25)	1.5 (132)
Stolen^			
Not Stolen	95.7 (9,423)	93.0 (668)	96.0 (8,755)
Stolen	4.3 (420)	7.0 (50)	4.1 (370)

^ sig <0.05 Chi2

Health outcomes and risk factors

Overall, 6.3% of Mayi Kuwayu participants reported a diagnosis of a drug or alcohol problem by a doctor (Table 2). Close to 6 in 10 participants (57.8%) reported being a current drinker, while nearly 1 in 5 (18.2%) reported never consuming alcohol. Just over one quarter of participants were current smokers (25.9%) and of those, 76.9% wanted to quit. Two-thirds of participants (66.4%) reported exercising for at least 30 minutes three or more days per week while 21.8% had done no exercise in the past week.

There were no significant differences in reporting of general health or diagnosis of a drug or alcohol problem between FWB participants and non-participants. Significant differences between the two groups were observed for drinking status, smoking status, desire to quit smoking and exercise participation in the last week. Over a quarter (26.4%) of FWB participants had stopped drinking (versus 20.4% Non-FWB) and around a third 33.4% had quit smoking (31.9% Non-FWB). Of current smokers 79.8% in the FWB participant group reported wanting to quit smoking, compared to 76.6% of Non-FWB smokers. The majority of FWB participants (67.7%) had undertaken 3 or more days of exercise in the past week, (versus 66.3% non-FWB), less than one-fifth (18.3%) of the exposed group reported having done no exercise in the past week to 22% of the non-FWB.

Table 2. Health behaviours and risk factors overall and by FWB/Non-FWB participation

	Total (n=9,843)	FWB participant (n=718)	Non-FWB participant (n=9,125)
	% (n)		
General Health			
Good-Excellent	66.6 (6,551)	63.4 (455)	66.8 (6,096)
Poor - Fair	30.9 (3,038)	33.8 (243)	30.6 (2,795)
Missing	2.6 (254)	2.8 (20)	2.6 (234)
Diagnosed Drug/ Alcohol Problem			
No	93.7 (9,220)	92.1 (661)	93.8 (8,559)
Yes	6.3 (623)	7.9 (57)	6.2 (566)
Do you drink Alcohol^			
Current drinker	57.9 (5,694)	53.2 (382)	58.2 (5,312)
Ex-drinker	20.8 (2,049)	26.2 (188)	20.4 (1,861)
Never a drinker	18.2 (1,793)	18.4 (132)	18.2 (1,661)
Missing	3.1 (307)	2.2 (16)	3.2 (291)
Smoking Status^			
Current Smoker	25.9 (2,549)	29.4 (211)	25.6 (2,338)
Ex-Smoker	32.0 (3,151)	33.4 (240)	31.9 (2,911)
Never a Smoker	39.4 (3,879)	35.1 (252)	39.8 (3,627)
Missing	2.7 (264)	2.1 (15)	2.7 (249)
Quit intentions*			
Not at all or unsure	23.1 (601)	20.2 (43)	23.4 (558)
A little to a lot	76.9 (1,998)	79.8 (170)	76.6 (1,828)
Exercise in the past week^			
None	21.8 (2,141)	18.3 (131)	22.0 (2,010)
1-2 Days	11.8 (1,163)	14.1 (101)	11.6 (1,062)
3 or more days	66.4 (6,539)	67.7 (486)	66.3 (6,053)

^ sig <0.05 chi2

**n = 2599, FWB = 213, non FWB = 2386*

Empowerment (personal, organisational and community), health and wellbeing

More than 9 in 10 people (94.2%) reported a little to a lot of personal control, similarly 91.6% reported a little to a lot of life satisfaction (91.6%). Against the organisational empowerment outcome 41.2% of participants reported high levels cultural wellbeing. Approximately half of participants (47.9%) felt that local people made decisions in the community that they lived. The prevalence of high personal control and life satisfaction was similar across FWB and Non-FWB participants. There were significant differences in family and community empowerment including almost half of FWB participants (45.7%) reporting high-very high outcomes on the family functioning scale (versus 34% Non-FWB) and 70.9% reporting moderate-high cultural wellbeing (versus 38.9% Non-FWB). Almost three-quarters (74.5%) of FWB participants reported that local Aboriginal and/ or Torres Strait Islander people made decisions in their community, compared to less than half of the Non-FWB group (45.8%).

Table 3. Empowerment, health, and wellbeing outcomes overall and by FWB/Non-FWB participation

	Total (n=9,843)	FWB participant (n=718)	Non-FWB participant (n=9,125)
	% (n)		
Personal Empowerment			
Life Control			
A little to a lot	94.0 (9252)	93.7 (673)	94.0 (8,579)
Not at all	2.5 (249)	2.8 (20)	2.5 (229)
Missing	3.5 (342)	3.5 (25)	3.5 (317)
Life Satisfaction			
A little to a lot	91.6 (9,012)	91.6 (658)	91.6 (8,354)
Not at all	5.1 (505)	5.0 (36)	5.1 (469)
Missing	3.3 (326)	3.3 (24)	3.3 (302)
Family Functioning^			
High-very high family functioning	34.8 (3,426)	45.7 (328)	34.0 (3,098)
Low-mod family functioning	40.8 (4,014)	43 (309)	40.6 (3,705)
Missing	24.4 (2,403)	11.3 (81)	25.5 (2,322)
Organisation empowerment			
Cultural Wellbeing^			
High-very high	41.2 (4,058)	70.9 (509)	38.9 (3,549)
Low-moderate	45.1 (4,443)	19.1 (137)	47.2 (4,306)
Missing	13.6 (1,342)	10.0 (72)	13.9 (1,270)
Community Empowerment			
Decision Making^			
A little to a lot	47.9 (4,710)	74.5 (535)	45.8 (4,175)
Not at all	16.8 (1,658)	10.7 (77)	17.3 (1,581)
Missing & unsure	35.3 (3,475)	14.8 (106)	36.9 (3,369)

^ sig <0.05 chi2

Associations between FWB, Empowerment, health, and wellbeing (Table 4).

There were no significant differences in life control PR 1.00 (CI. 1.00-1.00), life satisfaction PR 1.00 (0.98-1.02) or general health 0.95 (0.90-1.02) between FWB participants and non-Participants. There was a significant 13% increase in higher levels of family functioning PR 1.13 (CI 1.04-1.22); a 74% increase in higher levels of cultural wellbeing PR 1.74 (CI 1.66-1.83); and a 21% increase in higher levels of local decision making by Aboriginal and Torres Strait Islander people PR 1.21 (CI 1.16-1.25). After individual adjustment for gender, age, location and being an ex-drinker there was no difference in all but one exposure outcome relationship. Being a former drinker did reduce the prevalence ratio of cultural wellbeing to 13% increase from 74% increase in the unadjusted model.

Table 4. Relationship between FWB empowerment, health and wellbeing outcomes.

	Crude PR (95%CI)	PR Adjusted for Gender (95%CI)	PR Adjusted for Age (95%CI)	PR Adjusted for Location (95%CI)	PR Adjusted for ex-Drinker (95%CI)
Life Control (a little - a lot)					
Non-FWB	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1(ref)
FWB Participant	1 (1.00-1.00)	1 (1.00-1.00)	1 (0.99-1.00)	1 (1.00-1.00)	1 (0.99-1.00)
Life Satisfaction (a little - a lot)					
Non-FWB	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1(ref)
FWB Participant	1 (0.98-1.02)	1 ((0.98-1.02)	1 (0.98-1.02)	1 (0.99-1.02)	1 (0.98-1.02)
Community Decision Making (a little - a lot)					
Non-FWB	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1(ref)
FWB Participant	1.21 (1.16-1.25)	1.20 (1.15-1.24)	1.20 (1.16-1.24)	1.15 (1.12-1.18)	1.20 (1.16-1.24)
General Health (good-excellent)					
Non-FWB	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1(ref)
FWB Participant	0.95 (0.90-1.01)	0.95 (0.89-1.00)	0.97 (0.91-1.02)	0.95 (0.89-1.00)	0.95 (0.90-1.00)
Family Functioning (high-very high)					
Non-FWB	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1(ref)
FWB Participant	1.13 (1.04-1.22)	1.12 (1.04-1.21)	1.12 (1.04-1.22)	1.11 (1.02-1.20)	1.12 (1.04-1.22)
Cultural Wellbeing (high-very high)*					
Non-FWB	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1(ref)
FWB Participant	1.74 (1.66-1.83)	1.74 (1.66-1.82)	1.72 (1.64-1.81)		1.13 (1.04-1.22)

**missing adjustment model for location*

Discussion

In this cohort of Aboriginal and Torres Strait Islander adults we observed an association between FWB participation and improved outcomes particularly for organisational empowerment outcomes (cultural wellbeing 74%), community empowerment (community decision making 21%) and for high-very high family functioning (13%). We did not observe

an association between FWB participation and personal empowerment and general health. We did observe some modest associations between FWB participation and increased prevalence of addressing health risk factors including quitting smoking, increased physical inactivity and quitting alcohol. We also observed an increased prevalence of year 12 or higher educational attainment with FWB 57.8% of FWB and 52.8% Non-FWB.

These findings are in line with previous qualitative studies where participants reported wanting to connect with their spirituality, engage in life-long learning and reconnect with family and culture and look after their basic needs such as shelter, physical activity and good nutrition[27]. The higher prevalence of participants who live remote, have been Stolen and experienced incarceration (youth detention, jail or both), is in line with a history of program delivery for stolen generations and those experiencing incarceration and supports the flexibility of the program to address local needs identified by communities, including removal and incarceration[14]. The outcomes suggest a pathway from increased organisational and community empowerment indicators to positive changes in health risk factors may be occurring. While there is no evidence of improvement in the general health outcome, the slight increase in factors such as exercise and education, may have effects on health in the longer term. This aligns with community empowerment theory that describes empowerment interventions as having both a direct and indirect effect on health and wellbeing outcomes [4]. What the results may be suggesting is that engagement with, and contribution to, community and cultural life is linked to the adoption of healthy habits and therefore may be an intermediary to improved health outcomes [4, 19].

It is unclear why there is a lack of association in outcomes of life control and life satisfaction in this study, given both the strong focus in the program on individual healing and wellbeing, and the associated improvements in the outcome measures of family functioning, cultural wellbeing and community decision making. However, the findings are still in line with definitions of empowerment processes as a dynamic continuum [4, 6]; whereby individual agency may drive participation in community organisation, so too can participation and community connection be a driver of improved psychological wellbeing and health.

One limitation of this study is the high scores in life satisfaction and life control across both the exposed and non-exposed group, contributing to a ‘ceiling effect’ which limits variation in outcomes between the two groups. Another limitation is that the study it is cross-sectional which limits our ability to determine the direction of association, it is worth further exploring of how these outcome measures change over time for participants using more robust study designs. The possible confusion of the program with other similarly named programs or

services was also raised as a possible weakness of the study, as stated previously this was a particular concern in Queensland, however the sensitivity analysis revealed no material change and therefore all Queensland participants were included in the final analysis. There is also a question of cultural nuance that requires adaption to the levels of analysis, or domains within them, to be more in line with Aboriginal and Torres Strait Islander cultural understandings of self. This would be in line with earlier qualitative evaluations of the Family Wellbeing program that found participants placed particular emphasis on relational and spiritual traits as attributes of empowerment [16, 19].

Missing from the analysis is information on structural change, or evidence of how an empowerment intervention such as the Family Wellbeing program can influence changed conditions, different policies or impact experiences of racism. For example, the ability of participants to improve their housing conditions in remote areas where housing infrastructure is limited and over-crowding more common [28]. There are limitations to the difference individual and, or, collective action can make to health and wellbeing without changes to the structural inequality that creates the need for empowerment interventions in the first place: not recognising this risks attributing responsibility for outcomes solely at the agency of the individual or community [4, 29, 30]. A larger more mixed method study design would be required to capture if and how such changes occur, and the processes by which community advocacy plays a part.

Conclusion

The associations between the Family Wellbeing program and improvements in culture, family and local decision-making outcomes support the programs application as an empowerment intervention for Aboriginal and Torres Strait Islander communities. The program was linked to improved precursory health behaviors, including reduction of risk factors, such as drinking and smoking, implies a model whereby both immediate and intermediatory outcomes may occur. Further investigation is required to identify causal pathways to improved health outcomes. Given the structural understandings of empowerment and the association of discrimination with a wide range of poor health outcomes, such an analysis could also incorporate measures of discrimination as a factor. The successful application of outcome areas of family, culture, and local decision-making as indicators in this study demonstrates their relevance as indicators of Aboriginal and Torres Strait Islander community empowerment. Whilst cultural wellbeing has been applied as an organisational level outcome in this analysis there remains a gap in understanding how culture, and cultural wellbeing, is best applied and understood in Aboriginal and Torres Strait Islander community empowerment frameworks.

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Appendix A – Family Wellbeing Presentation

Mayi Kuwayu

Exposure to the Family Wellbeing Program and links to empowerment, health and wellbeing.

The National Study of Aboriginal & Torres Strait Islander Wellbeing.

Our cultures count.

3 August 2022

Australian National University | The Lowitja Institute

Outline

- Purpose – present draft findings from the MK Analysis on FWB Participation
- Background
  - Community empowerment and health
  - Family Wellbeing Program
  - Mayi Kuwayu Study
  - Research question
- Methods (descriptive, inferential)
- Results
  - Socio demographics profile by FWB exposure
  - FWB exposure links to outcomes
- Implications/ conclusion and next steps

Australian National University | The Lowitja Institute

Community Empowerment

"A social action process by which individuals, communities and organisations gain mastery over their lives in the context of changing their social and political environment to improve equity and quality of life" (Wallerstein 2002)

Empowerment Outcomes

Wallerstein's levels of empowerment	Corresponding settings applied in the Tsey & Every evaluation	Related empowerment Attributes	MK Study Outcome Measures
Personal or psychological empowerment	The Family	Improved perceptions of self-worth and mutability of social environment as evidenced by: empathy and perceived ability to help others; emotional responses to change; critical thinking abilities of root causes of problems, belief in one's ability to exert control; and a sense of coherence about one's place in the world.	Personal Control 'How much are you in control of your life?' Life Satisfaction 'How satisfied are you with your life?' General Health 'How would you rate your general health?' Family Functionality Scale
Organisational empowerment	The workplace	Stronger social networks and community/ organisation competence to collaborate and solve problems as evidenced by: perceptions of support, satisfaction and community connectedness; and changes in network function and utilisation.	Cultural Wellbeing scale (originally contribution to community question, adapted based on feedback)
Community empowerment	The wider community	Actual improvement in environmental or health conditions as evidenced by: change in public policy; systems level changes; and the community's ability to bring in resources to create healthier environments.	Decision making 'In the Aboriginal/ Torres Strait Islander community where I live now local Aboriginal/ Torres Strait Islander people make community decisions.'

Tsey & Every 2000, Adapted from Wallerstein 1992

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Family Wellbeing Program

- Developed in 1993.
- Delivered in over 60 sites with more than 3,500 participants.
- Group learning program that addresses stages of personal and community empowerment.
- Delivered for a range of community needs including suicide prevention, family safety, alcohol addiction and inmate rehabilitation.

Mayi Kuwayu Study

- *Mayi Kuwayu* in Ngiyampaa (Wangaaypuwan/Wongaibon) language 'to follow people over time'.
- Study conceptualised in 2014 with a 6 year development process.
- Release 3 (12/20) 9,843 participants
- Quantitative measures.
- Range of cultural indicators.
- Exposure variable: Have you ever participated in… Family Wellbeing?

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Research Question

- Does exposure to the Family Wellbeing Program vary individual, family and community health, wellbeing and empowerment outcomes compared to non-Family Wellbeing participants?

Methods

- Cross-sectional analysis of MK baseline data.
- Descriptive analysis: Socio-demographic profile of FWB and non-FWB participants.
- Logistic regression presented as Prevalence Ratios (PRs) and 95% Confidence Intervals.
- Adjustment for confounding variables.
- Sensitivity analysis QLD inclusion.

Table 1. Demographic characteristics of Mayi Kuwayu Study participants overall and by FWB/non-FWB participation.

	Total (N=9,843)	FWB participant (n=718)	Non-FWB participant (n=9,125)
		% (n)	
Gender ^			
Male	37.9 (3,729)	30.6 (220)	38.5 (3,509)
Female	59.5 (5,709)	67.1 (482)	58.9 (5,376)
Missing	2.6 (256)	2.2 (16)	2.6 (240)
Age group (years)^			
16-34	23.1 (2,270)	16.2 (116)	23.6 (2,154)
35-54	32.7 (3,222)	41.8 (300)	32.0 (2,922)
55+	40.9 (4,024)	39.4 (283)	41.0 (3,741)
Missing	3.3 (327)	2.6 (19)	3.4 (308)
Location^			
Major City	41.1 (4,048)	32.0 (230)	41.8 (3,818)
Regional	47.6 (4,681)	49.9 (358)	47.4 (4,323)
Remote	10.9 (1,072)	17.7 (127)	10.4 (945)
Missing	0.4 (42)	0.4 (3)	0.4 (39)

Table 2. Health behaviours and risk factors in the total sample and by FWB/non-FWB participation.

	Total (N=9,843)	FWB participant (n=718)	Non-FWB participant (n=9,125)
		% (n)	
General Health			
Good-Excellent	66.6 (6,551)	63.4 (455)	66.8 (6,096)
Poor - Fair	30.9 (3,038)	33.8 (243)	30.6 (2,795)
Missing	2.6 (254)	2.8 (20)	2.6 (234)
Diagnosed Drug/ Alcohol Problem			
No	93.7 (9,220)	92.1 (661)	93.8 (8,559)
Yes	6.3 (623)	7.9 (57)	6.2 (566)
Do you drink Alcohol^			
Current drinker	57.8 (5,694)	53.2 (382)	58.2 (5,312)
Ex-drinker	20.8 (2,049)	26.2 (188)	20.4 (1,861)
Never a drinker	18.2 (1,793)	18.4 (132)	18.2 (1,661)
Missing	3.1 (307)	2.2 (16)	3.2 (291)
^ sig <0.05			

Table 3. Empowerment, health, and wellbeing outcomes overall and by FWB/Non-FWB participation.

	Total (N=9,843)	FWB participant (n=718)	Non-FWB participant (n=9,125)
		% (n)	
Personal Empowerment			
Life Control			
A little to a lot	94.2 (9252)	93.7 (673)	94.0 (8,579)
Not at all	2.5 (249)	2.8 (20)	2.5 (229)
Missing	3.5 (342)	3.5 (25)	3.5 (317)
Life Satisfaction			
A little to a lot	91.6 (9,012)	91.6 (658)	91.6 (8,354)
Not at all	5.1 (505)	5.0 (36)	5.1 (469)
Missing	3.3 (326)	3.3 (24)	3.3 (302)
Family Functionality^			
High-very high family functionality	34.8 (3,426)	45.7 (328)	34.0 (3,098)
Low-mod family functionality	40.8 (4,014)	43 (309)	40.6 (3,705)
Missing	24.4 (2,403)	11.3 (81)	25.4 (2,322)
Organisation empowerment			
Cultural Wellbeing^			
High-very high	41.2 (4,058)	70.9 (509)	38.9 (3,549)
Low-moderate	45.1 (4,443)	19.1 (137)	47.2 (4,306)
Missing	13.6 (1,342)	10.0 (72)	13.9 (1,270)
Community Empowerment			
Decision Making^			
A little to a lot	47.9 (4,710)	74.5 (535)	45.8 (4,175)
Not at all	16.8 (1,658)	10.7 (77)	17.3 (1,581)
Missing & unsure	35.3 (3,475)	14.8 (106)	36.9 (3,369)
^ sig <0.05			

Table 4. Relationship between FWB empowerment, health and wellbeing.

	Crude PR (95%CI)	PR Adjusted for Gender (95%CI)	PR Adjusted for Age (95%CI)	PR Adjusted for Location (95%CI)	PR Adjusted for ex-Drinker (95%CI)
Life Control (a little - a lot)					
Non-FWB	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1(ref)
FWB Participant	1 (1.00-1.00)	1 (1.00-1.00)	1 (0.99-1.00)	1 (1.00-1.00)	1 (0.99-1.00)
Life Satisfaction (a little - a lot)					
Non-FWB	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1(ref)
FWB Participant	1 (0.98-1.02)	1 ((0.98-1.02)	1 (0.98-1.02)	1 (0.99-1.02)	1 (0.98-1.02)
General Health (very good)					
Non-FWB	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1(ref)
FWB Participant	0.95 (0.90-1.01)	0.95 (0.89-1.00)	0.97 (0.91-1.02)	0.95 (0.89-1.00)	0.95 (0.90-1.00)
Family Functionality (high-very high)					
Non-FWB	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1(ref)
FWB Participant	1.13 (1.04-1.22)	1.12 (1.04-1.21)	1.12 (1.04-1.22)	1.11 (1.02-1.20)	1.12 (1.04-1.22)
Cultural Wellbeing (high –very)					
Non-FWB	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1(ref)
FWB Participant	1.74 (1.66-1.83)	1.74 (1.66-1.82)	1.72 (1.64-1.81)		1.13 (1.04-1.22)
Community Decision Making (a little - a lot)					
Non-FWB	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1(ref)
FWB Participant	1.21 (1.16-1.25)	1.20 (1.15-1.24)	1.20 (1.16-1.24)	1.15 (1.12-1.18)	1.20 (1.16-1.24)

Conclusions

- Strong associations between FWB and organisational and community outcomes. This doesn't appear to be the case for individual empowerment.
- Higher level of reporting precursory health outcomes and risk factors – exercise, alcohol consumption and smoking – and educational attainment.
- Results do not change for QLD.
- Suggests that relational and cultural indicators are highly relevant to an Aboriginal and Torres Strait Islander community empowerment model. When and where individual empowerment occurs needs to be further explored.

Appendix B - Framework for empowerment evaluation outcomes

Wallerstein's levels of empowerment	**Corresponding settings applied in the Tsey & Every evaluation**	**Related empowerment Attributes**	**MK Study Outcome Measures**
Personal or psychological empowerment	The Family	Improved perceptions of self-worth and mutability of social environment as evidenced by: empathy and perceived ability to help others; emotional responses to change; critical thinking abilities of root causes of problems, belief in one's ability to exert control; and a sense of coherence about one's place in the world.	*Personal Control* 'How much are you in control of your life?' *Life Satisfaction* 'How satisfied are you with your life?' *General Health* 'How would you rate your general health?' *Family Functionality Scale*
Organisational empowerment	The workplace	Stronger social networks and community/ organisation competence to collaborate and solve problems as evidenced by: perceptions of support, satisfaction and community connectedness; and changes in network function and utilisation.	*Cultural Wellbeing scale*
Community empowerment	The wider community	Actual improvement in environmental or health conditions as evidenced by: change in public policy; systems level changes; and the community's ability to bring in resources to create healthier environments.	*Decision making* 'In the Aboriginal/ Torres Strait Islander community where I live now local Aboriginal/ Torres Strait Islander people make community decisions.'

Tsey & Every 2000, Adapted from Wallerstein, 1992

Chapter 3. What is the risk? Analysis of an outbreak of COVID-19 in a predominantly culturally and linguistic diverse group.

Acknowledgements

I thank and acknowledge the ACT Health Directorate's Public Health Emergency Coordination Centre (HECC) Case Investigation and Epidemiological Investigation for the opportunity and support to undertake this study. Notably Nevada Pingault, Timothy Sloan-Gardner and Alexandra Marmor all of whom contributed to the development and review of this study along with my ANU based supervisors Davoud Pourmarzi and Raymond Lovett.

Prologue

I was contacted by the MAE Team to assist with the ACT Health Directorate's Public Health Emergency Coordination Centre (HECC) Case Investigation and Epidemiological Investigation Team on 13 August 2021. The HECC was made up of a large taskforce led by the ACT Chief Health Officer (CHO). The taskforce's activities included case investigation, epidemiological investigation, contract tracing, data management and reporting, vaccination, quarantine, site management, case management, exemptions management and logistical and administrative support.

The Epidemiological Investigation, led by Nevada Pingault and Timothy Sloan-Gardner as Lead Epidemiologists and assisted by Senior Epidemiologist Alexandra Marmor, were responsible for overseeing the management of investigations and daily epidemiological reporting and advice to the CHO. All of whom contributed to the development and review of this study along with my ANU based supervisors Raymond Lovett and Davoud Pourmarzi who led the study design. As part of an MAE cohort of five, our day-to-day tasks and investigations were led by Keeley Allen and Algreg Gomez, two of our cohort placed with the ACT Health Directorate.

My Role

As part of the Epidemiology and Case Investigation Team I conducted case interviews, data entry and cleaning and epidemiological investigation and assessments. Case and quarantine information was recorded using a REDCap database [31, 32] equipped with interview templates that had been developed during the 2020 outbreak of COVID-19 in Canberra. I was also assigned to examine an indoor sports stadium cluster that involved two matches played at the stadium on the evening of 11 August 2021, involving several players and spectators. I assisted with reviewing the links across the cluster, to better understand the chains of transmission occurring. I worked with my MAE colleague Yasmin Lisson on mapping the households across the cluster that interwove with a second cluster. Based on this work I cleaned data to ensure cases were identified in the system, developed a line list using an edited reporting tool within REDCap, analysed the data and applied network mapping to report on the transmission chains of the outbreak from the index case.

Lessons Learned

Being part of an outbreak response of this size offered many valuable learnings about the different operations and capacities within an outbreak response. I learned about contact tracing, epidemiological investigation, quarantine facilities management, site management, vaccination and communications. I also learnt about logistics requirements for deploying a surge workforce—including human resources, information technology and facility services—quickly to respond to the emerging outbreak. Importantly, when it became clear that the outbreak was unlikely to be eliminated in the region, I was able to observe how the taskforce began to change from a rapid response focused on a suppression response to longer term outbreak control processes.

I was able to learn and apply tools and methods required for the operations of field epidemiology from conducting case interviews, data cleaning, creating line lists and charts. Observing the challenges of a new and high-pressure environment where information must be gathered and passed on quickly, it became clear that it is important to be prepared and clear with the information that you provide – what is the risk being observed (e.g. possible exposure, unknown transmission) and ensuring you have the relevant information needed to advise on risk and/or actions.

Comparative learnings and interest

I was particularly interested in analysis of this cluster due to the insight it gave to underlying risk factors for COVID-19 transmission, and prevention, in a culturally and linguistic diverse community. The cluster involved a high youth demographic group, extended family relationships and large multi-associated households with high levels of between and within household interaction. These are elements that should be anticipated when working with Aboriginal and Torres Strait Islander and culturally and linguistic diverse communities to manage the risk of transmission.

Understanding the transmission risks, and prevention strategies applied, has implications for planning for quarantine and self-solation measures for other communities that share a similar demographic profile of large household sizes.

Study

Abstract

Background: People with culturally and linguistically diverse background have been disproportionately affected by the COVID-19. This study investigated an outbreak of COVID-19 in a predominantly culturally and linguistic diverse group to identify risk factors and public health implications.

Methods: On 14 August 2021 a notification was received for a COVID-19 case who had played sport at an indoor stadium whilst infectious on the evening of 11 August. An outbreak investigation and a retrospective cohort study design was used to understand the characteristics of the outbreak and risk factors of transmission. Data on sociodemographic, household size, symptoms, quarantine and isolation periods, close contacts, vaccination status, and hospitalisation were collected. Household secondary attack rates and risk ratios for the secondary attack rates based on household size and language spoken at home were calculated.

Results: Fifty-nine cases were identified. The median age of cases was 20 years (range of 0-61 years) and 52.5% were female. Half of the cases (50.8%) were born overseas and 49.2% reported speaking a language other than English at home. The majority of transmissions were household-based with a secondary household attack rate of 86.5%. Households of five or more significantly increased the risk of transmission [RR 1.50 (95% CI 1.05-2.14, *P: 0*.003)]. There was no significant association between household language and the risk of transmission [RR 1.04 (95% CI 0.72-1.52, *P: 0*.99)].

Conclusion: Larger household size was linked to increased risk of transmission, and language spoken at home was not. Culturally and linguistically diverse communities need to be engaged in informing outbreak response including accessibility of isolation and quarantine facilities. The collection of information on language and ethnicity can be important to public health considerations regarding equity when used appropriately.

Key words: COVID-19, Outbreak, Migrants, Refugees, Culture

Introduction

SARS-CoV-2 is the infective virus that causes COVID-19 disease and is primarily transmitted through aerosols, direct contact with an infected person and, to a much lesser degree, via contact with fomites on contaminated surfaces and objects [1, 2]. Environmental conditions such as air circulation are thought to play a role in transmission [1]. Transmission can occur from both asymptomatic and pre-symptomatic infections, and at the time of this investigation people deemed at high risk of infection were those who have had at least 15 minutes of face-to-face contact with a case, including: household contacts and social contacts with extensive interaction [1, 2].

Overall the majority of COVID-19 cases will experience mild illness with commonly reported symptoms including cough, fever, myalgia, headache and a sore throat. Generally younger children experience milder symptoms, while the elderly and those with existing comorbidities such as cancer, chronic kidney diseases, diabetes and hypertension are most at risk of moderate to severe illness requiring hospitalisation [2, 3]. Compared to the wild-type strain, the Delta variant carries an increased risk of severity (hospitalisation, ICU admission or death) including amongst younger people and those without comorbidities [4]. The Australian SARS-CoV-2 vaccination program commenced in early 2021. At the time of this outbreak (early August 2021) the ACT had not yet commenced vaccination for those under 30 years of age outside of priority groups[5].

For groups such as recent migrants, asylum seekers and Indigenous peoples, differing demographics around household size, comorbidities, occupation, caring responsibilities and income shape unique risks in a pandemic [6-8] . Whilst migrant status or ethnicity may be relevant as indicators of health inequity and priority, effective application requires contextualising where the risk lies, and possible prevention [7].

Background

On Thursday 12 August, 2021 a community-acquired case of COVID-19 was notified to ACT Health and positive wastewater detections were recorded in several collection sites across the ACT. This was the first case of COVID-19 after about 16 months of no known local transmission in the ACT. Stay-at-home orders were quickly implemented under the Public Health Emergency Declaration put in place for the ACT due to the risk caused by the novel coronavirus SARS-CoV-2 [5, 9]. The case was later confirmed to be of the Delta variant of concern. A number of COVID-19 exposure sites were publicly listed by ACT Health, including a busy inner-city nightclub on the evening to early morning of 7-8 August.

On 14 August notification was received of a case (index case) that had played a basketball match at an indoor sporting stadium on 11 August between 7:00pm-10:00pm. The receipt of several notifications of COVID-19 cases linked to the same venue led to the initiation of an outbreak investigation. This study describes the investigation, epidemiological characteristics of the outbreak, and the risk factors associated with household transmission of SARS-CoV-2.

Methods

Study design

An outbreak investigation was conducted to understand the public health implications of the outbreak, control the outbreak and prevent a similar outbreak happening in the future. A retrospective cohort study design was used to examine incidence, specifically the effect of household size and language spoken at home on household transmission.

The cohort was defined as the index case, their close contacts at the stadium and in their household, secondary cases and their close contacts. In this study cases and their close contacts were followed up for 14 days after their contact with the case.

Case definitions

For this outbreak a case was defined as a person having laboratory confirmed detection of SARS-CoV-2 [2] who attended the indoor sporting stadium on 11 August 2021 between 7:00pm-10:00pm, or who was a close contact of a case who attended the stadium at the above-mentioned date and time.

As per the national guidelines at the time, a close contact was defined as a person who has had at least 15 minutes of face-to-face contact with a case and therefore is a reasonable risk of transmission and includes household contacts [2]. A household contact was defined as a person who was living in the same dwelling as an outbreak case.

All close contacts were required to quarantine for 14 days after their exposure date. Close contacts were required to get tested immediately on identification, prior to leaving quarantine or if symptoms developed in the intermediate period.

Data Collection

All data were collected and managed in REDCap electronic data capture tools [10, 11] hosted by ACT Health. Information captured through telephone interviews included; experienced symptoms; sociodemographic characteristics including sex, age, country of birth, and primary language spoken at home; close contacts; case movements during the exposure period (7 days prior to symptom onset, or testing if asymptomatic) and infectious period (72 hours prior to symptom onset, or testing if asymptomatic); and quarantine adherence. Cases were also asked a series of questions relating to social and emotional wellbeing, including if they were able to safely self-isolate or had any concerns about self-isolation, including mental health or meeting household needs. They were provided with the option for a referral to the Wellbeing team for further services if required. COVID-19 vaccination history was verified through the Australian Immunisation Register. Access to a free translation service was provided and community liaision officers were engaged to assist case investigators in the collection and dissemination of information. Laboratory and hospitalisation data were entered into the REDCap on the receipt of information from testing laboratories and hospitals.

Statistical analysis

A descriptive analysis of the data describes the outbreak including cases and contacts. A histogram was used to display an epidemiological curve of the outbreak based on symptom onset data or specimen collection date for asymptomatic cases (i.e. diagnosis date). The cohort was categorised based on age in three 0-15 years, 16-29 years and 30+ years categories.

Quarantine data were used to examine amount of time in quarantine. Three days or more prior to diagnosis date was selected to indicate if a case was in quarantine for all of the infectious period. In quarantine for part of infectious period was calculated by a quarantine date starting one to three days prior to diagnosis date and not in quarantine if they had not commenced quarantine prior to diagnosis date.

Vaccination status was categorised as received one dose, received two doses and not vaccinated. The denominator (14) was calculated based on those who fell into eligible vaccine categories at the time of the outbreak (i.e. people aged 30 and older).

Hospitalisation and ICU admission was included as an indicator of severity and established from REDCap records, admission was cross referenced with vaccination status.

Household secondary attack rates and relative risks were calculated to understand the effect of household characteristics including size and language spoken at home on the household transmission. For household secondary attack rates, cases were assigned a household identifier using residential address and close contact information. Household secondary attack rates were calculated assuming one primary case per household. Households were then categorised by size (5 or more and less than 5) and language spoken at home (English and other). Whereby one case resided by themself, they were not classified as a household in this study. Fishers Exact test was used to assess the differences between the two categories and 95% confidence intervals and P-values were reported.

The data were analysed using Excel and R [12], the social network graph was developed using the NodeXL Basic template for Excel [13] to visualise the transmission in this outbreak.

Results

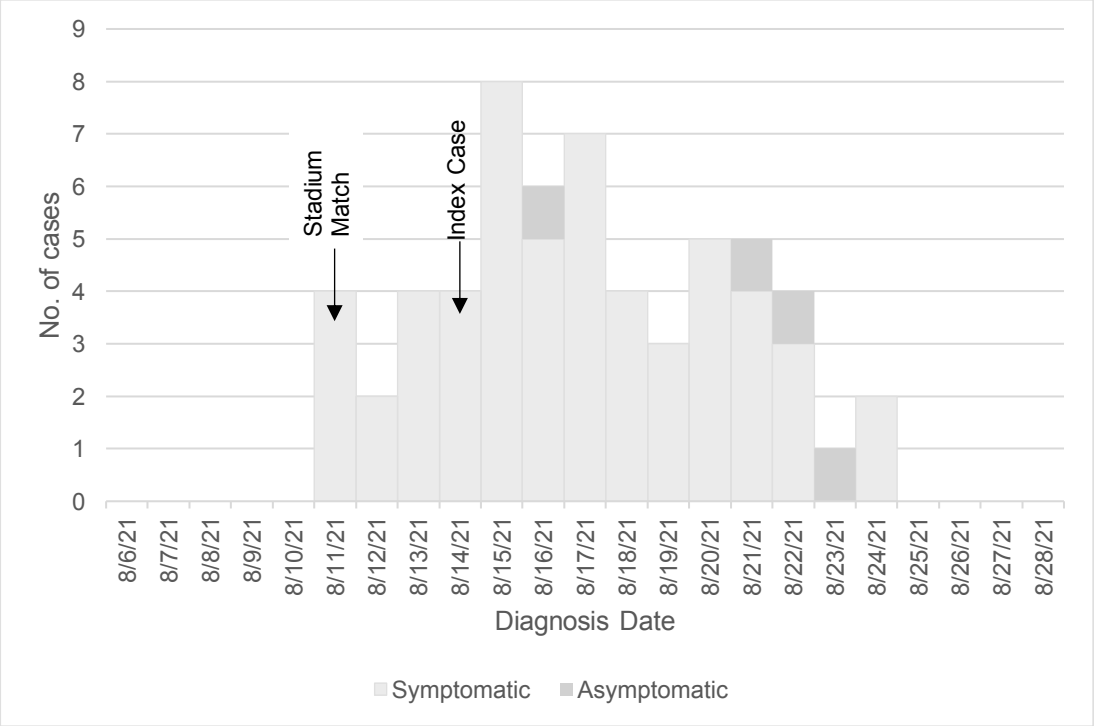
On 14 August 2021, a notification was received of a case (index case), with the initial report noting that the case had been symptomatic on the 11 August, the same day that they had played a sporting match at an indoor sporting stadium. The stadium contained multiple courts across two arenas with a shared foyer and change rooms. The entire venue was listed as a public exposure site and all attendees were required to be tested immediately and quarantine for 14 days from the exposure. Close contacts were identified based on the information provided by the interviewed cases, through information provided by the league/stadium and the ACT Health public communications of exposure sites (website and media).

A total of 59 ACT COVID-19 cases were linked to the stadium, with this outbreak defined as a cluster. This comprised five players (including the index case) and three spectators present at the stadium on 11 August, and a further 51 cases who were household or other close contacts of the stadium cases (Figure 3). Four players shared an initial onset of 11 August, the day of the game, another two attendees developed symptoms less than two days after the game, the onset dates suggested a common exposure prior to the basketball game. At least two cases at the stadium had been at a nightclub exposure site prior to the match, and all but one of the cases had social and family connections that provided a likely exposure other than the stadium. At the peak of this cluster six to eight cases per day were notified between 15 to 17 of August, four to six days from the date of the matches on the 11 August (Figure 4).

Figure 3. Node and Network Diagram

Key: the black nodes represent those present at the indoor sporting stadium, orange nodes represent household transmission, blue nodes represent other sources transmission, the grey represent household contacts who were not cases. A filled node indicates that a case was not in quarantine for any of their infectious period, an unfilled node indicates the case was in quarantine for at least part of the infectious period. The label on the lines are the days between exposure and diagnosis date.

Figure 4. Stadium cluster COVID-19 epicurve by diagnosis date*



** Diagnosis Date = first symptom onset date if known, otherwise, it is the earliest of specimen collection date, notification date or notification received date.*

Demographics

The median age of the cases was 20 years (range: 0-61). Thirty cases (50.8%) were born overseas and 29 (49.2%) spoke a language other than English at home. There were 28 males (47.5%) and 31 females (52.5%) in the cluster (Table 5).

Table 5. Demographic characteristics

Characteristic		M	F	Total
		n (%)	n (%)	n (%)
Age Category (years)	0-15	11(18.6)	8(13.6)	19(32.2)
	16-29	13(22.0)	13(22.0)	26(44.1)
	30 ≤	4(6.8)	10(16.9)	14(23.7)
Country of Birth	Australia	17(28.8)	12(20.3)	29(49.2)
	Overseas	11(18.6)	19(32.2)	30(50.8)
Primary language spoken at home	Other than English	14(23.7)	15(25.4)	29(49.2)
	English	14(23.7)	14(23.7)	28(47.5)
	Missing	0(0)	2(3.2)	2(3.4)

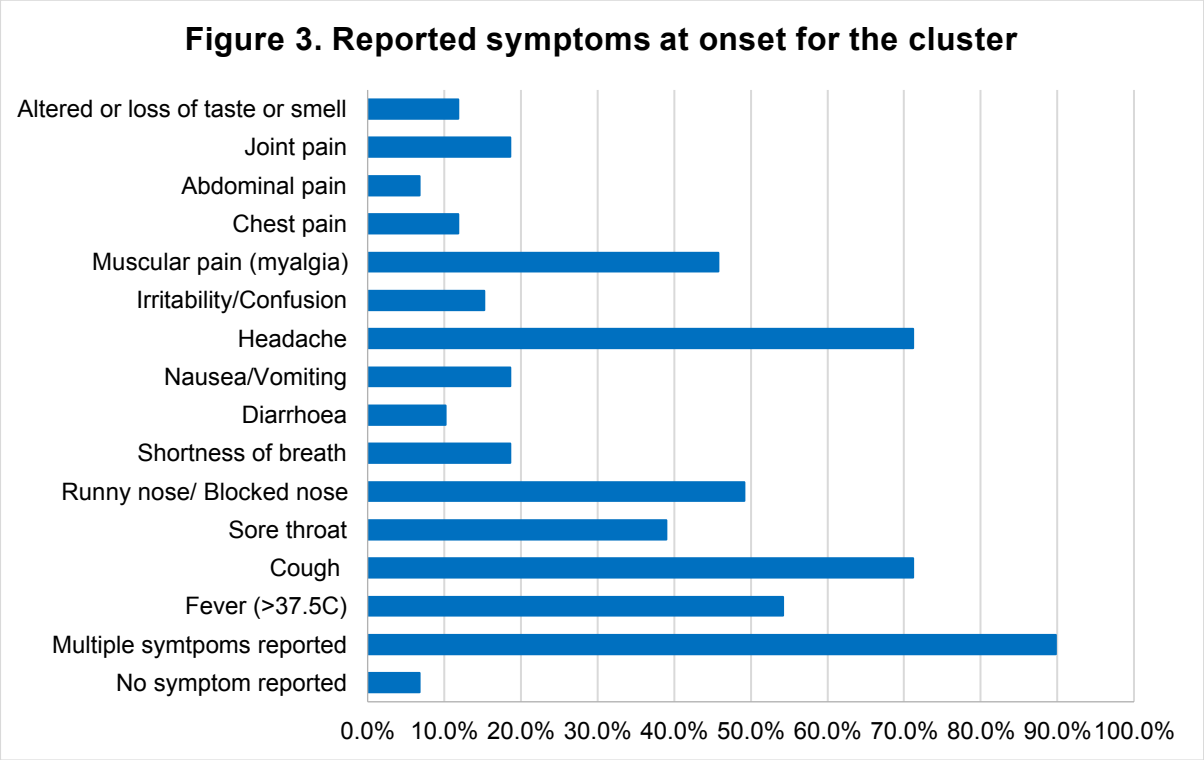
Quarantine

Just over half of cases (55.9%) were in quarantine for all or part of their infectious period; 20 (33.9%) for three days or more and 13 (22.0%) for less than three days. Twenty-six (44.1%) cases reported that they had not been in quarantine at all prior to their infectious period.

Vaccination status

Fourteen cases (23.7%) were vaccine-eligible based on age at the time of the outbreak (30 years or over at 2 August 2021). One had received two doses more than 14 days prior to exposure (7.1%) and four had received one dose (28.6%), however three of these single doses had been administered within the 14 days prior to exposure. Females made up 71.4% of the vaccine eligible cases (10/14) but had lower vaccine coverage, with only two having received one dose and none had received two doses.

Figure 5. Reported symptoms at onset for the cluster



Symptoms

Four cases (6.8%) were asymptomatic at the time of notification and initial interview, 53 (89.8%) reported experiencing more than one symptom. The most commonly reported symptoms in the cluster were headache and cough (new or worsening of chronic cough) experienced by almost three quarters (71.2%) of cases (Figure 5).

Hospitalisation

There were four incidences of hospitalisation (6.8%) including one ICU admission (1.7%). All hospitalised cases were female and only the ICU admitted case had a pre-existing medical condition (diabetes). Of the cases admitted to hospital only one had received a dose of the vaccine and it had been administered within the 14 days of exposure.

Household size, language spoken at home and household secondary attack rate

A total of 13 separate households were identified in the cluster (one case was living alone and was not classified as a household in this study). The median household size was four (IQR 3.5-6). The overall household secondary attack rate for the cluster was 86.5% and 9 out of 13 of the households had a 100% secondary attack rate (Table 6). Household C is notable as being the only one with a 0% secondary attack rate, the only variable of interest identified from the case information is that the primary case for the household was a child under 12 [14]. The secondary attack rate for household with five or more people (AR: 97.1%)

was higher than for household size less than five (AR:64.5%). The risk of infection for a household with 5 or more people was 1.5 times higher than a household with less than five (95% CI: 1.05-2.14, *P: 0*.003) (Table 7).

Those households who reported speaking a language other than English had a secondary attack rate of 86.5% while for those households where English was the primary language it was 83.3%. There was no statistically significant increase in risk for those who spoke a language other than English [RR 1.04 (95% CI 0.72-1.52, *P: 0*.99)] (Table 8).

Table 6. Secondary attack rate in all households*

Household	Household contacts*	No of cases**	Attack rate***
A	2	1	50.0%
B	3	3	100%
C	3	0	0%
D	6	6	100%
E	4	4	100%
F	3	3	100%
G	1	1	100%
H	4	4	100%
I	2	1	50.0%
J	4	4	100%
K	3	2	100%
L	9	8	90.0%
M	8	8	100%
Total	**52**	**45**	86.5%

Table 7. Secondary attack rate by number of household contacts*

Household	Household contacts*	No of cases**	Attack rate
Less than five			
G	1	1	100%
A	2	1	50.0%
I	2	1	50.0%
B	3	3	100%
C	3	0	0%
F	3	3	100%
K	3	2	100%
Total	**17**	**11**	**64.7%**
Five or more			
E	4	4	100%
H	4	4	100%
J	4	4	100%
D	6	6	100%
M	8	8	100%
L	9	8	90.0%
Total	**35**	**34**	**97.1%**

Table 8. Secondary attack rate by primary language in household*

Household	Household contacts*	No of cases**	Attack rate
Primary language other than English			
A	2	1	50.0%
B	3	3	100%
C	3	0	0%
D	6	6	100%
E	4	4	100%
G	1	1	100%
H	4	4	100%
I	2	1	50.0%
J	4	4	100%
L	9	8	90.0%
M	8	8	100%
Total	**46**	**40**	**87.0%**
English primary language			
F	3	3	100%
K	3	2	100%
Total	**6**	**5**	**83.3%**

** number of people living in a household at the time of outbreak excluding the primary case (e.g. household A's total size is 3 and Household E's is 5 if the primary cases are included)*

*** household primary case has been deducted from the number of cases for the purposes of calculating secondary attack rate.*

Uptake of quarantine/ isolation facilities and social and emotional wellbeing support

Within this cohort the option of managed quarantine/ isolation facilities was not utilised, however, social and emotional wellbeing referrals were in place for 10 out of the 13 households. Concerns reported in the referrals included mental health (pre-existing conditions as well as stress and anxiety about meeting caring responsibilities in isolation), financial concerns, access to food and other necessities and suitability of housing to isolation (e.g. ability to separate from non-confirmed cases, a large number of people including children in a small house).

Discussion

This analysis describes an outbreak investigation centred on an indoor sporting stadium at the beginning of the ACT's COVID-19 Delta variant outbreak. Within the cluster, eight cases were identified as being present at the stadium, while six reported onset dates within 48 hours of attendance. Given the social and family links across the stadium cases it is plausible that they may have acquired their infections through an earlier common exposure and little transmission occurred at the stadium. The median age of the cases was 20 years old and the social mobility of the younger demographic in the cluster might have affected the transmission of the virus.

This study has some limitations, the attack rate at the stadium was not calculated as complete data on attendance was not available. There were inter-related clusters that were not included in the scope of this study due to time and analysis limitations. Language spoken at home was used as a proxy for ethnicity with respect to privacy and possible misrepresentation of information.

This study showed that speaking a language other than English at home was not a risk factor, while residing in a household of five or more significantly increased the risk of transmission. Household transmission of SARS-CoV-2 is an important contributor to the spread of outbreaks, and assessing the risk of transmission within a household is a necessary component of control and prevention planning and strategy [6, 15]. In this outbreak, cases were advised to isolate for 14 days from diagnosis date. This does not mean that all cases were in isolation for 14 days as some cases had been notified days after the symptom onset date or at least one day after the specimen collection date. Isolation at the time was described as a case remaining in a room or section of the house that was not used by others, not having face to face interaction with other members of a household, preferably having access to their own bathroom, and wear a mask when common facilities in the house were used. The cases were also advised to wipe down high use surfaces with disinfectant after use. The option was available for accommodation at a managed quarantine/isolation facility if cases were concerned with ability to safely quarantine or isolate in their household. While some of the cases expressed concern about suitability of their residence for isolation, none opted to use the managed facilities.

Social and emotional wellbeing referrals were also in place where cases expressed concerns about isolating because of factors such as mental health or food security. Translation services were made available and community liaison officers were engaged to

assist in communication and outreach, such as situations whereby there were concerns that information may be limited by cultural nuance, for instance whereby information on medical background or relationships may not always be spoken of openly.

This analysis is in line with research indicating the mixed success of self-isolation in breaking transmission chains in communities with larger household sizes [6, 15], and raises the question of how quarantine and isolation strategies can be adapted for large households or extended family situations. It is also important to understand the definition and meaning of home, house and family members across different cultures[16]. Whilst there are increasing reports of measures to reduce overcrowding [17] and decrease the risk of transmission, such as the use of temporary accommodation and more family friendly quarantine and isolation facilities [18], there is as yet little information available on the success of these in reducing transmission. However, recent work has looked at issues surrounding the options of accommodation to prevent transmission in households, including who would likely accept and benefit, and the timing of such interventions [19]. They suggest that accommodation to support self-isolation is likely to be an effective method to reduce within-household transmission, but concerns such as caring responsibilities and family connection (or separation) are likely obstacles in the uptake of such measures, which should be addressed in the design of such interventions [19]. In this study 10 out of 13 households were referred to social and emotional wellbeing services and stress and anxiety about meeting caring responsibilities was one of the concerns that people reported.

Conclusion

Whilst ethnicity can be an important marker in considering public health implications, the use of data on ethnicity must also examine where the health risk lies within the socio-economic factors, such as household size and/ or structure, outside of ethnicity in itself. Planning and response measures that support large households, including those with extended caring responsibilities, are important to managing transmission in communities where larger household size is common. Understanding socioeconomic and cultural factors that affect people's ability to isolate or quarantine, and their acceptance of managed facilities, are important to preventing household transmission. In this outbreak the provision of social and emotional wellbeing services is one example of how public health orders were supported, where caring responsibilities and food security might otherwise be a concern for a large household in meeting isolation compliance. Such factors cannot be addressed while overlooking the inequity that can result in misunderstanding and mistrust between public health bodies and minority groups. In this outbreak community liaisons and translation

services were used to assist public health officers in gathering and conveying accurate information as part of case investigations. Culturally appropriate methods of communication are important when there is no or little understanding of the culture of the affected communities. This can be achieved through prospective engagement with community leaders and providing appropriate training for case interviewers. How such cross-cultural strategies can be, or have been, further embedded in public health operations, for example through the training of interpreters in case investigation or inclusion of community groups in planning quarantine facilities or isolation strategies, are possible questions for further research.

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Chapter 4. Yorgum 8L Assessment Tool, Psychometric Validation and Information System Assessment Report

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Prologue

This study consists of a psychometric validation and information system evaluation conducted for Yorgum Healing Services in Western Australia. Yorgum have over 30 years of experience providing counselling and support services for their community. Based on this experience they developed an Aboriginal Worldview Model and associated tools to guide culturally safe service provision. The validation was initiated to provide evidence to support further implementation of the 8L Assessment Tool in the organisation.

Aboriginal and Torres Strait Islander Healing Centres operate across Australia, and provide services that blend cultural knowledge and western practices. Healing Centres address a range of community concerns stemming from colonial disruption including intergenerational trauma, suicide, rehabilitation, incarceration, child removal and family violence[1]. They provide a variety of services for individuals, families and communities that relate to direct, indirect and transgenerational trauma[2]. Developing an evidence base around Healing Centres, and the services they provide, will contribute to addressing intergenerational trauma.

The study was developed through a process of close consultation with Yorgum staff on the development of the study, including the staff survey and report. This involved regular meetings, informal communication and formal surveys and interviews with staff. The findings of the Report were presented to Yorgum through both the formal report and presentations with management and an all staff forum.

Study

Abstract

Background: Culturally informed healing and wellbeing services are one mechanism by which communities are addressing the intergenerational and contemporary traumas effecting their health and wellbeing. We aim to validate an instrument (the 8L Assessment Tool) developed by Yorgum Healing Services, an Aboriginal community controlled organisation, to measure wellbeing based on an Aboriginal worldview model.

Methods: Data from 89 clients was used to conduct a psychometric validation of the tool. Face validity, acceptability, internal consistency, construct validity and convergent and divergent validity was assessed. An evaluation of the tool as an information system was also undertaken looking at system attributes of simplicity, flexibility, data quality and acceptability.

Results: The study provided evidence that the 8L Assessment Tool was acceptable, reliable and valid. The internal consistency was within the recommended range and the exploratory factor analysis identified one construct, representing the Aboriginal worldview model. While there was no evidence of convergent validity found, the magnitude of the association was in the assumed direction. Further confirmatory validation is recommended with a larger sample size in the future.

Conclusion: The results of the validation analysis undertaken support that the 8L Assessment Tool is suitable for further implementation across the organisation.

Background

The detrimental impact of child welfare policies, and the protection system, on Aboriginal and Torres Strait Islander people has been well documented [1-3]. Most notably the National Inquiry into the Separation of Aboriginal and Torres Strait Islander Children from their families outlined the racially discriminatory policies that resulted in the forcible removal of between 10% to 30% of Aboriginal and Torres Strait Islander children between 1910-1970. The Inquiry highlighted the widespread and unresolved trauma (including intergenerational trauma) that occurred for individuals and families as a result of removal [2, 4]. For example, children living in households with members of the Stolen Generation were significantly more likely to have experienced higher levels of psychological distress in the last 12 months and have poor self-assessed health when compared with people who were not living in households with members of the Stolen Generation[5].

Aboriginal and Torres Strait Islander children continue to be over-represented in the child protection system. The Aboriginal and Torres Strait Islander Health Performance Framework reports that between 2009 and 2018 the rate of Indigenous children on care and protection orders grew from 34 to 62 per 1000 children, and for out-of-home care 35 to 54 per 1000 [6]. From July 2019 to June 2020 a total of 55,301 Indigenous Australian children were in contact with the child protection services [7]. Aboriginal and Torres Strait Islander people have continued to advocate for Aboriginal and Torres Strait Islander-led solutions to address child wellbeing and safety that emphasises the value of culturally connected child rearing that involves Aboriginal and Torres Strait Islander people and organisations involvement over the decisions that affect children [8].

About Yorgum

Yorgum Healing Services Aboriginal Corporation is an Aboriginal Community Controlled Organisation that provides a range of social and emotional wellbeing services to Aboriginal people, and families.

Yorgum Vision	***Yorgum Mission***
Aboriginal people, their families and communities are empowered and have the skills and supports to improve and maintain their social and emotional wellbeing.	*Provide all Aboriginal people and their families with a wide range of culturally secure, community based healing services that utilise a trauma-informed approach to positively impact their social and emotional wellbeing.*

Yorgum Vison and Mission[9]

Yorgum services operate across all areas of Western Australia, with the exception of the Kimberly, with a head office based in Perth. They deliver a wide range of community based healing services including Link Up, Intensive Family Services, Family Support Services, Child Sexual Abuse Support and Witnessing Violence, and Disability Counselling [9]. In the period of 2020 and 2021 Yorgum's Indigenous Healing Service supported more than 200 clients including children, young people and families affected by sexual abuse or violence, families with children at risk of being taken into out-of-home-care and people living with a disability [9].

The Yorgum Aboriginal Worldview Model and the 8L Assessment Tool

The Yorgum Aboriginal Family Worldview Model (the Model) is an Aboriginal-designed service model to formalise Yorgum's way of working to support Aboriginal families and individuals to achieve culturally relevant outcomes. These outcomes are defined in the model as Strong Spirit, Strong Families, Strong Community and Strong Culture. Elements of the Model include Practice Frameworks (trauma informed therapeutic services and client centred services), Aboriginal Family Worldview (8 L's) and Case Management.[10]

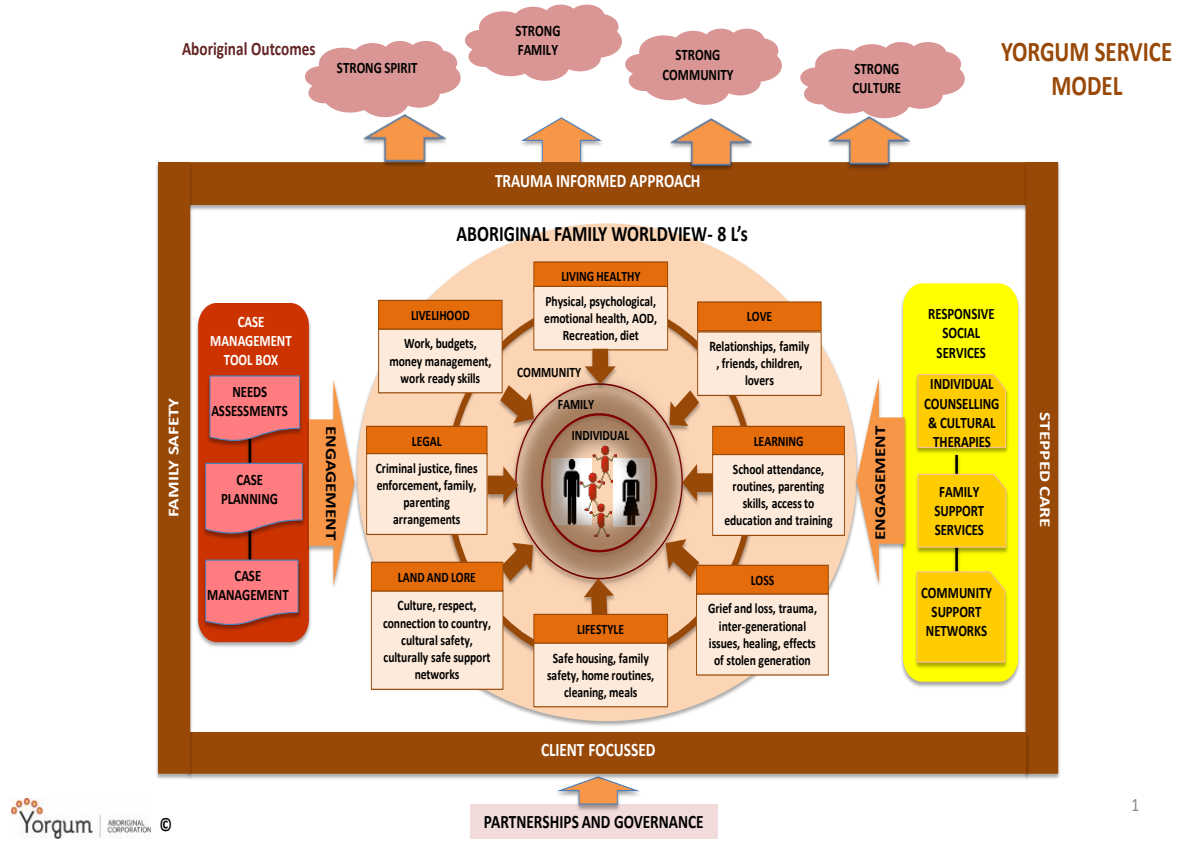

Figure 6. Yorgum Aboriginal Worldview Model

About the 8L Assessment Tool

The 8L's (Appendix A) describe eight important domains impacting on family life. They are an adaption from a drug and alcohol counselling tool, Roizen's Four L's Model (Liver, Lover, Livelihood, and Law)[11] and the Mental Health Commission's Making Sense and Supporting Change[10]. The Yorgum 8L's are defined as:

1. Living Healthy: physical, psychological, emotional health, alcohol and other drugs, recreation and diet
2. Love: relationships, family, friends, children and lovers
3. Learning: school attendance, routines, parenting skills, access to education and training
4. Loss: grief and loss, trauma, intergenerational trauma, healing and effects of stolen generation
5. Lifestyle: safe housing, family safety, home routines, cleaning and meals
6. Land and Lore culture: respect, connection to country, cultural safety and culturally safe networks
7. Legal: criminal justice, fines, enforcement, family and parenting arrangements
8. Livelihood: work, budgets, money management and work ready skills

The 8L Assessment Tool is designed to assess needs for case-planning and for monitoring of client progress and outcomes.

Implementing the 8L Assessment Tool

With a counsellor or case worker, the client is asked to rate their situation on a scale of 1-10, 1 being the least desirable, and 10 being the most desirable. Individual 'L' support plans are then developed and put in place for the domain/s that the client has identified as needing work, for example living healthy or lifestyle, with a template provided for goals, actions, time frames and indicators to improve that domain. An annual client record is created that maps the clients progress across the Ls over a 12-month period at quarterly periods (ie 3, 6, 9 and 12 months). The information is designed for use in a continuous process of discussion and feedback with the client on their progress. The 8L data is compiled and collated to inform and support Yorgum's work more broadly.

Information on the practice framework is disseminated in several ways. The onboarding processes for new counsellors or case workers has been updated to include a meeting with the Aboriginal Cultural Adviser to discuss the Yorgum Aboriginal Family Worldview model, the tool and its application. The Model documentation (guides and tools) are kept in a

shared file that contains information for staff on policies and processes and is designed to be easily downloaded and printed by counsellors and case workers to take with them when they see the client.

Initially the data collected from the client had been recorded by the case workers using excel spreadsheets, and collated centrally by the Aboriginal Cultural Adviser. The tool and rating scale have now been uploaded as a pro-forma onto Yorgum's Case Management Software[2], allowing the case notes and scaling to be entered directly by the counsellor or case worker, and data reports to be generated by the system.

The data collected using the 8L Assessment Tool is primarily designed to be used at the client and case manager level as a basis of discussion, and to review and monitor client progress. At an organisational level it is anticipated that the data will be a tool to assist Yorgum to understand the needs of the communities with whom they work by identifying new trends. This information would be used as evidence for discussions with government and other stakeholders on the work of Yorgum, and areas of demand.

The 8L Assessment Tool was developed with potential funding from the Western Australian Government for Aboriginal Community Controlled Services working with services preventing the removal of children into the state care system. It is currently being used across only some of its service arms including the Intensive Family Service, Family Support Services and Disability Team. It is envisaged that if the tool is valid, it will be used across all service arms. To progress implementation Yorgum wish to assess the psychometric validity and reliability of the 8L Assessment Tool, to ensure its utility across all of its case managed services.

Research Aim and Question

This study assessed the utility of the 8L Assessment Tool and its attributes as the basis of a social and emotional wellbeing monitoring system for Yorgum Healing Service. The research questions were (1) 'is the 8L a valid and reliable and valid measure of wellbeing according to the Yorgum Worldview Model?', and (2) 'how can the system be improved?'.

[2] Penelope by Social Solutions

Methods

1. Psychometric Validation Study

Psychometric validation methods were used to evaluate the reliability and validity of the Yorgum 8L Assessment Tool. De-identified data from 89 Yorgum clients who had completed the 8L Assessment Tool between January 2020 and June 2022 was analysed using Stata 16.0 [12]. Client data was collected and entered by Yorgum counsellors and case workers and collated by the Aboriginal Cultural Adviser.

A descriptive analysis was undertaken to characterise the client population in terms of gender, age, location, education and training status, income source and known mental and physical health conditions. The 8L score categories were included in the demographic analysis.

An overview of the 8L items and a summary of missing data was included to assess acceptability, with missing data of <10% considered desirable[13].

Face validity was evaluated in the survey of the Yorgum counsellors and case workers who were asked for each of the individual 8L Assessment Tool items; 'is the category phrased in a way that is easily understood and appropriately responded to by my clients?' (Q8.1-8.8, Appendix B). Options for response were 'Agree', 'Neither Agree or Disagree', 'Disagree' or 'I don't know'.

Cronbach's Alpha was conducted to assess internal reliability, with an acceptable range of good internal consistency being a score between 0.7-0.9[14]. Construct validity was assessed using an Exploratory Factor Analysis (EFA) and Scree Plot, with factor loadings of 0.40 and above retained as a having a good fit[15].

Convergent and divergent validity were tested using a total 8L score, Pearson's chi-squared test and binomial regression to assess associations with concepts thought to be related (Child Protection and Family Services (CPFS) involvement, Health Conditions), and one not thought to be conceptually related (month data recorded) (Table 4). Prevalence ratios were reported as the outcomes were common. A sensitivity analysis using linear regressions was also conducted due to the small sample size.

2. Evaluation of System Attributes

An evaluation study was conducted to assess the 8L Assessment Tool as a social and emotional wellbeing monitoring system for Yorgum. This study specifically focused on the

assessment of simplicity, flexibility, data quality and acceptability attributes of the system [16].

Sixteen case workers were invited by the Aboriginal Cultural Adviser to participate in an online survey on the 8L Assessment Tool (Appendix B) developed using the REDcap [17, 18] with a link distributed to the case workers. The survey questions were developed by the study team, in consultation with senior representatives of Yorgum. Consent was by completion of the survey and responses were anonymous.

Yorgum leadership were also engaged in the process of providing information through ad hoc meetings and conversations, and provision of documentation. A scripted interview was conducted with the General Manager, Corporate and Executive Services Manager and the Aboriginal Cultural Adviser, with the questions (Appendix C) informed by the Centre for Disease Control (CDC) Overview of Evaluating an Information System [16].

Measurements

Total 8L Scores were summed with mean imputation used for participants with incomplete data (ie some cells of NA or 0). Six participants with no 8L item data (ie a total 8L score of 0) were removed from the analysis. The 8L possible score range is from 8-80, with *low-moderate* designated 8-43 and *high-very high* 44-80 in this study.

A convergent and divergent validity was used to assess construct validity. The month that the data was recorded was included for the divergent analysis. Outcome variables used for the convergent analysis included number of reasons for referral, CPFS involvement, physical and mental health conditions. For the '*number of reasons for referral'* categories applied are '*none identified', 'one identified'* and *'multiple identified'*. For the CPFS involvement categories of '*no'* and '*yes'* is used. '*Known physical and mental health conditions'* are categorised into '*none identified'* or '*one or more conditions'. 'Month recorded'* is categorised into '*recorded January-June'* and '*recorded June-July'.*

Results

Clients' Demographics

The majority (80.90%) of the client group were female, with less than 2 in 10 (19.10%) male. The group was predominantly aged in the 25-44 year age group (43.80%), with 22.47% aged between 15 and 24 years, 21.35% made up the 45 and over group and 7.87% were

aged under 15. Close to two-thirds (65.17%) lived in a metropolitan area, 21.35% in a regional and 11.24% in a remote area. Locations for 2.25% of participants were unknown.

Most (74.16%) were participating in some form of study or training. Over half (58.43%) reported Centrelink as their income source, while 17.98% were receiving income through employment and 23.60% had other or unknown income source. Over two-thirds of participants (70.79%) had no recorded physical or mental health conditions, while 15.73% had one known condition, and 13.48% participants had multiple conditions recorded.

8L Assessment Tool Score

Overall, the 8L total score range was 8-76, from a possible 8-80, with a mean score of 42.22. Just over half (51.69%) of the Yorgum clients included in the study were classified as having a low-moderate 8L score (<43), with 48.31% in the high-very high group (<44).

Table 9. Yorgum client demographics

		8L score category		
	Total	**Low-Mod (8-43)**	**High-V.High (44-76)**	**Total 8L Score**
	n (%)	**n (%)**	**n (%)**	**Mean (Std Dev)**
Sex				
Female	72 (80.90)	37 (51.39)	35 (48.61)	41.64 (14.81)
Male	17 (19.10)	9 (52.94)	8 (47.06)	44.65 (16.89)
Age group (years)				
Under 15	7 (7.87)	4 (57.14)	3 (42.86)	44.04 (8.05)
15-24	20 (22.47)	12 (60.00)	8 (40.00)	40.68 (18.69)
25-44	43 (43.81)	22 (51.16)	21 (48.84)	41.24 (15.87)
45+	19 (21.35)	8 (42.11)	11 (57.89)	45.38 (11.47)
Location				
Metro	58 (65.17)	28 (48.28)	30 (51.72)	42.95 (12.97)
Regional	19 (21.35)	10 (52.63)	9 (47.73)	44.19 (12.01)
Remote	10 (11.24)	8 (80.00)	2 (20.00)	31.20 (26.22)
Unknown	*2 (2.25)*	0 (0.00)	*2 (100.00)*	*57.50 (10.61)*
Current Education & Training				
Study or Training	66 (74.16)	36 (54.55)	30 (45.45)	40.51 (15.26)
Not Applicable	23 (25.84)	10 (43.48)	13 (56.52)	47.11 (14.13)
Income				
Employment	16 (17.98)	7 (43.75)	9 (56.25)	46.57 (10.11)
Centrelink	52 (58.43)	28 (53.85)	24 (46.15)	40.67 (17.31)
Other or Unknown	21 (23.60)	11 (52.38)	10 (47.62)	42.74 (12.28)

Mental and Physical Health Conditions				
None Identified or Unknown	63 (70.79)	35 (55.56)	28 (44.44)	40.47 (15.14)
Condition/s identified	26 (29.21)	11 (42.31)	15 (57.69)	46.47 (14.69)
CPFS Involvement^				
Yes	46 (51.69)	19 (41.30)	27 (58.70)	38.73 (17.32)
No	43 (48.31)	27 (62.79)	16 (37.21)	45.48 (12.16)
Total				
	89 (100)	46 (51.69)	43 (48.31)	42.22 (15.18)

8L Categories Face Validity

For each of the 8L categories, case workers were asked is 'the category phrased in a way that is easily understood and appropriately responded to by clients'. Response options were 'agree', 'neither agree or disagree', 'disagree', and 'I don't know'. For most of the 8L categories, 11 of the 13 respondents (86.42%) agreed that the statements were phrased in a way that was easily understood. Exceptions were item 6L 'Land and Lore', where 9 out of 13 (69.23%) were in agreement, and item 8L 'Livelihood' where 10 out of 13 (76.92%) were in agreement (Table 10).

Table 10. Face validity assessment of 8L Assessment Tool (n=13)

The following category is phrased in a way that is easily understood and appropriately responded to by my clients?	Agree % (n)	Neither Agree or Disagree % (n)	Disagree % (n)	I don't know % (n)
1L "Living Healthy - physical psychological, emotional health, AOD, recreation and diet"	86.42 (11)	15.38 (2)	0	0
2L "Love - relationships, family, friends, children and lovers"	86.42 (11)	15.38 (2)	0	0
3L "Learning - school attendance, routines, parenting skills, access to education and training"	86.42 (11)	15.38 (2)	0	0
4L "Loss - Grief and loss, trauma, intergenerational trauma, healing and effects of stolen generation"	86.42 (11)	15.38 (2)	0	0
5L "Lifestyle - safe housing, family safety, home routines, cleaning and meals"	86.42 (11)	15.38 (2)	0	0
6L "Land and Lore - culture, respect, connection to country, cultural safety and culturally safe networks"	69.23 (9)	23.08 (3)	0	7.69 (1)
7L "Legal - criminal justice, fines, enforcement, family and parenting arrangements"	86.42 (11)	15.38 (2)	0	0
8L "Livelihood - work, budgets, money management and work ready skills"	76.92 (10)	15.38 (2)	0	7.69 (1)

Missing data for individual 8L Assessment Tool Items

Responses recorded as 0 (Nil) and NA are defined as being missing data, category 6 *Land and Lore* was the only item that had more than 10% of the data missing (13.48%) (Table 11).

Table 11. Missing data for individual 8L Assessment Tool Items (n=89)

8L Missing Items	Nil	*NA*	Total %
1. Living Healthy	0	0	0
2. Love	0	0	0
3. Learning	2	1	3.37
4. Loss	0	3	3.37
5. Lifestyle	0	0	0
6. Land and Lore	2	10	13.48
7. Legal	3	5	8.99
8. Livelihood	0	1	1.12

8L Assessment Tool Items' Range, Mode and Mean

Most of the 8L Assessment Tool items had both a mode and a mean of 5, with three exceptions. *L4 Loss* had a mode of 1 and a mean of 3.71 (std dev (2.17), *L5 Lifestyle* had a mode of 5 but recorded the highest mean of 6.13 (std dev 2.74) and *L7 Legal* had a mode of 10 with a mean of 5.67 (std dev 3.16) (Table 12).

Table 12. 8L Assessment Tool Items' range, mode and mean

Variable	Obs	Min	Max	Mode	Mean	Std. Dev.
L1 Health	89	1	10	5	5.10	2.53
L2 Love	89	1	10	5	5.54	2.58
L3 Learning	86	1	10	5	5.55	2.74
L4 Loss	86	1	10	1	3.71	2.17
L5 Lifestyle	89	1	10	5	6.13	2.75
L6 Land Lore	77	1	10	5	5.24	2.94
L7 Legal	81	1	10	10	5.67	3.16
L8 Livelihood	88	1	10	5	5.47	2.85

Internal Consistency

Cronbrach's alpha indicated excellent internal consistency between the items making up the 8L Assessment Tool (α=0.86).

Construct Validity

The exploratory factor analysis results were consistent with a unidimensional construct (1 factor), with all factor loadings >0.4[15] (Table 13, Figure 7). There is also a clear demarcation (Figure 7) after factor number 1 in the scree plot, with subsequent factors not reaching the threshold of 1 eigenvalue.

Table 13. Exploratory factor analysis

Variable	Component 1
1. Living Healthy	0.7779
2. Love	0.7241
3. Learning	0.7305
4. Loss	0.5724
5. Lifestyle	0.6696
6. Land and Lore	0.6769
7. Legal	0.6035
8. Livelihood	0.5931

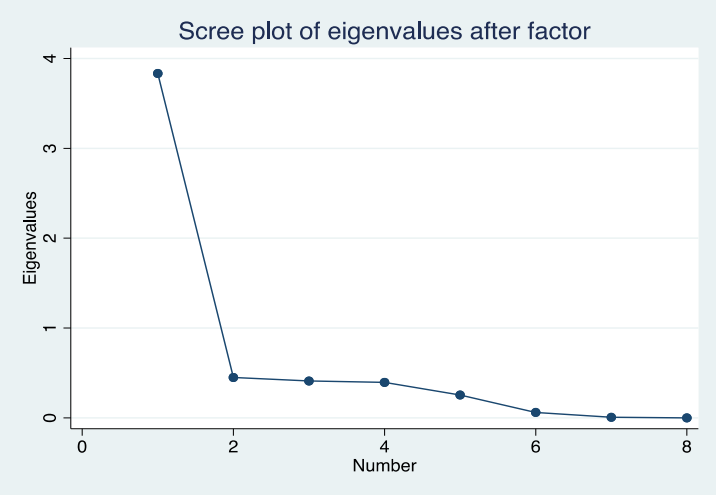

Figure 7. Scree Plot

Convergent Validity

The majority of clients (60.67%) had multiple reasons for referral noted, 30.34% had one reason for referral and 8.99% had no identified referral reason. There was no significant association between the number of reasons for referral and an outcome of a high-very high 8l score category. Prevalence ratio for those who had one identified reason for referral was 1.47 (0.97-2.26) and for those with none was 0.88 (CI 0.34-2.27) (Table 6).

Just under half of the group (48.31%) had no current involvement with the CPFS recorded. For those with CPFS exposure the relationship to high-very high 8L score PR 0.63 (0.40-

1.00) while not significant the association between exposure to CPFS and the likelihood of having a high-very high 8L Score was in the assumed direction (Table 14).

Over two-thirds of the clients (70.79%) had no known physical or mental health conditions, for those with a known condition/s there was no significant association with 8L high-very high score outcome PR 1.30 (0.84-1.99) (Table 14).

A sensitivity analysis was conducted using a linear regression models using the total 8L score. There were no material difference between each exposure outcome association across each model except for CPFS involvement and Total 8L score (-6.76, CI-13.03- -0.48), P-value = 0.04.

Divergent Validity

The majority of client data (64.04%) was recorded in the first six months of the calendar year, January-June. The prevalence of clients in the high-very high category for this period was not significantly different to those with data recorded in July-December PR1.28 (95% CI 0.84-1.96) (Table 14).

Table 14. Convergent and divergent associations

Convergent Associations	**n(%)**	**n(%)**		
No of reasons for referral	**Low-Mod**	**High-V. High**	**PR (CI)**	**P-value**
None Identified	5 (62.50)	3 (37.50)	.88 (0.34-2.27)	0.182
One Identified	10 (37.04)	17 (62.96)	1.47 (.97-2.26)	
Multiple	31 (57.41)	23 (42.59)	1 (base)	
CPFS Involvement^	**Low-Mod**	**High-V.High**	**PR(CI)**	**P-value**
No	19 (41.30)	27 (58.70)	1 (base)	0.43
Yes	27 (62.79)	16 (47.21)	0.63 (0.40-1.00)	
Health Conditions	**Low-Mod**	**High-V.High**	**PR(CI)**	**P-value**
None Ident	35 (55.56)	28 (44.44)	1 (base)	0.255
One or more condition	11 (42.31)	15 (57.69)	1.30 (0.84-1.99)	
Divergent Associations				
Month Data Recorded	**Low-Mod**	**High-V. High**	**PR (CI)**	**P-value**
Recorded Jan-June	32 (56.14)	25 (43.86)	1 (base)	0.262
Recorded Jul-Dec	14 (43.75)	18 (56.25)	1.28 (.84-1.96)	

Acceptability - Staff survey

Of the 13 responses that were received, 6 (46.15%) had used the tool often, 4 (37.55%) used it but not often, and 3 (23.08%) had not used it at all. Eight of the 13 (61.54%)

indicated that they had received instruction. Sources of instruction selected were colleague (3, 37.50%), supervisor (2, 25.00%), manager (1, 12.50%) and other (2, 25.00%). The Aboriginal Cultural Adviser and written guide were noted as the other sources.

The survey asked if 'I find the 8L Assessment Tool easy to use' and '…easy to explain to others'. All of the 10 staff who had used the tool agreed that they found the 8L Assessment Tool easy to use and explain to others. Responses in the 'ease of use' additional comments section noted that, 'the 8L's provide a conversation piece with your client' and 'helps the client identify with their culture'. On finding the tool easy to explain to others, comments included 'yes, I ask for three goals to work towards' and 'easy to reference to other things'.

On the question of 'Would you find additional training in the 8L Assessment Tool useful', 12 of 13 (92.31%) responded yes, and 1 selected no. With one response commenting that 'training always enhances learning'. Twelve of the 13 respondents (92.31%) agreed that they understood why the information from the 8L Assessment Tool is collected, with one response of neither agree or disagree. On the why of the information collected one commented 'vital whole picture of persons wellbeing' while another noted 'important to know the why, clarity re specific value would encourage use'.

Of the respondents who had used the tool 9 of the 10 (90%) agreed that they found the 8L Tool valuable to their work, while 1 'indicated they did not know'. Comments included that it 'provides achievable goals which the client wants to work towards' and 'as we work with Aboriginal people and this helps them to connect to culture and everyday life'.

Discussion

This study provides initial evidence on the acceptability, reliability, and validity of the 8L Assessment Tool as a social and emotional wellbeing assessment tool. The internal consistency and construct validity are supported by the results of the exploratory factor analysis and the Cronbach alpha score. While there was no evidence of convergent validity found, the sensitivity analysis conducted using a linear regression supported that for the CPFS involvement the association in the 8L score was in assumed direction of a decrease in the 8L score.

Based on the analysis of the 8L Item scores and missing data, the tool could benefit from refinement of the items L4 Loss, L6 Legal and L7 Land and Lore. Further consultation and testing on these items would ensure that they are consistent with the strengths based approach of the tool, and the client context. For instance, reflecting that you are doing well in

a context of loss is different than categories such as lifestyle, similarly land and lore may need to be interpreted differently for those who have experienced removal (including intergenerationally).

The responses of the case workers surveyed support the utility of the 8L Assessment Tool in that it helped guide conversations, goal setting and informed cultural relevance. The interviews with the leadership team indicate that positive steps are being taken to standardise procedures around use of the 8L Assessment Tool, such as incorporating the tool into onboarding processes and the case management software.

Strengths

The sample size of 79 takes into account the number of items (8) in the study. This was consistent with rules of thumb where the recommended ratio of number of people to the number of items for exploratory factor analysis should range from 5 with a minimum of 100 people (Gorsuch, 1983; cited in [19]) to 10 (Everitt, 1975; cited in [19]). These findings support that the work of Yorgum is contributing evidence on Aboriginal specific counselling tools, and culturally safe and relevant service contexts. The ease of use and relevance of the tool is supported by staff users and the data created by the tool can assist Yorgum to translate or map their work to state and territory policy agendas, such as the federal and state close the gap targets[20].

Limitations

There was a discrepancy in the scoring advice whereby 0 and 1 were both referred to as the bottom measurement of the 8L scale in separate sections. This caused some uncertainty around whether 0 was being entered by case workers as a ‘not applicable’ or as the lowest point in the scale. The limitation of the sample size to assess convergent and divergent validity has been touched on previously. The tool is not currently a whole of service tool, broader roll out across the organization would allow for a more comprehensive analysis of the tool and data in the future.

Conclusion

Culturally informed and relevant healing tools and practice, that operate within the context of individual, family and historical context, are important to addressing the effects of intergenerational trauma in Aboriginal and Torres Strait Islander communities[21, 22]. Evaluations such as this provide an important contribution to knowledge of what works and where improvements can be made. The results of the validation analysis undertaken in this

study support that the 8L Assessment Tool is suitable for further implementation across the organisation. It provides a method by which Yorgum can document and guide culturally secure client care, and track client progress. The data created by Yorgum through the 8L Assessment Tool will assist in illustrating the cultural context of their services for planning and reporting purposes. Planning for further evaluation on the tool once a larger sample has been generated, and client progress tracked, will help build an evidence base on culturally based tools and practice for Yorgum and other services operating in the field.

Recommendations

1. The 8L Assessment Tool has been psychometrically validated and is suitable for further implementation by Yorgum Healing Services.
2. Further implementation should be supported by a structured implementation process to engage and inform staff.
3. The findings of this report be presented to Managers and Case Workers who will be responsible for implementation.
4. That the concept the Yorgum 8L Assessment Name the concept the 8L Assessment Tool is measuring be given a name. Mooditj is a Noongar term that has been suggested.
5. The description and phrasing of 8L Items L4, L6 and L7 be reviewed and revised if needed.
6. Develop and implement a short training session for case managers on the 8L Assessment Tool to support understanding and uniformity.
7. Review 8L Assessment Tool materials to ensure all of the materials refer to the scale as being from 1 to 10.
8. Plan for further evaluation of the 8L Assessment Tool once a suitable amount of progress data has been collected from clients.
9. Yorgum share the findings of this study as evidence of culturally centred case management tools and practice.

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Appendix A– Yorgum 8 L's Assessment Tool

Client Name

Caseworker

Date

Yorgum ABORIGINAL CORPORATION

8 L's Assessment Tool

Living Healthy

Physical, Psychological, Emotional Health, AOD, Recreation and Diet

Needs Work ——— Great

Love

Relationships, Family, Friends, Children amd Lovers

Needs Work ——— Great

Learning

School Attendance, Routines, Parenting Skills, Access to Education and Training

Needs Work ——— Great

Loss

Grief and Loss, Trauma, Intergenerational Trauma, Healing and Effects of Stolen Generation

Needs Work ——— Great

Lifestyle

Safe Housing, Family Safety, Home Routines, Cleaning and Meals

Needs Work ——— Great

Land & Lore

Culture, Respect, Connection to Country, Cultural Safety and Culturally Safe Support Networks

Needs Work ——— Great

Legal

Criminal Justice, Fines, Enforcement, Family and Parenting Arrangements

Needs Work ——— Great

Livelihood

Work, Budgets, Money Management and Work Ready Skills

Needs Work ——— Great

Appendix B – Survey of Counsellors and Case Workers

Yorgum 8L Assessment Tool - Validation Survey

About This Survey.

The 8L Assessment Tool is part of the practice framework attached to the Yorgum Aboriginal Family Worldview Model. It is designed for use by caseworkers and counsellors to guide needs assessment, case-planning, and service responses. In an effort to ensure the quality and effectiveness of the tool Yorgum are working with the Mayi Kuwayu Study Team, at the Australian National University, to undertake a validation study. The aim of the study is to conduct a psychometric assessment of the tool that will consider simplicity, flexibility, data quality and acceptability.

As part of this study we are asking staff for feedback on the tool and its implementation, the survey is designed to take around 15 mins to complete. Responses are anonymous and will be collated and provided to the organisation as part of the Validity Study Report.

We ask that the survey be completed by cob Monday, 22 August.

By completing the survey you have given your consent to participate. If you have any problems accessing the survey please email leonie.williamson@anu.edu.au .

1	Do you use the 8L Assessment Tool often in your role?	◯ Yes, I use it often ◯ Somewhat, I have used it but not often ◯ No, I have not used the tool ◯ Not applicable
2	Did you receive instruction on using the 8L Assessment Tool?	◯ Yes ◯ No ◯ Not applicable
	If Yes, who provided the instruction?	◯ Colleague ◯ Supervisor ◯ Manager ◯ Other
	If you selected other please specify:	_____
3	I find the 8L Assessment Tool easy to use?	◯ Agree ◯ Neither Agree or Disagree ◯ Disagree ◯ I don't know
	Additional Comments:	_____
4	I find the 8L Assessment Tool easy to explain to others?	◯ Agree ◯ Neither Agree or Disagree ◯ Disagree ◯ I don't know
	Additional comments:	_____
5	Would you find training in the 8L Assessment Tool useful?	◯ Yes ◯ No ◯ Not Applicable

Additional comments:

_____

6 I understand why the information from the 8L Assessment Tool is collected?

- ◯ Agree
- ◯ Neither Agree or Disagree
- ◯ Disagree
- ◯ I don't know

Additional comments:

_____

7 I find the 8L Assessment Tool valuable to my work?

- ◯ Agree
- ◯ Neither Agree or Disagree
- ◯ Disagree
- ◯ I don't know

Additional comments:

_____

8L Assessment Tool Categories

8 For each of the 8L Assessment Tool Categories please provide a rating of how appropriately the category is phrased for, and understood by your client.

8.1 Living Healthy - physical psychological, emotional health, AOD, recreation and diet

The Living Healthy category is phrased in a way that is easily understood and appropriately responded to by my clients?

- ◯ Agree
- ◯ Neither Agree or Disagree
- ◯ Disagree
- ◯ I don't know

Additional comments:

_____

8.2 Love - relationships, family, friends, children and lovers
The Love category is phrased in a way that is easily understood and appropriately responded to by my clients?

- ◯ Agree
- ◯ Neither Agree or Disagree
- ◯ Disagree
- ◯ I don't know

Additional comments:

_____

8.3 Learning - school attendance, routines, parenting skills, access to education and training

The Learning category is phrased in a way that is easily understood and appropriately responded to by my clients?

- ◯ Agree
- ◯ Neither Agree or Disagree
- ◯ Disagree
- ◯ I don't know

Additional comments:

_____

Further comments

9 Do you have anything further that you would like to add?

Appendix C – Interview Script

As part of the 8L Assessment Team we hope that you will be available to conduct a short group interview with us on the development and implementation of the 8L Assessment Tool. We will ask about the purpose of the 8L Assessment Tool and the resources used in its implementation and operation.

Hopefully the interview will only take 25-30minutes, at the start of the session I will ask for your permission to record the discussion. I have set out the proposed questions below for information.

Interview questions – Yorgum Leadership

1. Describe the importance of the 8L Assessment Tool to the work of Yorgum.

2. Describe the reason/ purpose behind collecting the data and how it is intended for use? Who manages and uses the data?

3. Describe the resources used to implement the Assessment Tool – ie paper or electronic resources, who manages the process, how is information about the tool distributed and the data collected and collated?

4. What has been the positive benefits of implementation of the Assessment Tool for the organisation so far?

5. Have there been any limitations in implementation of the Assessment Tool so far?

6. Is there anything further that you would like to add?

Chapter 5. Teaching Chapter

Introduction

Teaching and peer-to-peer learning are important to continued knowledge development and improvement in public health and epidemiology. The MAE includes two teaching and lesson design components relating to teaching field epidemiology; the first 'teaching to first year scholars' was a group assignment, the second 'Lessons from the field' was a peer-to-peer based session designed and delivered as individuals.

An adult learning session was provided by one of the MAE staff to guide the development of the sessions. In this session we were introduced to adult preferred learning behaviours and approaches, and lesson planning, including developing suitable learning outcomes. This included a tendency for adults to be self-reflective (lessons should be problem-centred), wanting to try things themselves (learning through experience) and adults as collaborative learners (co-creators of knowledge)[1, 2]. The components on lesson planning and the importance of alignment of learning outcomes, objectives, activities and assessment tasks were especially relevant to forming a cohesive session as a group[1, 3].

Teaching to First Year Scholars

Our teaching to first years lesson was developed as a group of four including Josh Montgomery, Kirsty Nicholls, Meg Dalmau and myself. The session was designed to apply strengths-based practices to a scenario working with Aboriginal communities during an COVID-19 outbreak. The group had a shared interest and experience working with Aboriginal communities and applying strengths-based approaches (part of the first block teaching program) to an outbreak management practices.

The session consisted of objectives, outcomes and overview of the session; and instructive components; whole of group exercises (art interpretation activity); and small group activities (case study). The whole of group exercise was a reflective activity where the participants were asked to explore experiences of health and wellbeing through depiction in art. This approach employed a different medium to engage participants on how cultural contexts and historical experiences shaped understandings of health and wellbeing. The small group activity (outbreak case study) was based on an actual scenario and encouraged participants to collaboratively problem solve through different elements of planning and response. The first year scholars had previously participated in a session discussing strengths based approaches as part of the course block, so the instructive slides were designed to reiterate and highlight key considerations to support informed participation in the activity, rather than an in-depth exploration.

To ensure the integrity of the session with the content of strengths based approaches we also incorporated acknowledgement of Traditional Owners, addressed the historical context of Aboriginal and Torres Strait Islander health, provided context for the use of terminology (ie referring to Aboriginal rather than Aboriginal and/ or Torres Strait Islander community) and acknowledged that the content may be sensitive and encouraged open and respectful discussion.

Project Processes

Project processes and tools established to develop the session as a group included setting up a schedule of regular meetings and creating a share point site to store presentation documents, readings, and meeting summaries. We developed a lesson plan and outline (Appendix A) and then divided the tasks and responsibilities. To support a cohesive lesson delivery, we assigned slides to presenters and created facilitators notes that included discussion and prompt points for the group exercises. The Presentation Slides (Appendix B) are attached.

My Role

My role in the group included scheduling meeting times and setting up an online collaboration space and contributing to the development of the principles and the group activities in the case study scenario. I also delivered the opening slides, assisted in the closing summation and facilitated one of the break out groups. Other key responsibilities included Kirsty Nicholls, who developed and delivered the 'Historical Context Reflective Exercise', Joshua Montgomery who developed and delivered the 'Outbreak Scenario' and Meg Dalmau who led the outbreak small group materials, evaluation and the scheduling of presentations for the day.

Evaluation

We used an online questionnaire developed using Qualtrics[4] to evaluate the session. There were three questions that assessed structure of the session, relevance of the content and participants' learning; and one question to collect suggestions for improving the session in future presentation(Table 15).

The evaluation was completed by 16 respondents. 87.50% of participants responded that all objective and outcomes were clearly met, with the remaining 12.50% rating most objectives as being met, rating the alignment of our session to the objective and outcomes highly. All respondents rated the content as relevant, with 81.25% rating the session as extremely relevant and 18.75% rating it very relevant. When asked what they found valuable,

responses included the ‘application of theory of strengths based approaches’, ‘I appreciated using a scenario to think about these concept, it was really helpful to solidify some of the learnings we’ve done…’ and ‘real examples of difficult scenarios’. In response to the question about suggestions for improving the session, participants suggested ‘more interaction through quizzes and games’, ‘perhaps some more lessons from the field in this context’ and ‘approach the issue from a variety of perspectives ranging from cultural to legal and other medical obstacles below’.

Table 15. Evaluation Summary Applying a strengths-based approach to an outbreak response in an Aboriginal community.

Q1. How well did the session meet the stated objectives and outcomes?	
All objectives and outcomes clearly met	14
Most objectives and outcomes clearly met	2
Some objectives and outcomes met	0
Objectives and outcomes not met	0
Total	**16**
Q2 How relevant was the content to your learning?	
Extremely relevant	13
Very relevant	3
Moderately relevant	0
Slightly relevant	0
Not relevant	0
Total	**16**

Q3 What was your most valuable takeaway/ learning from the session?	
Cultural adaption strategies in an outbreak response	Contextual application around OB response for culturally appropriate consideration
Application of the theory of strengths-based approaches – the how to	Value culture, cooperation, understanding the context
How to optimise a community-led response during an outbreak situation.	Great discussion, listening, learning, reflecting.
Making decisions based on what is needed on the ground. Working with the community rather that for the community.	I appreciated using a scenario to think about these concepts, it was really helpful to solidify some of the learnings we’ve done.
Strengths based approach application.	Real examples of difficult scenarios and how to manage them.
To be actually culturally appropriate.	Very useful. Great job everyone.
How applying a strength-based approach would actually work in practice in an outbreak response.	Strengths of community and focussing on outcomes from outbreak response that are meaningful to community.
Self-determination is important.	

Q4. What could have improved your learning or engagement with this session?	
More interaction through quizzes and games.	A little more life experience. Nothing you guys can improve on.
Nothing – it was brilliant, thank you.	Approach the issue from a variety of perspectives ranging from cultural to legal and other medical obstacles.
Perhaps some more ‘lessons from the field’ in this context.	Well run session.

Overall the feedback was positive with no standout areas for revision, the feedback indicated the application of strengths based principles to a scenario style setting was valuable. One area that I would consider developing further based on feedback is 'more lessons from the field in this context' and maybe including some short testimonials or learnings from colleagues who had worked in related settings.

Lessons From the Field

For my lessons from the field I introduced NodeXL[5], a tool for social network diagrams that can be used in outbreak investigations and reports. There were two main reasons that I selected this topic for my Lesson From the Field session. Firstly, I used this tool for my outbreak report and found it very useful. I also had been asked about it by other MAEs which showed there is a perceived need for learning this tool.

In designing the session, I focused on a simple problem-centred exercise, that was hands on (learning through experience) and had both self-directed and collaborative elements. This approach was in line with the adult learning characteristics that had been introduced in our Adult Learning session[1, 2]. I had developed a pre-brief for the session and a dummy data set and sent it to all participant a week before the session (Appendix C). The pre-brief included the session outline and pre-session exercise. The pre-session exercise was designed as a learn at your own pace, with I providing a dummy data set and links to the freely available software and instructional videos (Appendix C). In the brief participants were asked to design their own basic diagram using the data set provided, with the option of using their own data if preferred, and bring it to the session to discuss.

In an online session I provided a short presentation on overview of node and network diagrams, the basic functions of NodeXL and the diagram that I had developed for my outbreak (Appendix D). Participants were then invited to share the diagrams they had developed and discuss the limitations and benefits of the networking tool.

Group Discussion

Those who had diagrams to share provided useful comparison and discussion points on the different information that the diagrams could convey depending upon your outbreak and visual styles. One participant who shared their diagram during the session mentioned they found it quite simple to use and useful in their field work. Information they displayed with their diagram included sex, age and vaccination status. Another participant displayed the NodeXL diagram they had developed for their own outbreak report and conference

presentation, that was shaped to emphasise tier of transmission (ie primary, secondary). They also noted that they taught themselves how to use the program using a template that I had provided that already had some data contained and demonstrated where to input information, rather than the videos.

Feedback and Reflections

Participants' feedback showed that the session was helpful and provided information and skills that they can use in the field. It was mentioned that it would have been helpful if they had learnt this tool prior to placement in an outbreak investigation, especially when working with large and rapid outbreaks data (such as the latter variants of COVID-19). During the session one of the participants asked about the capacity of the tool to display time series data. As the session was an introductory session. While we did not have time to explore this it indicates that a list of some of the more complex capacities of NodeXL would be a useful addition to the session.There were limitations on participants' ability to develop the diagram prior the session. The restricted permissions on government computers and time available were the main reasons given. In anticipating this it would be useful to incorporate more instruction time on NodeXL, or the demonstration video as part of the session. One participant did contact me after and informed me that they had downloaded NodeXL and tried to develop a diagram after the session, indicating that participants continued to use the tool and information post-session. References to published epidemiological articles using node and network diagrams were also provided in the participant information pack and participants were encouraged to used them should they wish to learn more about the application of such diagrams in epidemiological studies.

Appendix A - Teaching to First Years: Running Sheet

Session Running Sheet: Applying a Strengths Based Approach to an Outbreak Response in An Aboriginal Community	
Lesson Objective: Apply strengths bases principles to an outbreak response case study.	
Lesson Outcomes: 1. Understand Australia's shared history, and the impact of past policies and communicable disease on Aboriginal and Torres Strait Islander health and wellbeing. 2. Apply strength-based approaches to the outbreak response scenario, including community-led and partnership approaches. 3. Identify and understand key stakeholders, decision makers and protocols, and effective strategies for engagement. 4. Apply effective communication strategies to work at the cultural interface.	
Lesson Timings	
Acknowledgement of country, intro to session & speakers, objectives, and overview (3 slides)	5 mins
Historical context reflective exercise (6 slides)	20 mins
Intro to case study scenario (2 slides and instruction handout)	5 mins
Case study break out room for small group sessions (instruction handout)	10 mins
Group report back (1 slide and facilitator notes)	20 mins
Whole group discussion question (1 slide and facilitator notes)	5 mins
Wrap up of key take home messages (1 slide)	5 mins
Evaluation (Qualtrics link and survey)	5 mins
Lesson Materials • Power point presentation • Participant handout (Case Study – Outbreak Scenario) • Facilitator notes	

Appendix B - Teaching to First Years: Presentation Slides

APPLYING A STRENGTHS BASED APPROACH TO AN OUTBREAK RESPONSE IN AN ABORIGINAL COMMUNITY

COVID-19 CASE STUDY

PRESENTERS: JOSHUA MONTGOMERY, KIRSTY NICHOLS, LEONIE WILLIAMSON, AND MEG DALMAU

Australian National University

ACKNOWLEDGEMENT OF COUNTRY

We acknowledge the traditional owners on whose land we are all meeting today and pay our respect to elders past and present.

Objectives and Outcomes

Session objective

Apply strengths-based principles to an outbreak response case study.

Session outcomes

1. Understand Australia's shared history, and the impact of past policies and communicable disease on Aboriginal and Torres Strait Islander health and wellbeing.
2. Apply strength-based approaches to the outbreak response scenario, including community-led and partnership approaches.
3. Identify and understand key stakeholders, decision makers and protocols, and effective strategies for engagement.
4. Apply effective communication strategies to work at the cultural interface.

Lesson overview

1. Historical context and strength-based approaches (15 mins)
2. Case study, outbreak scenario (45mins)
   - Scenario overview and exercise intro: 5 mins
   - Breakout rooms to discuss questions: 10 mins
   - Group report back: 20 mins
3. Group discussion on future planning (5 mins)
4. Wrap up of key take home messages: (5 mins)
5. Evaluation (5 mins)

- ***Limitation – case study specific to an 'Aboriginal' community***
- ***Learning space = safe space – we appreciate that some of the content may be uncomfortable, we encourage people to share their ideas and engage in discussion openly and respectfully.***

What is happening here?

What might be the health effects of this?

What is happening here?

- Strong connection to country, kinship networks, and language
- Knowledge being handed down
- Traditional hunting and gathering
- Cultural practice
- Healing and science practices

What might be the health effects of this?

- Holistic health – SEWB, physically healthy, spiritual
- Strong identity and belonging
- Sustainable environment
- Gum disease
- Accident and injury

What is happening here?

What might be the health effects of this?

What is happening here?

- Destruction of and dislocation from land
- Introduction of disease, foreign animals, substances, foods
- Frontier wards, guerrilla war tactics

What might be the health effects of this?

- Communicable diseases
- Mortality
- Trauma

Policy Eras

1. Colonisation (1788 – 1880)
2. The White Australia Policy (1850s–1973)
3. Protection – Segregation (1890's – 1950's)
4. Assimilation (1950 – 1960)
5. Integration (1967 – 1972)
6. Self Determination (1972 – 1975)
7. Self-management (1975 – 1988)
8. Self-management 2 (1988 – 2004)
9. Shared Responsibility (2004 – 2014)
10. Indigenous Advancement Strategy (2014 – 2016)
11. Stronger futures policy (2016 – current)

Strengths Based Principles

- Does not mean problem deflating
- Recognises Aboriginal and Torres Strait Islander culture is a protective factor (cultural determinants)
- Operates with an awareness of historical and policy context
- Recognises the strengths of communities and embraces Indigenous leadership and decision making
- Holistic health and wellbeing viewpoint
- Avoids deficit language and approaches, i.e. dysfunction, normalising, vulnerable
- System isn't set up to support strengths based approaches, tends to be problem based

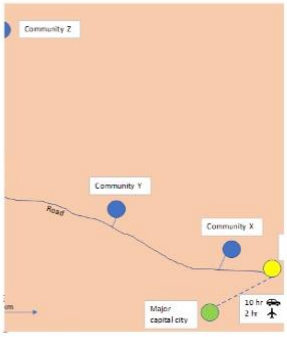
Outbreak Scenario (refer to handout)

There is a COVID-19 (omicron) outbreak in a remote Aboriginal community (Community X) with a population of ~180 people. To date, ~50 cases have been identified in Community X.

Considerations are underway to transport all cases via charter flights to the nearest major capital city to isolate in a managed facility.

There have recently been large gatherings in the regional township for two funerals. Cases have been linked back to these events, and cases from these events are believed to be the index cases in the Community X outbreak.

As a precaution, Communities Y and Z implemented a self-elected lockout – no one is allowed back into the community without 7 days of quarantine and adequate testing. This means ~50 people from Communities Y and Z are unable to return home and are currently sleeping rough in the regional township.



Outbreak Response (refer to handout)

You have been deployed to assist with the outbreak response. Considering the large number of cases and contacts, it does not appear that contact tracing will significantly contribute to disease control at this stage. Regular testing of everyone in Community X is already underway.

Your priority is to facilitate appropriate isolation of newly identified cases and quarantine of persons who are seeking to return to Communities Y and Z. There are multiple sites in the regional township that could be utilised for isolation and quarantine.

Instructions

- Please read the scenario. There are four questions to prompt discussion and reflection.
- Students will be grouped together to answer one of the four questions.
- Each group will have 10 minutes to discuss their question.
- Assign a note taker and spokesperson from each group.
- We will come back together as a larger group to share our reflections.

Questions

Group 1: Engagement	Who are your key stakeholders you need to engage with? What are your engagement strategies?
Group 2: Response	What considerations need to be made to ensure isolation and quarantine facilities are culturally and contextually appropriate?
Group 3: Communication	What elements do you need to consider for communication? Choose one target audience and develop a few key messages
Group 4: Evaluation	How will you learn from the response? How will the community be involved in the process even after the response has concluded?

Reflections

Group 1: Engagement	Who are your key stakeholders you need to engage with? What are your engagement strategies?
Group 2: Response	What considerations need to be made to ensure isolation and quarantine facilities are culturally and contextually appropriate?
Group 3: Communication	What elements do you need to consider for communication? Choose one target audience and develop a few key messages
Group 4: Evaluation	How will you learn from the response? How will the community be involved in the process even after the response has concluded?

Whole Group Discussion

What could be done prior to an outbreak occurring to enable a contextually appropriate response?

Summary

Strengths-based approaches	Deficit-based approaches
• **Does not mean problem deflating**	• Overuse of deficit language (i.e. risk, vulnerability or poor health behaviours in briefings or reports)
• **Identifying who (organisations or individuals) in community X can take a leadership role in decision making**	• No local representation or leadership in outbreak response team
• **Ensuring community X can make decisions where possible i.e. offering different options for quarantine/isolation**	• No consultation on decisions
• **Ensure constant communication (and feedback?) through all processes**	• No options provided throughout process
• **Be prepared to compromise – if community X are aware of the risks, ensure autonomy is granted to make decisions and be flexible on the outbreak management (i.e. people going to homeland centres)**	• No consultation on communication throughout (i.e. all in one language, in a format decided by outbreak team, without consultation)
• **Recognises culture/lore e.g. different family/kin structures, caring responsibilities, avoidance relationships**	• 'Removing' cases from community without any consultation
• **Are aware of cultural and historical context and bias (i.e. personnel are educated on or have experience in working with Aboriginal communities, thoughts to how actions and words can be misinterpreted)**	• Writing a report/undertaking an evaluation without asking for feedback
• **Respect privacy and dignity**	• Identifying people/cases, providing names or creating a narrative around how the cases spread – inadvertently assigning blame or shame
	• Publishing or releasing information on a community that can be misused or misrepresented against their interests without their consultation.

Appendix C - Lessons from the Field: Pre-Brief

Lessons from the Field: Introduction to NodeXL as a tool for developing node and network diagrams

This lesson will introduce participants to the NodeXL as a tool for developing node and network diagrams to visualise outbreaks data.

Learning outcome:

Upon successful completion, participants will have the knowledge and skills to use NodeXL to visualise outbreaks data.

Learning Objectives:

At the end of this session participants will be able to:

1) Discuss the importance of network visualisation in outbreak data presentation
2) Explain what NodeXl is and how to access and install it.
3) Use NodeXL to construct a basic outbreak diagram.
4) Discuss the limitations and advantages of NodeXL as a tool to visualise outbreak data.

Lesson Resources:

- NodeXL website, Social Media Research Foundation https://www.smrfoundation.org/nodexl/ .
- Youtube tutorial 'How to enter NodeXL Edge Lists and Begin Visualising Networks' https://www.youtube.com/watch?v=zEgrruOITHw&t=1s .
- Excel Data set 'Outbreak' (attachment).
- Examples of outbreak articles that use social network maps:

    1. Valencia, C; Bah, H; Fatoumata, B. *Network visualization for outbreak response: Mapping the Ebola Virus Disease (EVD) chains of transmission in N'Ze´re´kore´, Guinea*. The Journal of infection, 2016, Volume 74, Issue 3 http://dx.doi.org/10.1016/j.jinf.2016.09.012
    2. Wilkinson, K., Chen, X., & Shaw, S. (2021). Secondary attack rate of COVID-19 in household contacts in the Winnipeg Health Region, Canada. *Canadian journal of public health = Revue canadienne de sante publique*, *112*(1), 12–16. https://doi.org/10.17269/s41997-020-00451-x

Pre-session exercise - Build a node and network diagram using NodeXL

1) Download and Install NodeXL.
   - Go to https://nodexlgraphgallery.org/Pages/RegistrationBasic.aspx and register for NodeXL Basic, an email with the download link will be sent to you. You will need a Windows operating system and Microsoft Office, further information on installation can be found at https://www.smrfoundation.org/nodexl/installation/

2) Introductory tutorial.
   - There is lots of free information on the Social Media Research Foundation website and YouTube about how to use NodeXL. I found this video created by James Cook to be a simple and quick beginners guide: 'How to enter NodeXL Edge Lists and Begin Visualising Networks' https://www.youtube.com/watch?v=zEgrruOITHw&t=1s

3) Design your own diagram.
   - A line-list of a hypothetical 'outbreak' has been provided for you to use to create a diagram in NodeXL, you are also welcome to use your own data to develop the diagram if you have something suitable for use. Examples of how node and network diagrams have been used in outbreak studies are also available in the journal articles provided.
   - Please bring your completed diagram to the Lesson from the Field Session on the 18 May. Be prepared to discuss what information is conveyed in your diagram.

4) Reflection questions.
   a) Were visual diagrams used in your outbreak, and if yes how?
   b) What did you find useful about developing a diagram with NodeXL?
   c) What did you find limiting about using NodeXL to develop a diagram?

Dummy Data Set*

A	B	C	D	E	F	G	H	I	J	K	L
ID	Age at	Age categ	sex	Date of Quarantin	Onset Da	Collection	Notificatio	Source Case/ Cont	Exposure Locatio	Symptomatic	Vax
301	36		Female	14/7/20				6001	Household	NA	Y
302	23		Female	14/7/20				6001	Restaurant	NA	N
303	34		Female	15/7/20				6003	Household	NA	Y
304	15		Male	15/7/20				6003	Household	NA	N
305	32		Female	16/7/20				6007	Household	NA	N
306	8		Male	16/7/20				6007	Household	NA	N
307	45		Female	16/7/20				6002	Household	NA	Y
6001	21	16-29	Female		11/7/20	13/7/20	14/7/20	Unkown	Unkown	Y	N
6002	18	16-29	Female	13/7/20	12/7/20	14/7/20	15/7/20	6001	Restaurant	Y	N
6003	23	16-29	Male		11/7/20	14/7/20	15/7/20	6001	Restaurant	Y	N
6004	18	16-29	Male	13/7/20	11/7/20	14/7/20	15/7/20	6001	Restaurant	Y	N
6005	20	16-29	Female	13/7/20	13/7/20	14/7/20	16/7/20	6001	Restaurant	Y	N
6006	19	16-29	Female	16/7/20		16/7/20	17/7/20	6005	Household	N	N
6007	17	16-29	Male	15/7/20	11/7/20	15/7/20	15/7/20	6001	Restaurant	Y	N
6008	46	30+	Female	16/7/20	16/7/20	16/7/20	17/7/20	6005	Household	Y	N
6009	12	0-15	Male	16/7/20	15/7/20	16/7/20	17/7/20	6005	Household	Y	N
6010	20	16-29	Female	14/7/20	15/7/20	15/7/20	16/7/20	6004	Household	Y	N
6011	5	0-15	Male	14/7/20	15/7/20	15/7/20	16/7/20	6004	Household	Y	N
6012	14	0-15	Female	16/7/20	15/7/20	16/7/20	17/7/20	6005	Household	Y	N
6013	8	0-15	Male	16/7/20		16/7/20	17/7/20	6005	Household	N	N
6014	21	16-29	Female		16/7/20	15/7/20	16/7/20	6007	Household	Y	N
6015	20	16-29	Female		13/7/20	15/7/20	16/7/20	6007	Household	Y	N
6016	12	0-15	Female		16/7/20	16/7/20	17/7/20	6004	Household	Y	N
6017	35	30+	Female		13/7/20	16/7/20	17/7/20	6004	Household	Y	Y
6018	37	30+	Male		13/7/20	16/7/20	17/7/20	6003	Household	Y	Y
6019	2	0-15	Male			16/7/20	17/7/20	6002	Household	N	N
6020	15	0-15	Male	12/7/20	15/7/20	16/7/20	17/7/20	6002	Household	Y	N
6021	11	0-15	Female	16/7/20		16/7/20	17/7/20	6007	Household	N	N
6022	21	16-29	Male	16/7/21	13/7/20	17/7/20	18/7/20	6007	Household	Y	N
6023	17	16-29	Female			17/7/20	18/7/20	6007	Household	N	N
6024	48	30+	Female	13/7/20	16/7/20	16/7/20	16/7/20	6007	Household	Y	N

*provided in Excel for exercise

Appendix D - Lessons from the Field Presentation Slides

Lessons from the Field – NodeXL

1. Acknowledgement of Country
2. Introduction – why network visualisation
3. About NodeXL - basic functions
4. Diagram examples and discussion

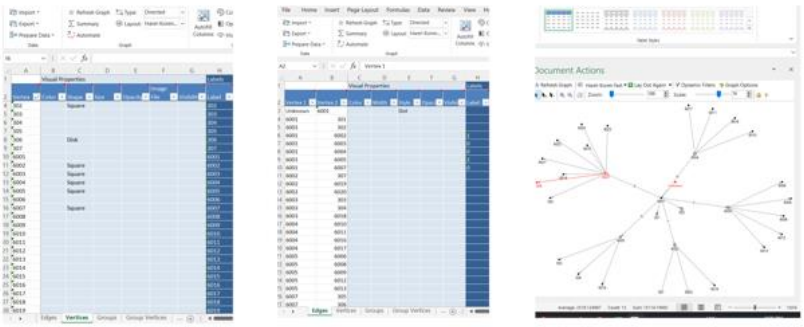
Intro – why network visualization?

- *Question – did you use a diagram in your outbreak report or investigation?*
- Visual diagram consisting of nodes and edges
- Visual map of relationships between entities
- Simple and intuitive way to convey information

Key

- Cases present at the stadium
- Household transmission
- Non-household transmission
- Household contacts, not cases
- Filled node case in quarantine for at least part of infectious period
- Unfilled not in quarantine for infectious period

-1- label on line days between exposure and diagnosis date



NodeXL

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2. Teal Centre Staff, *Teal Center Fact Sheet No. 11: Adult Learning Theories*, Teaching Excellence in Adult Literacy (TEAL), Editor. 2011.
3. Chatterjee, D. and J. Corral, *How to Write Well-Defined Learning Objectives.* The journal of education in perioperative medicine, 2017. **19**(4): p. 1-E610.
4. Qualtrics, *Qualtrics*. 2005: Provo, Utah, USA.
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