

The acceptability and utility of Indigenous youth health assessments: a narrative systematic review

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ABSTRACT

Background. Indigenous youth are navigating the transition from childhood to adulthood while contending with challenges of ongoing colonisation and everyday lived experiences of racism. A comprehensive assessment of Indigenous youth's health could enable early diagnosis and respond to health concerns. This narrative systematic review synthesises evidence about the acceptability and utility of primary health care-based health assessments for improving the health and wellbeing of Indigenous youth. **Methods.** A systematic search strategy was conducted using 20 electronic databases. Studies were included if they reported on health assessments conducted in primary health care with youth aged 12–24 years who were Indigenous to Australia, New Zealand, Canada, the USA, Taiwan, and the arctic regions of Scandinavia and Russia. A narrative synthesis was undertaken. **Results.** Of 3061 unique studies identified, seven met the eligibility criteria. Included studies showed that youth health assessments were useful for making new diagnoses, detecting social and emotional wellbeing concerns, and biomedical parameters. Co-created health assessments with Indigenous youth conducted by clinicians familiar to the community were well accepted. Digital health assessments administered using an electronic tablet provide advantages. No health outcomes were reported. Additionally, no health assessments addressed the impacts of colonisation and racism. **Conclusion.** There is insufficient evidence to make firm conclusions about the benefits of health assessments; however, health assessments can be useful for detecting new diagnoses and concerns regarding social determinants of health, and social and emotional wellbeing. Future development of Indigenous youth health assessments needs to involve Indigenous youth's perspectives and interpretations of health.

Keywords: appropriateness, e-health, health assessments, holistic, Indigenous, primary health care, utility, youth.

Introduction

Youth, the period between childhood and adulthood, is marked by significant psychological and biological development, second in scale only to early childhood (Viner *et al.* 2012; Patton *et al.* 2016). During this time, which we define as people aged 12–24 years, individuals acquire the physical, cognitive, social and economic resources that influence identity formation, and lay the foundation for health and wellbeing later in life (Patton *et al.* 2016; Azzopardi *et al.* 2020).

Indigenous youth go through the same life-stage transitions as non-Indigenous youth, and can draw on deep wells of cultural knowledge, family connection and connection to the lands of which they are the traditional custodians (Haswell *et al.* 2013; Tremblay *et al.* 2018). However, they also contend with the impacts of ongoing colonisation and racism. Thus, Indigenous youth are at greater risk of psychological distress and mental health issues (Australian Indigenous HealthInfoNet 2020).

Despite being infrequent attenders, primary health care (PHC) is often where Indigenous youth first link with the health system as independent agents. Therefore, PHC has an important role in identifying and ameliorating psychological distress and risky behaviours (Tylee *et al.* 2007; Wilson *et al.* 2007; Zieve *et al.* 2017). Even when they do

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attend, youth do not usually seek help for psychosocial issues (Bailey *et al.* 2016), which makes each interaction an important opportunity for preventative health care and/or health interventions. PHC-based health assessments have been proposed as a mechanism to improve access to recommended, regular screening and preventative healthcare for Indigenous people (Mayers and Couzos 2004). Health assessments, defined as a comprehensive assessment to detect and manage risk factors (Si *et al.* 2014), are a common element of health care in some countries, such as Australia (Holland 2010), but the uptake of government funded health assessments in Australia by Aboriginal and Torres Strait Islander youth remains low (Australian Institute of Health and Welfare 2018).

Although Indigenous youth typically underutilise PHC services, a PHC-based health assessment that addresses Indigenous youth health priorities, underpinned by Indigenous conceptions of health, may benefit those accessing health services. This systematic review synthesises evidence regarding the utility and acceptability of PHC-based health assessments for improving the health and wellbeing of Indigenous youth.

Methods

We used the Joanna Briggs Institute approach and the Preferred Reporting Items for Systematic research and Meta-analyses (PRISMA) statement for conducting and reporting this systematic narrative review (Moher *et al.* 2009; Aromataris and Munn 2020).

Search strategy

We searched the following databases: PubMed, CINAHL, Embase, Scopus via EBSCOHOST, and 16 grey literature databases to identify text that contained key words in the title and abstract. Keywords included 'health check', 'health assessment' and 'youth'. Search strategies are available in Supplementary Tables S1 and S2.

Study inclusion and exclusion

Papers were included if the majority (>50%) of participants were 12–24 years of age (inclusive), and were Indigenous to Australia (Aboriginal and/or Torres Strait Islander), New Zealand (Māori), Canada (First Nations, Inuit and Métis), the USA (American Indian, Native Alaskan and Native Hawaiian), arctic regions of Sweden, Norway, Finland and Russia (Sámi), and Taiwan. Papers that included non-Indigenous and Indigenous populations within the age range were included if data on Indigenous youth were presented separately. We did not exclude papers based on language, and considered both published and unpublished studies.

A 'health assessment' was defined as a comprehensive and/or holistic review of an Indigenous youth's health.

Therefore, only studies reporting on health assessments that covered a minimum of two health domains (multidomain) were included. Here, domains were defined as a single social determinant of health, mental health condition or biomedical measure involving a single bodily system. Studies were included where health assessments were conducted in PHC, or in other settings if overseen by PHC services. Papers that did not meet the inclusion criteria were excluded from the analysis.

Study selection

Peer-reviewed papers detected using database searching were imported to the bibliographic software Endnote 20 (Clarivate Analytics, Philadelphia, PA, USA) by one reviewer (JF) and duplicates removed. Studies were then assessed for inclusion based on title and abstract by two reviewers (JF and GS). The full text publications of potentially eligible papers were then retrieved and assessed against the inclusion criteria in accordance with the PRISMA statement (29).

Study quality assessment

Papers selected for inclusion were assessed using the Mixed Methods Appraisal Tool (Hong *et al.* 2018; Table 1). The same two reviewers (JF and GS) who conducted the study selection also independently reviewed included studies using the appropriate critical appraisal tools. Disagreements were resolved by consensus. Studies were not excluded based on quality appraisal.

Data extraction strategy

The data extraction tool was customised and piloted to ensure information, extracted independently by JF and GS, responded to the review's aims. Extracted data included: (1) study type, (2) countries where studies were conducted, (3) setting in which health assessments were administered, (4) participant demographics, (5) description of the health assessment and who administered it, and (6) effectiveness of the health assessment. Effectiveness measures included mortality, hospitalisation, disability, new diagnosis, morbidity and quality of life, referrals, follow up, brief intervention, and social and cultural determinants of health.

Data synthesis and presentation

Owing to the heterogeneity of the included studies, meta-analysis was not considered appropriate. Instead, we conducted a narrative synthesis of extracted data.

Ethics approval and consent to participate

Ethics approval was not sought, as no primary data were collected. This study is a systematic review of existing research.

Table 1. Methodological quality of included studies.

Methodological quality criteria questions	Included studies						
	Thabrew <i>et al.</i> (2019)	Harriss <i>et al.</i> (2018)	Maari Ma Health (2018)	Goodyear- Smith <i>et al.</i> (2016)	Barraza <i>et al.</i> (2016)	Nori <i>et al.</i> (2013)	Fagan <i>et al.</i> (2013)
All study types							
Are there clear research questions?	✓	X	✓	✓	X	X	X
Do the collected data allow to address the research questions?	✓	X	✓	✓	?	X	✓
Quantitative descriptive studies							
Is the sampling strategy relevant to address the research questions?		✓	✓	✓			✓
Is the sample representative of the target population?		?	✓	X			✓
Are the measurements appropriate?		✓	✓	✓			✓
Is the risk of non-response bias low?		X	?	✓			✓
Is the statistical analysis appropriate to answer the research questions?		✓	✓	✓			✓
Randomised controlled trials							
Is randomisation appropriately performed?	✓						
Are the groups comparable at baseline?	✓						
Are there complete outcome data?	✓						
Are outcome assessors blinded to the intervention provided?	X						
Did the participants adhere to the assigned intervention?	✓						
Qualitative studies							
Is the qualitative approach appropriate to answer the research question	✓	✓	✓	✓	X	X	
Are the qualitative data collection methods adequate to address the research question?	✓	X	✓	✓	?	X	
Are the findings adequately derived from the data?	✓	X	✓	✓	✓	X	
Is the interpretation of results sufficiently substantiated by data?	✓	✓	✓	✓	✓	X	
Is there coherence between qualitative data sources, collection, analysis and interpretation?	✓	✓	✓	✓	✓	X	
Mixed methods studies							
Is there an adequate rationale for using a mixed methods design to address the research question?	✓	X	✓	✓			
Are the different components of the study question using a mixed methods design to address the research question?	✓	X	✓	✓			
Are the outputs of the integration of qualitative and quantitative components adequately interpreted?	✓	X	✓	✓			
Are divergencies and inconsistencies between quantitative and qualitative results adequately addressed?	✓	X	✓	X			
Do the different components of the study adhere to the quality criteria of each tradition of the methods addressed?	✓	X	✓	✓			

✓, yes; X, no; ?, can't tell.

Results

Study selection

Initial searching yielded 3352 records. Once duplicates were removed, we reviewed the titles and abstracts of 3061 studies. Of these, 28 full-text articles were retrieved for further review. Seven met the inclusion criteria. The study selection process is detailed in the PRISMA flow diagram (Fig. 1).

Study characteristics

Characteristics of included studies are presented in Table 2. The studies were published between 2013 and 2019, and included four mixed methods studies (Goodyear-Smith *et al.* 2016; Harriss *et al.* 2018; Maari Ma Health 2018; Thabrew *et al.* 2019), two qualitative studies (Nori *et al.* 2013; Barraza *et al.* 2016) and one cross-sectional study (Fagan *et al.* 2013). The health assessments were conducted

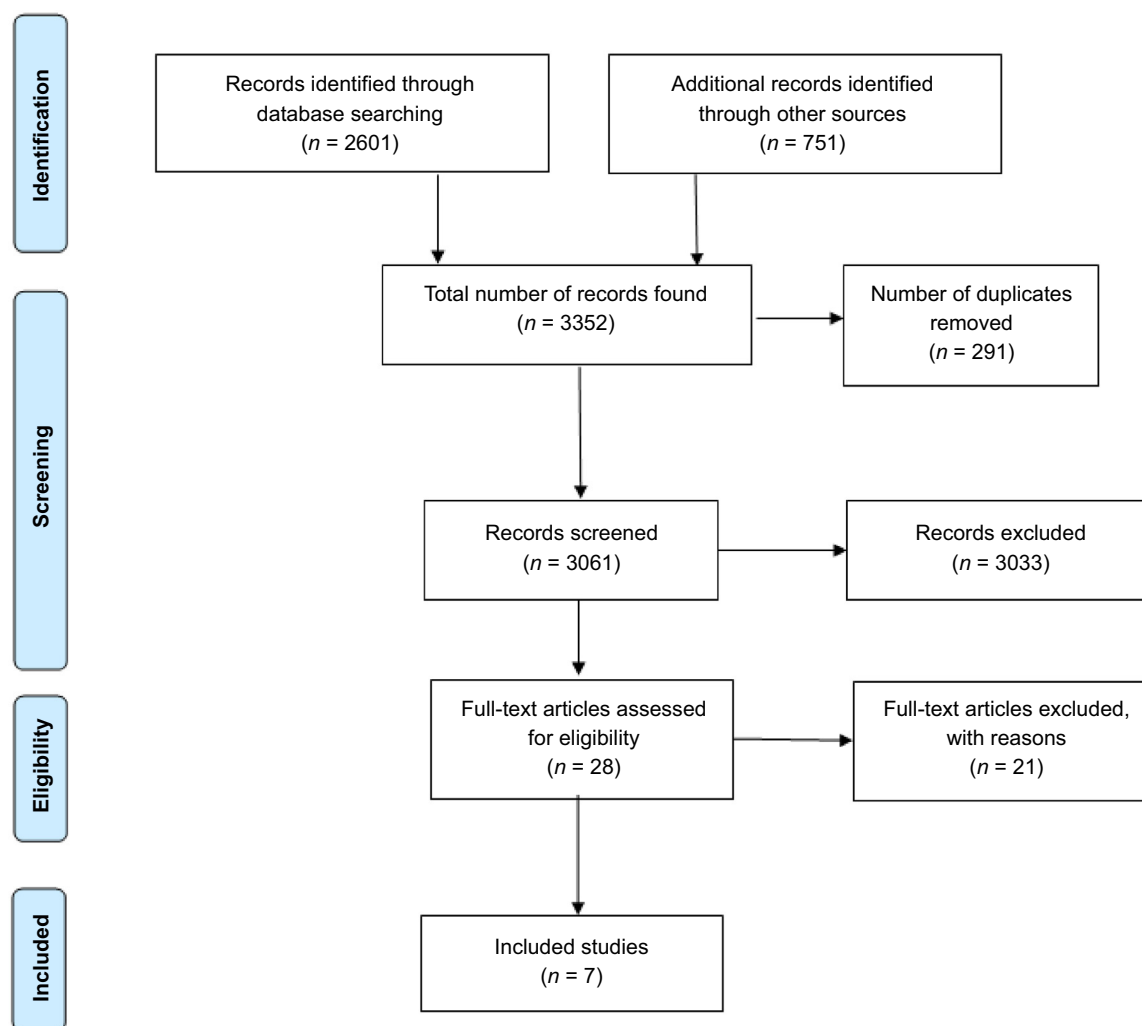


Fig. 1. PRISMA diagram.

within PHC services in the four Australian studies (Fagan *et al.* 2013; Nori *et al.* 2013; Harriss *et al.* 2018; Maari Ma Health 2018). The two New Zealand studies used high schools with co-located PHC clinics (Goodyear-Smith *et al.* 2016; Thabrew *et al.* 2019), whereas the USA study was led by the San Diego American Indian Health Center (Barraza *et al.* 2016).

Health domains

Included studies measured quality of life, social and cultural determinants of health, and biomedical measures (Table 2). Only Barraza *et al.* (2016) assessed quality of life using qualitative data.

Administration of health assessments

All, but one, youth health assessments were administered by a variety of health professionals, either singularly or in teams, including Aboriginal Health Workers (Fagan *et al.* 2013; Nori *et al.* 2013; Harriss *et al.* 2018; Maari Ma Health 2018),

nursing staff (Fagan *et al.* 2013; Goodyear-Smith *et al.* 2016; Harriss *et al.* 2018; Maari Ma Health 2018; Thabrew *et al.* 2019) and general practitioners (Goodyear-Smith *et al.* 2016; Maari Ma Health 2018; Thabrew *et al.* 2019) (Table 2).

In four studies, the health assessments were administered using digital technology (Table 2). The two New Zealand studies used a self-administered assessment on an electronic tablet that provided a summary of issues to the nurse and/or doctor for reference during the subsequent consultation (Goodyear-Smith *et al.* 2016; Thabrew *et al.* 2019). Maari Ma Health (2018) used a self-administered health assessment on an electronic tablet with a Youth Health Worker available for support, and Nori *et al.* (2013) used a desktop computer. The health assessments in the remaining studies were administered using pen and paper only. One of these was completed by the youth (Barraza *et al.* 2016), and the others by health professionals (Fagan *et al.* 2013; Harriss *et al.* 2018).

Table 2. Characteristics of included studies.

Citation	Indigenous people and Country	Study objective	Study Design	Sample size, age range	Setting	Health domains	Who conducted the health assessment	Administration of health assessment (digital technology vs pen and paper)
Thabrew et al. (2019)	Māori youth; New Zealand	To compare the performance and acceptability of YouthCHAT with HEEADSSS	Mixed methods: RCT and qualitative study.	129 high school students aged 13–14 years	PHC clinic co-located in a high school	Smoking, drinking alcohol, recreational drugs, HEEADSSS, depression.	Nurse	Digital and pen and paper
Harriss et al. (2018)	Aboriginal and Torres Strait Islander youth; Australia	To describe the 2016 Young Person's Check (YPC) event and to determine the prevalence of depressive symptoms in young people	Mixed methods: cross-sectional with youth and qualitative study with PHC service staff.	350 youth aged 13–25 years	PHC service	Mental health, physical health including clinical measures and health risk behaviours.	Aboriginal Health Worker, nurse, Health Promotion Officer.	Pen and paper
Maari Ma Health (2018)	Aboriginal youth; Australia	To determine the acceptability of the TickiT psychosocial assessment tool	Mixed methods: cross-sectional and qualitative interviews with youth and clinic staff.	78 youth aged 12–18 years completed the TickiT during their annual youth health check; 11 youth were interviewed	PHC service	Psychosocial, biomedical health and health risk behaviours.	Aboriginal Health Worker, nurse, General Practitioner.	Digital (TickiT) and pen and paper (health check)
Goodyear-Smith et al. (2016)	Māori youth; New Zealand	To assess the utility and acceptability of YouthCHAT program for youth and health service staff and build a framework for subsequent roll-out.	Mixed methods: cross-sectional and focus groups and interviews with youth and staff	30 youth aged 12–18 years	PHC clinic co-located in a high school	Sexual health, substance use/misuse, mental health, gambling, exposure to abuse, anger control and physical activity.	Nurse and doctor	Digital
Barraza et al. (2016)	Native American youth: USA	To develop and pilot a strength-based, holistic, and youth-friendly self-assessment tool grounded in the medicine wheel.	Qualitative study with focus groups	70 youth aged 12–17 years	Health Center. Fresno	Mental, physical, emotional and spiritual health.	Self-administered	Pen and paper
Nori et al. (2013)	Aboriginal youth; Australia	To develop and implement an evidence-informed, culturally valid Aboriginal and Torres Strait Islander Youth Health Check and an accompanying Youth Health Audit tool.	Qualitative study with focus groups	30 youth aged 12–24 years.	Urban, rural and remote settings	Social and emotional wellbeing, clinical assessment.	Aboriginal Health Worker	Digital and pen and paper
Fagan et al. (2013)	Aboriginal and Torres Strait Islander youth; Australia	To describe the implementation and selected outcomes of the YPC.	Cross-sectional	3083 youth aged 15–24 years	PHC service	Sexually transmitted infections, body mass index, blood glucose and lipid profile, urinary albumin creatine ratio.	Aboriginal Health Worker, district health staff, public health nurses	Pen and paper

HEEADSSS, Home, Education, Eating, Activities, Drugs and alcohol, Suicide and depression, Sexuality, and Safety assessment; PHC, primary health care; RCT, randomised controlled trial; YPC, Young Person's Check.

Risk of bias within included studies

Quantitative and qualitative components of the mixed methods studies were assessed separately in addition to assessing the study overall (Hong *et al.* 2018; Table 1). Many included studies had methodological limitations. Four studies lacked a clear statement of the research aims and research questions (Fagan *et al.* 2013; Nori *et al.* 2013; Goodyear-Smith *et al.* 2016; Harriss *et al.* 2018). Cross-sectional data relevant to this review were extracted from a cohort study, and although this study did not address confounding factors, the risk of bias was considered to be low (Fagan *et al.* 2013). Three of the four mixed methods studies were considered to have high methodological rigour (Goodyear-Smith *et al.* 2016; Maari Ma Health 2018; Thabrew *et al.* 2019), but the fourth study was found to have limitations owing to concerns about the reporting of their qualitative components (Harriss *et al.* 2018; Table 1).

Key findings of included studies

We found a diversity of health assessments for Indigenous youth that were developed in different ways for specific communities, adapted from previously developed tools and with varying levels of co-creation with youth. None of the included studies reported on the impact of the health assessment on health outcomes.

New diagnosis and morbidity

New diagnosis was an outcome measure in four of the seven studies (Table 3). Sexually transmitted infections (STIs) were diagnosed in 547 of 3083 participants (18%) by Fagan *et al.* (2013), and in 11 of 30 participants (37%) by Goodyear-Smith *et al.* (2016). Thabrew *et al.* (2019) reported new diagnoses of eating or weight problems in 70 of 110 participants (63%), physical inactivity in 43 of 110 participants (39%), concerns about sexual health in 24 of 110 participants (22%), and depression and anxiety in 11 of 110 participants (10%). Harriss *et al.* (2018) reported new diagnoses of psychological distress in 42 of 350 participants (24%), and Goodyear-Smith *et al.* (2016) found six of 30 participants (20%) had depression and 11 of 30 (37%) had anxiety.

Social determinants of health

Using the Home, Education, Eating, Activities, Drugs and alcohol, Suicide and depression, Sexuality, and Safety assessments (HEEADSSS) and/or YouthCHAT tools, the two New Zealand studies found high proportions of youth were affected by social determinants of health (Goodyear-Smith *et al.* 2016; Thabrew *et al.* 2019; Table 3).

Health assessment development

Health assessments were co-created with Indigenous youth (Nori *et al.* 2013; Barraza *et al.* 2016), youth in general (Goodyear-Smith *et al.* 2016; Thabrew *et al.* 2019) or community members (Fagan *et al.* 2013; Harriss *et al.* 2018). Barraza *et al.* (2016) conducted focus groups with Indigenous youth to co-create a self-assessment tool. Nori *et al.* (2013) facilitated eight community meetings with Aboriginal youth to co-create a health assessment that was youth friendly, culturally appropriate and addressed their key health concerns, including cultural connection, concerns about safety, sexual health, social and emotional wellbeing, smoking, and substance use. The study by Goodyear-Smith *et al.* (2016) adapted YouthCHAT from the generic eCHAT health assessment through input from, and piloting by, adolescents. The study conducted by Maari Ma Health (2018) used the TickiT assessment, which is a HEEADSSS assessment on an electronic tablet, developed with non-Indigenous youth in Canada.

Two health assessments conducted in Far North Queensland, Australia, were developed specifically for Indigenous youth without documented consultation or co-design with youth (Fagan *et al.* 2013; Harriss *et al.* 2018). The study by Fagan *et al.* (2013) reported that the local Public Health Unit was interested in targeted STI screening for Aboriginal and Torres Strait Islander youth with a subsidiary aim of screening for chronic diseases. Harriss *et al.* (2018) reported on a health assessment conducted in the Aboriginal community of Yarrabah where, responding to community concerns, the health assessment was expanded in 2014 to include the adapted Patient Health Questionnaire-9 items (aPHQ-9).

Digital technology for administering health assessments

Four studies, using self-administered digital technology for the health assessment, reported that youth found the apparent privacy and confidentiality enabled by this approach increased their willingness to disclose sensitive information regarding bodyweight, sexual health and safety concerns, such as bullying and violence (Nori *et al.* 2013; Goodyear-Smith *et al.* 2016; Maari Ma Health 2018; Thabrew *et al.* 2019). For clinicians, administration of health assessments using electronic tablets was quicker, and assisted subsequent face-to-face consultations. Nori *et al.* (2013), using both a digital and paper-based health assessment template, reported that youth preferred the digital version and especially preferred options like tick boxes rather than open-ended written text boxes. These results are consistent with findings from Goodyear-Smith *et al.* (2016), who found that electronic, tablet-based health screening provided consistent results, led to more disclosure, reduced staff time, kept youth busy while they were waiting, and allowed youth to structure thoughts and prioritise the issues they wanted help with. Furthermore, Māori youth felt clinicians knew what their

Table 3. New diagnoses, morbidity and social determinants of health measured in the included studies.

Citation	New diagnoses				
	Physical and/or psychological ill-health			Social determinants of health	
	Illness	n/N	(%)	Social determinant	n/N (%)
Fagan et al. (2013)	STIs	547/3083	(18%)	Not measured	
Harriss et al. (2018)	Psychological distress (moderate to severe)	42/350	(24%)	Not measured	
Thabrew et al. (2019)	Problems with eating or weight			Substance misuse:	
	YouthCHAT	70/110	(64%)	YouthCHAT	10/110 (9%)
	HEEADSSS	25/110	(23%)	HEEADSSS	10/110 (9%)
	Mental distress:			Problems at home:	
	YouthCHAT	11/110	(10%)	YouthCHAT	30/110 (27%)
	HEEADSSS	30/110	(27%)	HEEADSSS	29/110 (26%)
	Sexual health:			Safety:	
	YouthCHAT	24/110	(22%)	YouthCHAT	65/110 (59%)
	HEEADSSS	10/110	(9%)	HEEADSSS	17/110 (15%)
	Physical inactivity:				
Goodyear-Smith et al. (2016)	STIs	11/30	(37%)	Smoking	13/30 (43%)
	Depression	6/30	(20%)	Gambling	3/30 (10%)
	Anxiety	11/30	(37%)	Using alcohol or other drugs	23/30 (77%)
				Exposure to abuse	5/30 (17%)

STIs, sexually transmitted infections; HEEADSSS, Home, Education, Eating, Activities, Drugs and alcohol, Suicide and depression, Sexuality, and Safety assessment.

health concerns were before they walked through the consultation door, and clinicians felt it was easier to address these concerns because of their prior identification through the health assessment (Goodyear-Smith et al. 2016). Barriers to digital health assessments included connectivity problems, slow internet speed, and literacy and language difficulties (Nori et al. 2013; Goodyear-Smith et al. 2016; Maari Ma Health 2018; Thabrew et al. 2019).

Help question findings

The two New Zealand studies utilised a 'help question' that asked youth if they wanted help today or in the future for each domain screened (Goodyear-Smith et al. 2016; Thabrew et al. 2019). The 'help question' supports the conversation between the youth and the clinician about health issues that the youth would like addressed, and facilitates shared decision making (Thabrew et al. 2019). Furthermore, the help question allowed youth to request intervention for health issues without the potential awkwardness of face-to-face dialogue (Goodyear-Smith et al. 2016).

Acceptability

Overall, the health assessments were well accepted. Youth in the study by Barraza et al. (2016) described the

self-administered health assessment as positive, fun and enjoyable, and different to what they normally experienced in preventative health programs. Nori et al. (2013) reported that youth and community members found the health assessment to be acceptable and important.

Thabrew et al. (2019) compared acceptability of YouthCHAT and HEEADSSS for youth and school nurses. For youth, both were equally acceptable; however, nurses found YouthCHAT easier to answer in digital format, faster to administer than HEEADSSS, provided more health information and helped with subsequent answering of face-to-face questions (Thabrew et al. 2019).

Youth health clinic staff at Maari Ma Health (2018) reported that self-administered TickiT was acceptable and appropriate for staff and Aboriginal youth, with the youth being able to answer the questions on the electronic tablet without assistance.

Harriss et al. (2018) reported an evaluation of a Young Persons' Check in Yarrabah, Australia, with additional mental health screening. The addition of the aPHQ-9, a psychological distress tool that was later adapted to the 'Yarrabah aPHQ-8', was well-accepted by staff and participating youth; however, only 35% of youth completed the screening tool, suggesting that there were barriers to the deployment of this screening tool.

Discussion

Indigenous youth health assessments were most frequently used to detect psychological distress, sexual health concerns and adverse social determinants of health. One health assessment measured strengths, including how youth could find life balance according to an adapted Medicine Wheel (Barraza *et al.* 2016). None of the included studies measured health outcomes following administration of the health assessment. Cultural identity, impacts of colonisation and experience of racism, critical to health and wellbeing of youth, were absent in the health assessments.

Digital technology was preferred over paper-based technology owing to youth familiarity with electronic tablets, the opportunity to respond to sensitive health questions in private and quicker health assessment administration (Goodyear-Smith *et al.* 2016; Maari Ma Health 2018; Thabrew *et al.* 2019) compared with paper-based assessment. However, health assessments delivered using digital technology also presented problems with internet connectivity

and language, especially when youth completed digital health assessment templates without support (Goodyear-Smith *et al.* 2016).

Generally, youth health assessments were well accepted. However, the only youth health assessment that was described as enjoyable by youth was also the only health assessment to measure strengths (Barraza *et al.* 2016), and was one of only two health assessments co-created with Indigenous youth (Nori *et al.* 2013; Barraza *et al.* 2016).

To our knowledge, this is the first review of the characteristics, utility and acceptability of Indigenous youth health assessments. The search strategy for this review involved a thorough search of online databases and grey literature. Another important strength of this review is its authorship by an Indigenous young person (JF), so all the included data have been analysed and reported through this lens (Box 1).

Limitations of this review include the sparsity of literature from the target countries. Six of the seven included studies were from Australia and New Zealand, with no studies

Box 1. Author's narrative (JF)

As a proud Aboriginal youth, with connections with the Bidjara and Mandandanji nations from South Western Queensland on the continent known as Australia and the lead author of this review, there were moments that resonated with me. In today's society, there are growing concerns about racism, mental health and behavioural risk issues for Indigenous youth; however, these needs are not being met, particularly in the mainstream public and primary healthcare systems.

I have been to primary healthcare services for the Australian Government's annual Indigenous health assessments; however, I believe currently they don't meet health needs of youth. For young Aboriginal and Torres Strait Islander people accessing primary health care, there is already associated stigma. You are either accessing health care because you're 'womba' (something wrong with your head or crazy e.g. mental illness) or for an STI check. This stigma is exacerbated via the reports, journal articles and strategies that focus on the deficit-based statistics of young Aboriginal and Torres Strait Islander people. The current health assessment should shift to a health assessment that is driven by youth self-determination, and that meets their health needs. I understand the need to screen for biomedical factors, but there is limited screening on cultural and gender identity, impacts of racism, and the social determinants of health. A health assessment that identifies these risks, but importantly, identifies strengths of youth, can reinforce self-determination and assist with exercising sovereignty. Co-creating and implementing a health assessment with youth can assist with identifying the factors that youth find important, along with clinicians' expertise for the biomedical factors that are also important.

However, health assessments and screening are only the first step. There needs to be infrastructure, resources and services implemented in primary health care to which youth can be referred when a problem is identified, along with follow up. An example could be a young person questioning their identity. Having a place or somewhere to go to, such as Elders or other young Indigenous people to talk to, can help that young person navigate their identity, which can be a strength for their health and wellbeing. The health assessment should be holistic and be underpinned by the Indigenous conceptions of health rather than focusing on just the biomedical components of health. This can include identifying the strengths in the community, where the primary healthcare service can refer to for cultural support.

As an Aboriginal youth, I can see the benefits of an e-health assessment, particularly for privacy and disclosing health information. Having a digital health assessment that is holistic, comprehensive and is based on youth health priorities could be a beneficial way for youth to engage with primary health care. In addition, the 'help question' that YouthCHAT utilises could be a strategy to encourage youth to ask questions about their health concerns. Generally, I would not go to primary care unless there is something I want to get checked. Therefore, having the 'help question' allows the individual to ask for the specific health issue, as well as doing it privately. In conclusion, I can see the potential benefits of an Indigenous youth health assessment and support the idea of that being in a digital format. However, youth should be involved in the development of health assessments, as youth know their health the best and can ensure that the assessment meets youth health priorities.

meeting inclusion criteria from Canada, Taiwan or the arctic region Sámi people, limiting generalisability of findings. Of the included studies, many had significant methodological and reporting limitations, including a majority lacking a reported research question. Some studies did not report on the effectiveness outcomes at all, and none measured health outcomes following a health assessment. In addition, none of the included studies report on the impacts of colonisation and racism. Finally, only one of the youth health assessments evaluated strengths.

Conclusion

Primary health care-based health assessments can be an acceptable and useful means of documenting strengths, risk factors and social determinants of health regarding Indigenous youth. However, no data on health outcomes following health assessments were reported, and there is limited research regarding Indigenous youth health priorities and Indigenous youth views on health assessments. Acceptability of health assessments for Indigenous youth was most likely when they were co-created with Indigenous youth, adapted to local community needs, delivered by Indigenous Health Workers familiar with Indigenous youth, and used a combination of self-administered digital technology and face-to-face contact. Future research should focus on youth health priorities, and how these priorities inform future Indigenous youth health assessments.

Supplementary material

Supplementary material is available [online](#).

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