

Is eHealth Research *with* or *on* Our People?: Lessons Learned Using the Aboriginal and Torres Strait Islander Quality Appraisal Tool

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Abstract. There is growing evidence for the benefits of eHealth interventions with Aboriginal and Torres Strait Islander people. Yet, there is a lack of guidance for culturally safe, relevant, and sustainable initiatives with Aboriginal and Torres Strait Islander peoples and organisations. To this end a research program was established to develop a roadmap for eHealth with Aboriginal and Torres Strait Islander peoples. The current phase of the research program is a review of the literature aimed at identifying the important characteristics of eHealth interventions with Aboriginal and Torres Strait Islander people. Thirty-nine publications reporting on a variety of eHealth modalities with Aboriginal and Torres Strait Islander people were identified. To assess the cultural quality of the final papers, the authorship applied the Aboriginal and Torres Strait Islander Quality Appraisal Tool (QAT). Results from the appraisal demonstrated significantly higher QAT scores between studies, including more Indigenous authors. This further substantiates the importance Aboriginal and Torres Strait Islander ways of knowing, doing, and being incorporating Indigenous worldviews and leadership have on the cultural quality of eHealth research studies.

Keywords. Aboriginal and Torres Strait Islander Quality Appraisal Tool, eHealth, mHealth, telehealth, digital health, Aboriginal, Indigenous, Torres Strait Islander

1. Introduction

The ubiquity of digital devices in contemporary Australia has enabled accessible healthcare from afar (eHealth). Evidence has reported the benefits of eHealth

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interventions with Aboriginal and Torres Strait Islander people [1-7]. While “Australian research has shown eHealth can address access challenges associated with health care for Aboriginal and Torres Strait Islander people” [8 p.2], there remains a lack of evidence-based frameworks for eHealth specific to the interests and needs of Aboriginal and Torres Strait Islander peoples.

The e-Health Research Collaboration for Aboriginal and Torres Strait Islander Health (the Collaboration) was established in 2019 by the Commonwealth Scientific and Industrial Research Organisation’s (CSIRO) Australian eHealth Research Centre (AEHRC) in partnership with leading eHealth research institutes. The Collaboration has established a research program with the aim of developing an evidence-based best practice framework for culturally safe eHealth with Aboriginal and Torres Strait Islander people [8].

A phased approach to this research program has produced a narrative systematic review to identify factors important to eHealth with Aboriginal and Torres Strait Islander people. Thirty-nine studies were retained that focused on a variety of eHealth modalities, research methodologies and processes. The Aboriginal and Torres Strait Islander Quality Appraisal Tool (QAT) [9, 10] was applied to assess the cultural rigour of this systematic review. This QAT is designed to assess the quality of research through the lens of Indigenous ways of knowing, doing, and being, and was developed as a response to the well-documented limited benefit of research to Aboriginal and Torres Strait Islander peoples.

This paper focuses on the process and findings of a cultural quality appraisal of eHealth research studies with Aboriginal and Torres Strait Islander peoples by three researchers with diverse professional and cultural perspectives.

2. Methods

The team acknowledges the importance of reflexively considering the diverse professional backgrounds, perspectives, gender, race and values. Specific to the focus of the paper, Dr Andrew Goodman (AG) and Prof. Ray Mahoney (RM) are Aboriginal, and Dr Georgina Chelberg (GC), Mr Charankarthi Musuwadi (CM) and Assoc. Prof. Sheleigh Lawler (SL) are non-indigenous. The team includes early-career and established public health academics (AG, RM, SL, GC), qualitative researchers (AG, SL, GC), and implementation researchers (AG, RM, SL) working in Indigenous health research.

To appraise the cultural quality of the 39 retained studies included in the aforementioned review, the QAT [9, 10] was used. The QAT comprises 14 criteria to assess the quality of research studies against key values determined by Aboriginal and Torres Strait Islander peoples. The QAT utilises a “Yes”, “Partially”, “No”, or “Unclear” to score evidence of quality for criteria. An appraisal template based on the QAT was developed within Microsoft Forms to allow for ease of use and blinding between appraisers. The 39 included papers were divided among three authors (AG, GC and SL) for appraisal. A sample paper was initially appraised collaboratively to establish a preliminary interpretation of the criteria within the appraisal rubric. To improve interrater reliability, three papers from each appraiser were cross-checked by another. Discussions on the inconsistencies between the cross-checked appraisals were undertaken to ensure that all research team members had consistent interpretations of both the text and appraisal rubric. Microsoft Excel was then used to collate responses and analyse them based on

the 14 parameters. The authors determined that meeting nine of the 14 criteria was an appropriate demarcation score for QAT. Papers with two Indigenous authors emerged as a suitable threshold in relation to meeting nine criteria. An odds ratio was calculated to determine the statistical significance of the association between the number of Indigenous authors and the QAT scores.

3. Results

Figure 1 presents the distribution of QAT criteria results across the studies, with scores ranging from 0-12 out of a possible 14 points. The datasets represent the relationship between the number of Indigenous authors and the total number of criteria each publication satisfied. Several studies demonstrated the strengths of Indigenous leadership and management present in the consultation and engagement with Indigenous community-controlled organisations or Indigenous leaders. Papers also reported their intent to ensure a strengths-based approach was taken and that the research embedded capacity building with Indigenous people. Areas for improvement were the reporting of intellectual property, cultural property, ownership, and protection (Questions 6 and 7), as this was not commonly included in publications.

Dichotomous variables, “Indigenous Authors” (<2 or =>2) and “QAT Scores” (= <8 or =>9), were created and found that studies with two or more Indigenous Authors were 12.75 times (95% CI of [2.29, 70.57]) more likely to achieve a QAT Scores =>9 compared to papers with less than two Indigenous authors. (see Table 1).

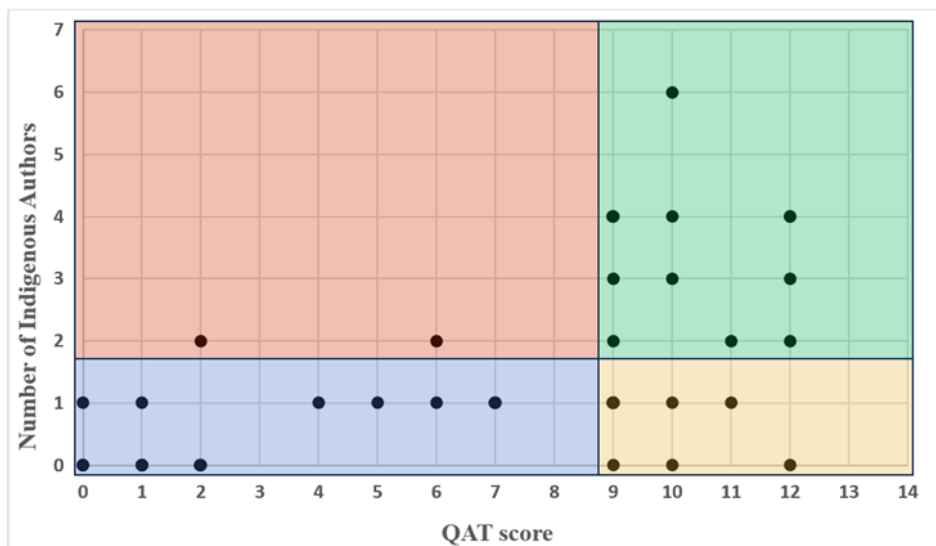


Figure 1. Scatter plot with QAT score versus the number of Indigenous authors for included studies. *NB Some datasets represent more than one paper.*

Table 1. Data table of dichotomous variables, “Indigenous Authors” and “QAT Scores”.

Number of Indigenous Authors	QAT Scores		
	≥9	≤8	TOTAL
≥2	12 (85.7%)	2 (14.3%)	14
<2	8 (32.0%)	17 (68.0%)	25
Total	20 (51.3%)	19 (48.7%)	39
Odds ratio			12.749
P-value			0.0036

4. Discussion

The QAT enabled critical appraisal using criteria (values and ethics) designed by and with the voices of Aboriginal and Torres Strait Islander peoples. This appraisal found that published eHealth studies demonstrate cultural applicability on a sliding scale of quality subject to Aboriginal and Torres Strait Islander participation (authorship) in the project. Similarly, Hobson and colleagues (2019) undertook a systematic review of eHealth studies with First Nations populations and proposed the presence of Indigenous knowledges and leadership positively influenced uptake and outcomes. Reinforcing the inclusion of Aboriginal and Torres Strait Islander leadership and knowledge systems in eHealth research design creates the most significant opportunity for culturally appropriate and quality-driven processes.

The screening process between the three reviewers further highlighted the strengths of Indigenous knowledges and leadership in research processes. In applying the QAT, diverse interpretations of the 14 appraisal criteria were found. This provided a knowledge and cultural exchange between reviewers that added to the rigour of the interrater reliability. Furthermore, the inclusion of Indigenous voices within this process allowed an opportunity “to better understand, demonstrate and measure health research benefits” [11 p.9] with Aboriginal and Torres Strait Islander peoples.

Significantly higher QAT scores were achieved in studies that included two or more Indigenous authors. This underscores Australia’s foremost guidelines on research with Aboriginal and Torres Strait Islander peoples consistently recommend partnership and leadership of Aboriginal and Torres Strait Islander peoples to achieve ethical and beneficial research [12-14]. Results provide unique quantitative evidence suggesting research that embraces Aboriginal and Torres Strait Islander leadership and authorship facilitates mutually beneficial outcomes for the community and the research team.

5. Conclusions

These findings indicate a direct correlation between the vital importance of Aboriginal and Torres Strait Islander ways of knowing, doing, and being and the cultural quality of eHealth research studies. To ensure the appropriate conduct and reporting of eHealth research in this area, researchers and service providers should apply such tools as the QAT [9, 10] from the outset and early planning with Aboriginal and Torres Strait Islander peoples alongside an appropriate ethics review.

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References

- [1] Caffery LJ, Bradford NK, Wickramasinghe SI, Hayman N, Smith AC. Outcomes of using telehealth for the provision of healthcare to Aboriginal and Torres Strait Islander people: a systematic review. *Aust N Z J Public Health*. 2017 Feb;41(1):48-53, doi: 10.1111/1753-6405.12600.
- [2] Caffery LJ, Bradford NK, Smith AC, Langbecker D. How telehealth facilitates the provision of culturally appropriate healthcare for Indigenous Australians. *J Telemed Telecare*. 2018 Dec;24(10):676-82, doi: 10.1177/1357633X18795764.
- [3] Snoswell CL, Caffery LJ, Haydon HM, Wickramasinghe SI, Crumblin K, Smith AC. A cost-consequence analysis comparing patient travel, outreach, and telehealth clinic models for a specialist diabetes service to Indigenous people in Queensland. *J Telemed Telecare*. 2019 Oct;25(9):537-44, doi: 10.1177/1357633X19873239.
- [4] Clair MS, Murtagh DP, Kelly J, Cook J. Telehealth a game changer: closing the gap in remote Aboriginal communities. *Med J Aust*. 2019 Mar;210(6):S36-S7, doi: 10.5694/mja2.50036.
- [5] Elliott G, Smith AC, Bensink ME, Brown C, Stewart C, Perry C, et al. The feasibility of a community-based mobile telehealth screening service for Aboriginal and Torres Strait Islander children in Australia. *Telemed J E Health*. 2010 Nov;16(9):950-6, doi: 10.1089/tmj.2010.0045.
- [6] Tighe J, Shand F, McKay K, McAlister T-J, Mackinnon A, Christensen H. Usage and acceptability of the iBobbly app: pilot trial for suicide prevention in Aboriginal and Torres Strait Islander youth. *JMIR Ment Health*. 2020 Dec;7(12):e14296, doi: 10.2196/14296.
- [7] Fletcher R, Hammond C, Faulkner D, Turner N, Shipley L, Read D, et al. Stayin' on track: the feasibility of developing Internet and mobile phone-based resources to support young Aboriginal fathers. *Aust J Prim Health*. 2017 Sep;23(4):329-34, doi: 10.1071/PY16151.
- [8] Chelberg GR, Butten K, Mahoney R. Culturally safe eHealth interventions with Aboriginal and Torres Strait Islander people: protocol for a best practice framework. *JMIR Res Protoc*. 2022 Jun;11(6):e34904, doi: 10.2196/34904.
- [9] Harfield S, Pearson O, Morey K, Kite E, Glover K, Canuto K, Streak Gomersall J, Carter D, Davy C, Aromataris E, Braunack-Mayer A. The Aboriginal and Torres Strait Islander quality appraisal tool: companion document. Adelaide, Australia: South Australian Health and Medical Research Institute. 2018. 24 p, Available from: <https://sahmri.blob.core.windows.net/communications/Aboriginal-and-Torres-Strait-Islander-Quality-Appraisal-Tool-Companion-Documents-1.pdf>.
- [10] Harfield S, Pearson O, Morey K, Kite E, Canuto K, Glover K, et al. Assessing the quality of health research from an Indigenous perspective: the Aboriginal and Torres Strait Islander quality appraisal tool. *BMC Med Res Methodol*. 2020 Apr;20(1):79, doi: 10.1186/s12874-020-00959-3.
- [11] Bainbridge R, Tsey K, McCalman J, Kinchin I, Saunders V, Lui F, et al. No one's discussing the elephant in the room: contemplating questions of research impact and benefit in Aboriginal and Torres Strait Islander Australian health research. *BMC Public Health*. 2015 Jul;15(1):696, doi: 10.1186/s12889-015-2052-3.
- [12] Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATIS). AIATSIS Code of ethics for Aboriginal and Torres Strait Islander research. AIATSIS. 2020. Available from: <https://aiatsis.gov.au/sites/default/files/2020-10/aiatsis-code-ethics.pdf>
- [13] National Health and Medical Research Council. Keeping research on track II: a companion document to Ethical conduct in research with Aboriginal and Torres Strait Islander peoples and communities: guidelines for researchers and stakeholders. 2018. 51 p, Available from:

<https://www.nhmrc.gov.au/sites/default/files/documents/Indigenous%20guidelines/Keeping-research-on-track.pdf>.

- [14] National Health and Medical Research Council. Ethical conduct in research with Aboriginal and Torres Strait Islander peoples and communities: guidelines for researchers and stakeholders. 2018. 35 p, Available from: <https://www.nhmrc.gov.au/about-us/resources/ethical-conduct-research-aboriginal-and-torres-strait-islander-peoples-and-communities>.