Further Strengthening Research Capabilities
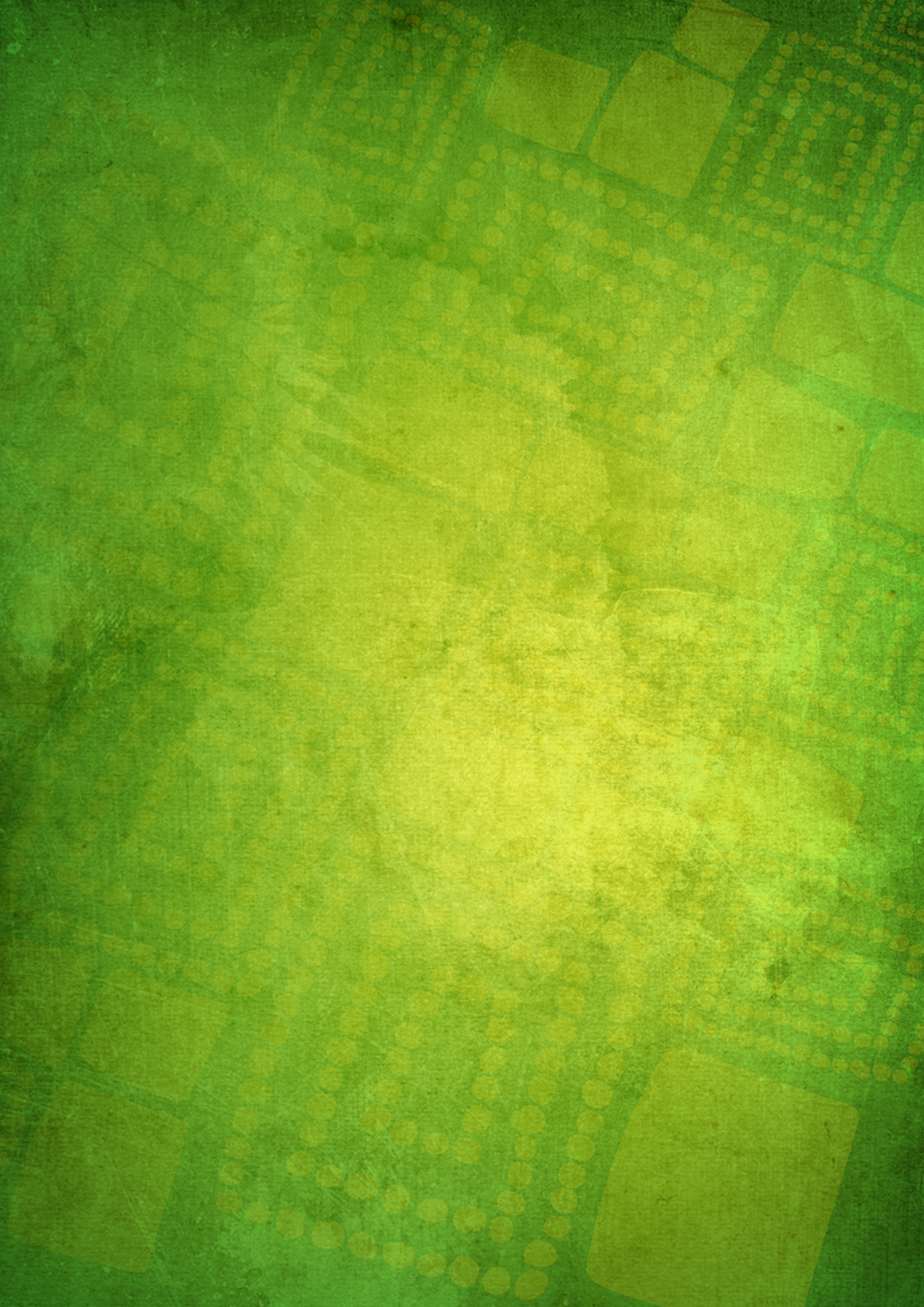
A review and analysis of the Aboriginal and Torres Strait Islander health researcher workforce

Shaun Ewen, Tess Ryan & Chris Platania-Phung

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Melbourne Poche Centre for Indigenous Health

The University of Melbourne

Australia's National Institute for Aboriginal and Torres Strait Islander Health Research

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Australian Government
Department of Industry, Innovation and Science

Business
Cooperative Research Centres Programme

Contents

Acknowledgments

Abbreviations

ACOLA

Australian Council of Learned Academics

ARC

Australian Research Council

BIRC Collective–JCU

Building Indigenous Research Capacity Collective–James Cook University

BIRCWH

Building Interdisciplinary Research Careers in Women's Health

HDR

Higher Degree by Research

NHMRC

National Health and Medical Research Council

NIRAKN

National Indigenous Research and Knowledges Network

NSW

New South Wales

PhD

Doctor of Philosophy

RCS

research capability strengthening

VET

Vocational Education and Training

WA

Western Australia

Terminology

The term Aboriginal and Torres Strait Islander people is used when referring to Australia's First Nations. The word 'people' refers to individuals and 'peoples' of the various Aboriginal and Torres Strait Islander groups and Nations. The terms First Nations and Indigenous are used largely in the international context or as they appear in original titles and quotations. The term Torres Strait Islander or Islanders is respected in direct quotation, but not commonly used in this Review.

Executive Summary

It is critical to improving the benefit of health research to Aboriginal and Torres Strait Islander communities that Aboriginal and Torres Strait Islander health researchers are at the centre of research. This will ensure that research is better aligned with community needs which in turn leads to more effective health policy and action.

Building on the successes of Aboriginal and Torres Strait Islander health researchers over the past two decades, the Lowitja Institute saw the need for a review and analysis of progress in expanding and strengthening the Aboriginal and Torres Strait Islander health researcher workforce. To be best placed for strategic workforce planning, the Lowitja Institute highlighted the need to identify and understand success factors connected with research training approaches. Researchers at the Melbourne Poche Centre for Indigenous Health were commissioned to conduct the review and analysis (hereafter the Review).

Project aims and purpose of the Review

The project aimed to integrate and consolidate knowledges on research capability strengthening (hereafter RCS) in Australia and globally, and learn from current and future Aboriginal and Torres Strait Islander health researchers, via interviews and a survey (for instance, PhD candidates, senior researchers).

The Review brings together diverse ideas from, and experiences of, interviewees, survey respondents and the literature on how to most effectively expand and strengthen health research capabilities.

Findings

Driven by generations of Aboriginal and Torres Strait Islander leadership, a nexus of health research organisations and networks has been steadily established throughout Australia. This has given rise to a cohort of Aboriginal and Torres Strait Islander health researchers who have formed and strengthened cross-linking structures between health research, communities, health services, policy and education. Drawing on strong Aboriginal and Torres Strait Islander community capabilities, these researchers have made significant inroads in changing the structural conditions on which health research is based, organised, conducted and applied. This has culminated in more inclusive, rigorous, ethical, culturally appropriate and impactful research.

Aboriginal and Torres Strait Islander health researchers include globally recognised leaders who are advancing knowledge and driving large-scale research programs that support and encourage more community-driven research. There are also increasing numbers of Aboriginal and Torres Strait Islander tertiary students commencing and graduating with research degrees who are going on to senior positions within universities.

The Review brings together diverse ideas from, and experiences of, interviewees, survey respondents and the literature on how to most effectively expand and strengthen health research capabilities.

Aboriginal and Torres Strait Islander people enter research with wide-ranging expertise and experience acquired through their work in the community, industry and the academy. As such, they are equipped to build the capacities of conventional research organisations. However, their contributions and expertise are often unrecognised, under-valued, non-remunerated, or pushed to the periphery in other ways.

Many of the interviewees in this project described an expanding of recognition, valuing and understanding of Aboriginal and Torres Strait Islander knowledges and values, and enactment of support structures for Higher Degree by Research (HDR) students. Interviewees did express, however, that there is still a long way to go in realising environments in which Aboriginal and Torres Strait Islander researchers are free to excel.

The **two key findings** point to peer generative power and health researcher agency in navigating tensions of 'push and pull' between the academy, family and community:

- Power generated by cohorts of Aboriginal and Torres Strait Islander researchers is integral to strengthening research capabilities. These peer networks go largely unrecognised and emerge from informal networks, group-facilitated research programs and events, university departments led by Aboriginal and Torres Strait Islander researchers and conferences.

- Aboriginal and Torres Strait Islander health researchers exert agency in navigating structural tensions between the academy, family and community. Convergences of these domains propelled research progress and RCS, while divergences restricted health researchers. Institutions can do a lot to eliminate many of these divergences to open up freedom for Aboriginal and Torres Strait Islander researchers to meet their cross-domain commitments and aspirations.

In light of these main findings, cohort-driven research training models, such as the former Building Indigenous Research Capacity Collective at James Cook University (BIRC Collective–JCU), should be prioritised in research capability policy and implementation.

This Review also details Aboriginal and Torres Strait Islander health researcher experiences and views on intersecting features of RCS, e.g. mentorship, supervision, funding, and pathways and transitions.

An Integrated Research Capability Strengthening Framework (see pp.37-39) arose out of the overall project to deepen understanding of the evidence base, guide further research and inform ways forward.

The best way forward

Key recommendations revolve around the need for institutions to support and utilise peer generative power more strategically, and to invest in Aboriginal and Torres Strait Islander leadership in health research.

Recommendations

Key recommendations

- Further develop a national-level agenda that centres Aboriginal and Torres Strait Islander leadership in changing health research and higher education institutions utilising the complexity and diversity of approaches to nurturing research excellence.

- Using the action-based principles for research capability strengthening, detailed in Table 1 (see p.39), to guide policy and implementation.

- Recognise, and more explicitly value and build on, peer cohort strengths. This should include renewed commitment to cohort-driven research capability strengthening by research funding bodies.

- Reorientate policy to intersect with global movements in social justice and equity, First Nations' self-determination and re-visioning of the role of health research and universities in social change.

- Gearing research employment to sharp increases in long-term and permanent positions.

- A policy-based commitment to research that informs and evaluates the next generation of research capability strengthening programs and provides a fuller picture of transitions and pathways across sectors – community health services, Vocational Education and Training (VET) and universities.

Other recommendations

- More programmatic nurturing of the leadership capabilities of Aboriginal and Torres Strait Islander researchers.

- Ensuring embeddedness of research learning opportunities in undergraduate programs and other research learning opportunities (e.g. Summer internships).

- Introducing more formalised mentoring structures.

- Introducing better research support and pathways for Aboriginal and Torres Strait Islander people seeking to incorporate research into their work.

- Formalising an international Aboriginal and Torres Strait Islander-led health researcher network, in particular to support early and mid-career researchers and to forge closer connections between students (aspiring and current) and senior Aboriginal and Torres Strait Islander academics.

These recommendations feed into the following strategic direction:

Strategic planning at a national level should invest in Aboriginal and Torres Strait Islander researchers working to change institutional structures. Collective agency is integral to research workforce extension and improving the quality and health efficacy of research.

Several findings of this Review reaffirm recommendations from previous research and analyses, such as bolstering undergraduate coursework on research, as asserted in the Behrendt Review of Higher Education.[1]

For publications tied to this Review, go to: https://www.lowitja.org.au/workforce-review

Introduction

The continued success and increased prominence of Aboriginal and Torres Strait Islander health researchers is critical to reworking health research agendas and, in turn, to the wellbeing of our First Nations peoples. Pivotal to achieving this is furthering large increases in the number of Aboriginal and Torres Strait Islander researchers across the health sector. Thus, strong foundations in research capability strengthening structures and processes are key for accelerated progress towards a critical mass of Aboriginal and Torres Strait Islander health researchers and more impactful research.

To be best placed to capitalise on Aboriginal and Torres Strait Islander health researcher successes, the Lowitja Institute identified an urgent need for research to support programmatic strategising in research capability expansion and strengthening.[2] While it was well recognised that concerted RCS had taken place over the past two decades, it was also acknowledged that much of the activity was siloed and ad hoc. Efforts needed to be redoubled to develop more national Aboriginal and Torres Strait Islander-led strategic planning and action. Fundamental steps in doing so would be integrating international and local knowledge on RCS, and, as part of this, learning from the experiences of Aboriginal and Torres Strait Islander researchers in training and research practice.

In response to these needs, the Lowitja Institute engaged with and provided funding to one of its Essential Participants, the Melbourne Poche Centre for Indigenous Health, to conduct a project that reviewed progress in Aboriginal and Torres Strait Islander health research workforce growth from 2000 to 2018.

In particular, the Lowitja Institute emphasised the role of research training systems in workforce expansion by focusing on the question: what are the characteristics of research training models that are associated with success?

Project aims

- To consolidate the base of knowledge on research capability strengthening in Australia and globally.

- To learn from current and future Aboriginal and Torres Strait Islander health researchers, via interviews and a survey.

- To suggest next steps in research capability strengthening for policy-makers, researchers and educationalists, research institutions and health care organisations.

Background

The role of RCS in research workforce expansion and performance

The main pathway into the research workforce is the completion of formal research training. This could include on-the-job training, short courses and workshops run by research institutions. In accordance with the Australian Qualifications Framework,[3] the most common formal pathway is graduation from a Higher Degree by Research (HDR), such as a Masters by Research and a Doctorate by Research, e.g. a Doctor of Philosophy (PhD). In terms of research employment, recruitment by health organisations typically has attainment of these research training degrees as a key selection criterion.

The literature on research capacity building[4] denotes actions that target individuals (e.g. enhanced research skills), organisations and broader structures, with more or less emphasis on:

- areas of expertise

- research training programs and curricula

- mentoring and supervision

- funding schemes

- partnerships.

In this Review, 'research capability strengthening' is the preferred phrase to 'research capacity building'. It is a term used by other First Nations peoples[5], as it is geared more to a strengths-based approach. The choice of 'capabilities' over 'capacities' was also determined by the intention to include the Capabilities Approach[6] in this research, as introduced in the next section.

Significance of the Aboriginal and Torres Strait Islander health researcher workforce to improved wellbeing

Inequalities in health are most likely to be eradicated when decision-making is informed by a robust evidence base.[7-9] However the type of evidence that is generated will always reflect the lens of the researcher, and given the peer-reviewed nature of the research, reflect the zeitgeist of the academy. Higher quality and health-effectual research will be better realised when it is led and shaped by the talents, values, priorities, ontologies and epistemologies of Aboriginal and Torres Strait Islander peoples, cultures and communities.[8, 10, 11] On this basis, as well as on population parity grounds (equity and social justice), there is a significant need for much greater

Aboriginal and Torres Strait Islander representation in research education and the health research workforce.

Aboriginal and Torres Strait Islander people justifiably hold strong reservations about research, which many view with distrust, deep knowledge and a direct experience of generations of wrongdoing by researchers and research institutions. These views are situated within a common understanding of conventional research as stemming from imperial, colonial and related agendas of domination, dispossession and erasure.[12-14] In response, Aboriginal and Torres Strait Islander people have strived for significant change to the fundamentals of research, and towards knowledge advancement that benefits the wellbeing of all peoples. The core values of Aboriginal and Torres Strait Islander research practice are based on genuine collaboration, equity and justice, reciprocity and research excellence.[10, 11, 15]

One of the many examples of a significant Aboriginal and Torres Strait Islander contribution to health research is the Lancet–Lowitja Institute Global Collaboration, which charted the health inequalities of around half (154 million) of the world's population of First Nations peoples.[16] A collaboration of 65 experts, led by an Australian Aboriginal health researcher, it encompassed 28 countries and provided a much fuller overview of the health and wellbeing of First Nations peoples.

Strengthening the health workforce and health care systems

To improve Aboriginal and Torres Strait Islander health and wellbeing, changes to Australia's health workforce and health care systems are needed. Health research is integral to improving health care systems, through:

- building the evidence base to inform decision-making in everyday health care and administration

- evaluating the effectiveness of health services

- moving health practice in directions that make a real difference to the wellbeing of Aboriginal and Torres Strait Islander people

- identifying and tracking progress on health inequalities and inequities

- deeply evaluating and reworking health policy.

An example of how Aboriginal and Torres Strait Islander researchers have been working in this area has been in embedding diversified and culturally appropriate curricula in health professional training (e.g. of medical doctors and nurses) so that incumbents are much better equipped to provide good quality health care.[17, 18]

Aboriginal and Torres Strait Islander researchers need to be at the centre of deliberations and decision-making in health research, practice policy and debate, as the control of health research will be a critical factor in

shaping future developments in health, such as:

- 'big data' (e.g. health service, genomics) — whether and how data is conceived, collected, produced and used[19-24]

- research and/or knowledge translation (e.g. clinical research)[25-27]

- e-learning[28] and digital health.[29, 30]

Workforce inclusion and positioning

Workforce employment is a key site for social justice, equity, economic inclusion, and the wellbeing of Aboriginal and Torres Strait Islander peoples.[31] The Health Care and Social Assistance Industry is the largest employer of Aboriginal and Torres Strait Islander people,[32] and health has the third greatest allocation of Australian Government research funding.[33]

RCS of Aboriginal and Torres Strait Islander health researchers contributes to a more robust and higher performing health workforce. Research supports the wider Aboriginal and Torres Strait Islander health workforce in spreading and embedding culturally appropriate and effective health care across health practitioner groups, service settings, and in policy.

This research project sits within the Workforce and Capacity Building arm of the Lowitja Institute, thereby complementing a series of projects in this area.[34-36]

For Aboriginal and Torres Strait Islander and other First Nations' perspectives on research, see Gerald Taiaike Alfred,[37] Gawaian Bodkin-Andrews and Bronwyn Carlson,[38] Chelsea Bond,[39, 40] Bronwyn Fredericks,[41] Steven Kelly,[42] Karen Martin,[43] Aileen Moreton-Robinson,[44, 45] Martin Nakata,[14] Lester-Irabinna Rigney,[46] Linda Tuhawai Smith,[47] Eve Tuck,[48] Maggie Walter[19], and the VicHealth Koori Health Research and Community Development Unit.[49, 50]

Research Approach

Social justice and equity are core tenets of this research. The project used several methods – desktop searches, literature reviews, interviews and a survey – to gain an overall picture of RCS initiatives and Aboriginal and Torres Strait Islander health research workforce advances.

Project Reference Group

Two Aboriginal academics, Cindy Shannon and Mick Adams, comprised the Reference Group for this project.

Review and analysis of literature

Early stages of the research involved identification, mapping and analysis of literature released between 2000 and 2018, including the grey literature. Priority was given to a detailed review of peer-reviewed journal articles on Aboriginal and Torres Strait Islander experiences of health research training in Australia-based RCS.

A follow-up review expanded to RCS programs internationally and to overlapping and/or other minoritised identities/categories connected with gender, class or ethnicity. Twenty-five of the programs described in most detail in this literature were thematically analysed.

Policy frameworks and higher education and workforce data

Early stages of the research also documented federal government policy on higher education, health research or both, as well as the size and growth of the Aboriginal and Torres Strait Islander university-employed research workforce and HDR student enrolments and completions.

Interviews

Qualitative interviews with 14 Aboriginal and Torres Strait Islander health researchers from around Australia were conducted by Tess Ryan, a lead Aboriginal academic on the research team. Tess used yarning, an Aboriginal and Torres Strait Islander interview approach that is conversational, as the basis of the interview conversations.[51, 52] The interview approach was also guided by standpoint theory[53, 54] and decolonising methodologies.[13]

Interview questions centred on:

- interests in health research and pathways

- highlights of research training

- experiences of training

- respondents' plans over the next five years

- what respondents see as an ideal space for Aboriginal and Torres Strait Islander health research

- views on what would be the most effective ways forward in optimising further growth of the Aboriginal and Torres Strait Islander health researcher workforce.

Sixty-five per cent of interviewees were women. There were four current PhD candidates, seven early-career researchers (e.g. Postdoctoral Fellow), two mid-career researchers, and one later-career researcher (Professor). Twelve were university-based and two were undertaking research within government agencies.

Survey

After the interview study, an Internet survey study was conducted that received 35 responses. Survey questions were on:

- forms of motivation for health research and pathways

- experiences during HDR and health research employment

- views on the quality of research training

- the value of peers

- views on what national-level strategies for RCS should be prioritised

- interests in health research training topics.

Sixty-six per cent of survey respondents were women, and around half were living in Queensland. Thirty-seven per cent were 35–44 years of age, and 23 per cent were aged 44–54 years. Fifty per cent were employed full-time in a job that included research.

Ethics

Research interviews and the survey were reviewed and approved by the Human Research Ethics Committee at the University of Melbourne (ID 1750826). All data was kept confidential. On the consent form, prospective interviewees were asked if they wished to be named or not in any reporting of statements from their interview – all chose to remain anonymous.

Integrated RCS Framework

Over the course of the project a framework was developed to guide analysis, synthesis and further interpretation of findings. It was located at the *overlap* of three rubrics:

1. **Systems theory and perspectives** – a holistic view of whole structures as comprising interacting and inter-dependent sub-structures, mechanisms, actions and processes.[55] Systems perspectives are evident in some RCS literature.[56]

Systems perspectives are useful for:

- Unpacking systemic challenges and opportunities
- Charting and understanding complexities (scope, diversity, dynamics, interdependencies) of the sectors that interact in health research and health research education, stretching from immediate or micro processes and structures to global ones.
- Applying systems-specific sensitising concepts (e.g. emergence).

Systems perspectives are a cornerstone of health research[57, 58] and policy.[57]

2. **Critical research on power relations** – to centre the reality of unequal structural power relations in higher education, research and the larger societies, as well as agency in reworking power relations (e.g. equalisation).[59-61]

3. **The Capabilities Approach** – seeks normative theory and definitions of wellbeing in terms of capabilities, such as the capability of affiliation.[6, 62, 63] The approach emphasises social, political and economic conditions for *being and doing*. The approach has been applied to higher education[64] and RCS.[65]

The latter stages of the research operated at the intersection of these vantage points in order to utilise the strengths of each and to co-address the limitations of Systems Perspectives and of the Capabilities Approach. These limitations tend to be borne out when either is used in isolation (e.g. see Elise Klein[66] on misinterpretation and misapplication of the Capabilities Approach in Aboriginal and Torres Strait Islander policy).

Limitations

While relatively comprehensive, the project does not provide a complete picture of RCS and the growth of the Aboriginal and Torres Strait Islander research workforce. For instance, as research collaborations across the Aboriginal community controlled health sector (comprising around 143 organisations) are under-reported, by implication this project underestimates the research capability strengths of the Aboriginal and Torres Strait Islander workforce.

A mix of methods privileging Aboriginal and Torres Strait Islander experiences and views were employed for a comprehensive review and analysis of the role of research training within the broader context of RCS of the Aboriginal and Torres Strait Islander health researcher workforce.

More detail on the interviews and survey are provided in Item 1 in the Supplementary Materials found at: https://www.lowitja.org.au/page/research/research-categories/health-services-and-workforce/workforce/projects/workforce-review

For a full copy of the survey, please contact Shaun Ewen: shaun.ewen@unimelb.edu.au.

Findings of Literature and Document Reviews

Strong research capabilities

Aboriginal and Torres Strait Islander health researchers:

- contribute strong research capabilities in the service of Aboriginal and Torres Strait Islander communities and the wider society

- lead research with global influence

- include Rhodes, Fulbright and Churchill scholars and fellows.

The Aboriginal and Torres Strait Islander health research workforce is leading research on:

Action research methods[67-70]

Bullying[71]

Case-management models[72]

Congenital heart disease[73]

Epidemiology of smoking[74]

Health service evaluation[75-79]

Evaluation of health information sources[80]

Evaluation of needs assessment instruments[81]

Health data usage and improvement[82]

Health professional education[12, 18, 83-87]

Health profession–Human rights interface[88]

HIV incidence and prevention[89-91]

Identity and wellbeing[92, 93]

Indigenist health research[94, 95]

Indigenous peoples' health internationally[16, 96, 97]

Indigenous quantitative methodologies[98]

Primary health care service improvement[99]

Quality of life[100]

Racism and ill-health[101-103]

Research poems[104]

Risk factors for child ill-health[105]

Sexual health[106]

Smoking intervention[107]

Social determinants of health[12]

There are also many Aboriginal and Torres Strait Islander researchers specialising in fields often not registered as 'health' research areas by conventional classification systems that, nonetheless, contribute to health, for instance, language revitalisation.

An oft-overlooked strength of Aboriginal and Torres Strait Islander health researchers are their capabilities in the translation of research and knowledge. Converting research-derived knowledge into application in health care, medicine and policy is a relatively recent policy commitment and institutional focus in Australia and internationally.[25, 108-110] Research translation has been a long-standing priority and value of Aboriginal and Torres Strait Islander peoples and communities. Furthermore, the majority of Aboriginal and Torres Strait Islander people entering health research bring extensive experience and expertise from working directly in community, health care and other applied settings. In many cases, they have undertaken research in conjunction with ongoing commitments in these settings. In these ways, Aboriginal and Torres Strait Islander researchers are often best placed:

- to design research programs high in translatability

- to work out how research findings can be converted into health-related actions, and are already engaged in partnerships geared for immediate actioning.

Increases in Aboriginal and Torres Strait Islander research staff and doctoral students

A key site of health research in Australia is the university sector. The following figures are based on data from the Australian Government Department of Education and Training.[111] It should be noted that the figures do not take into account Aboriginal and Torres Strait Islander learning research and/or employed in health research at other types of research institutions in Australia.

The number of Aboriginal and Torres Strait Islander researchers at universities has grown markedly from 2001 to 2017, for example:[111]

- a five-fold increase in Masters and Doctorates by Research enrolments in health

- 619 completions of HDRs — Masters by Research (207 completions) and Doctorates by Research (412 completions), with more than 16 per cent of these in the health field.

As of 2017, there were 387 Aboriginal and Torres Strait Islander staff employed at universities in research functions (22% in health research positions).

Figure 1 shows more than a two-fold increase in Aboriginal and Torres Strait Islander research staff employed at universities, from 2001 to 2017.

Figure 2, indicates variable change in commencements across the years. There was a peak of 15 commencements in 2014. Since 2012 there have consistently been more than six commencements per year.

Figure 3 presents the number of Aboriginal and Torres Strait Islander HDR completions from 2001 to 2017. From 2014 to 2016, one of the steepest increases in completions for the period occurred. For Masters by Research, the maximum completion-by-year rate was in 2015 with 20 graduations.

Not indicated in Figures 1 to 4 is that Aboriginal and Torres Strait Islander researchers are engaged in health research around the world (e.g. at overseas universities). Unfortunately, it is not known how many of these are doing health research degrees and/or undertaking health research internationally.

The Aboriginal and Torres Strait Islander health researcher workforce contributes a wide array of research expertise and other strong capabilities to the health sector. Workforce growth has been reflected in a steady rise of both HDR students and researchers employed at universities.

For other reporting on trends in Aboriginal and Torres Strait Islander representation in higher education and research, see Boyd Hunter and Jerry Schwab,[112] Danielle Venn and Heather Crawford,[113] Judith Wilks and Katie Wilson,[114] Rhonda Craven and Anthony Dillon,[115] the Behrendt Review,[1] the Australian and Torres Strait Islander Higher Education Advisory Consortium,[116] and Susan Bandias et al.[117]

Figure 1

Coverage of increases in the number of Aboriginal and Torres Strait Islander research staff
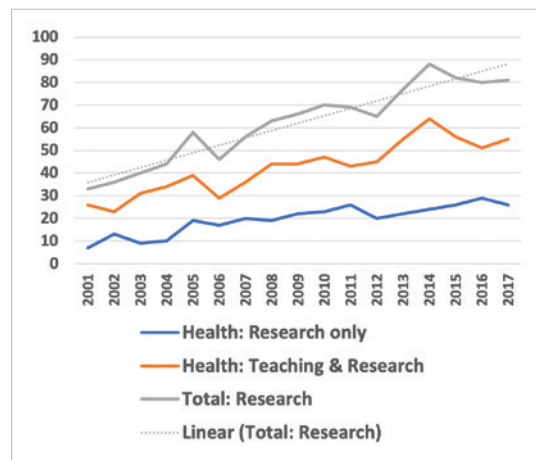

Figure 2

Number of commencements – Aboriginal and Torres Strait Islander researchers
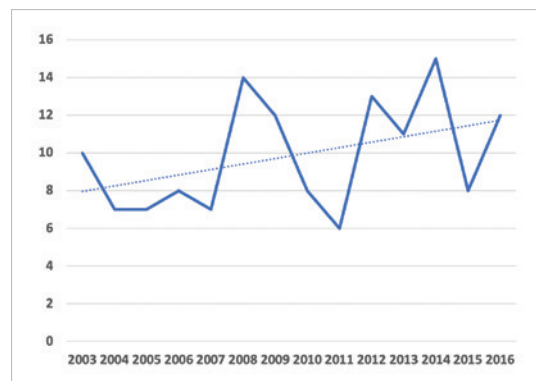
Figure 3

Number of HDR completions
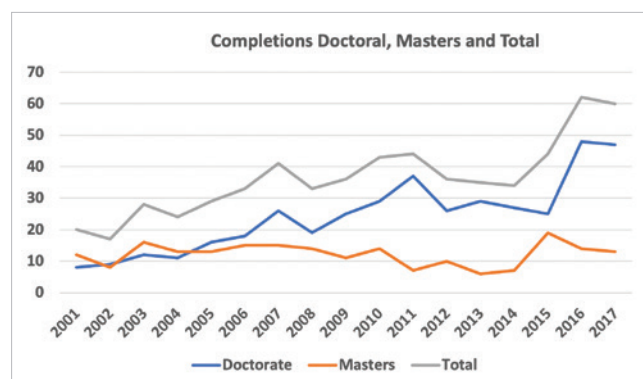
Sense of momentum for change

Wide-ranging agendas for change have driven this growth in the university-based Aboriginal and Torres Strait Islander researcher workforce, with Aboriginal and Torres Strait Islander leadership over the past few decades paving the way for these advances. A nexus of RCS structures has been established over the last 20 years representing combinations of:

- cross-sector research projects
- national Aboriginal and Torres Strait Islander-led research organisations
- discrete RCS programs
- health research organisations
- solitary academics establishing peer groups.

This nexus has produced and been the outcome of inter-connected progressive changes, including:

- **More Aboriginal and Torres Strait Islander control of research processes, with a commitment to research excellence, inclusion and reciprocity:** A sharp increase both in research projects led or co-designed by Aboriginal and Torres Strait Islander health researchers and in the governance of health research.[118-121] This has coincided with ethical protocols and guidelines led or co-determined by Aboriginal and Torres Strait Islander people, including research ethics bodies at the national, state/territory, and local community levels.[122-125]

- **Shifts from 'us and them' to collaborative engagement between Aboriginal and Torres Strait Islander and non-Indigenous researchers and organisations:** A large increase in partnerships both within projects and extending to organisational-level reforms.[126] There has been more research collaboration with a focus on forms of reciprocal and broadened learning. The establishment of Aboriginal and Torres Strait Islander Health Cooperative Research Centres[127], [128] and the Lowitja Institute[15] is a nationwide example of new bases for collaborations. Furthermore, there has been increased sharing of non-Indigenous perspectives on collaboration,[129-131] and Aboriginal and Torres Strait Islander advice on genuine 'ally-ship'.[132]

- **Aboriginal and Torres Strait Islander communities as key stakeholders in health research:** An increase in partnerships between communities and research institutions has led to a rise in community-based priorities and agendas.[133] One major pathway has been advancing variations on participatory action research as a framework for heightened community control of research agendas, processes and applications.[69, 120, 134-138]

- **Movement from a deficit paradigm to a focus on strengths-based education and research:** Intensified research exposing the deficit paradigm in higher education and health fields, and devising new strategies for a move to strengths-based orientations.[8, 115, 139-145] Addressing deficit models across the spectrum, for instance: in higher education, the reform of health professional training programs, and movement beyond 'retention and support' discourse and practice;[146] and in population research, a shift from research on chronic disease rates to research on the cultural determinants of health.[147]

- **Overturning educational inequities, such as in the quality of training and participation:** Direct actions in developing more equitable education systems; upscaling of equity-focused policy, research agendas,[146] and equity-targeted higher education and research training.[148]

- **Major growth in Aboriginal and Torres Strait Islander research methodologies and health frameworks and conceptualisations:** Aboriginal and Torres Strait Islander-determined research methods,[44, 45, 51, 94, 149] health and wellbeing definitions and frameworks,[150-152] visioning,[153] and working across interfaces of knowledge systems at universities.[154]

- **A significant rise in Aboriginal and Torres Strait Islander students undertaking undergraduate degrees:** In 2017 there were around 19,261 Aboriginal and Torres Strait Islander students enrolled at universities,[155] compared to 8,988 in 2003.[156]

- **Foundational research on experiences of Aboriginal and Torres Strait Islander emerging and senior researchers:** In-depth qualitative research studies prioritising the first-hand experiences and views of Aboriginal and Torres Strait Islander people in higher education and research have emerged, including at the high school,[157] undergraduate,[158-160] transition from undergraduate to postgraduate,[161, 162] HDR,[163-165] and faculty level.[166] Also several commentaries and literature reviews on higher education in Australia, especially at the undergraduate level, that detail barriers, enablers and pathways for systemic reform.[112, 114, 117, 167-172]

- **Increased prominence of Aboriginal and Torres Strait Islander academics at university executive level:** Significant increase in Aboriginal and Torres Strait Islander academics in executive positions at universities,[59, 173] and some recognition of this in the Australian Council of Learned Academics (ACOLA) Review.[148]

- **Higher Aboriginal and Torres Strait Islander representation and leadership in the professions:** Increase in Aboriginal and Torres Strait Islander professionals,[174] including health practitioners engaging in research.[175]

- **Heightened commitment to knowledge translation:** Going beyond conventional research culture tendencies of 'research for the sake of research' to requirements that findings lead to tangible health benefits, with knowledge translation and exchange prioritised in health research planning and partnering.[15, 176]

- **More frequent meetings concentrated on research programs, research ethics, research translation and data sovereignty that is prioritised by Aboriginal and Torres Strait Islander and other First Nations peoples:** Building on the international focus that has always been the remit of Aboriginal and Torres Strait Islander researchers,[15] a rise in the number of international collaborations and conferences.[177]

- **Expansion of the Aboriginal and Torres Strait Islander public sphere and media influence through new information technology infrastructures and platforms:** Coverage of health-related projects on relatively new platforms such as the NITV channel of SBS, and the rise of social media to network, educate and influence,[178-181] for instance, via twitter, the IndigenousX website, and the upcoming Blacademia™ podcast.

Multi-pronged progressive changes in health research are afoot, driven by and feeding back into the growing influence of Aboriginal and Torres Strait Islander researchers. Decolonising and Indigenising education and research are major priorities.

Systems and structures for research capability strengthening and extending

In Australia there is a nexus of RCS organisations and platforms, several of which are led by Aboriginal and Torres Strait Islander people and/or have majority or full membership by Aboriginal and Torres Strait Islander people. These entities create and deliver RCS programs, infrastructure for relationship-building, and scholarship and fellowship schemes. Most have partnerships with each other.

The following are key RCS entities, former and current:

- Aurora Education Foundation International Scholarships Program

- Australian Health Council of South Australia

- Australian Institute of Aboriginal and Torres Strait Islander Studies

- Building Indigenous Research Capacity Collective–James Cook University

- Centre of Research Excellence, Indigenous Health and Alcohol

- Centre of Research Excellence in Aboriginal Chronic Disease Knowledge Translation and Exchange Capacity Strengthening Program

- Coalition for Research to Improve Aboriginal Health (partnership between the Sax Institute and Aboriginal Health and Medical Research Council of NSW)

- Institute for Urban Indigenous Health

- Kulunga Aboriginal Research Development Unit, Telethon Kids Institute, and WA Aboriginal Health Knowledge Network

- Maiam nayri Wingara Aboriginal and Torres Strait Islander Data Sovereignty Collective

- Master of Philosophy (Applied Epidemiology), National Centre of Epidemiology and Population Health, Australian National University (previously, Master of Applied Epidemiology)

- Melbourne Centre for the Study of Higher Education: Professional Certificate in Indigenous Research and Graduate Certificate in Indigenous Research and Leadership

- Melbourne Academic Centre for Health, Indigenous Health Network

- Menzies Institute for Medical Research, The University of Tasmania

- Menzies School of Health Research

- Narrbang Indigenous Health Research Student Network, University of Technology Sydney

- National Indigenous Research and Knowledges Network

- Ninty One Aboriginal Community Researcher Program

- (formerly) Onemda (and earlier, VicHealth Koori Health Research and Community Development Unit)

- Poche Indigenous Health Network

- QIMR Berghofer (Queensland Institute for Medical Research)

- South Australian Aboriginal Health Council

- South Australian Health and Medical Research Institute and Wardliparingga Aboriginal Research Unit

- The Lowitja Institute and Cooperative Research Centres for Aboriginal and Torres Strait Islander Health

- Torres Strait Islander Researcher Network and Community of Practice

The following also play an important role in RCS:

- Aboriginal and Community Controlled Health Organisations, internally and/or with partners

- Australian Indigenous Health InfoNet

- Health research training in the VET sector (e.g. Certificate II in Community Health Research, Certificate IV in Indigenous Research Capacity Building)

- Centre for the Advancement of Indigenous Knowledges, University of Technology Sydney

- Health professional organisations, e.g. National Aboriginal and Torres Strait Islander Nursing Congress.

In addition, large health research programs led by Aboriginal and Torres Strait Islander researchers, such as in epidemiology, have RCS of Aboriginal and Torres Strait Islander and non-Indigenous researchers built into the program design.[e.g. 147]

Another promising development has been mobilising the seven Research Translation Centres of the Australian Health Research Alliance to establish a national Aboriginal and Torres Strait Islander health researcher network. This has been led by Health Translation SA and Aboriginal and Torres Strait Islander academics, with comprehensive input from Aboriginal and Torres Strait Islander representatives across the centres. The endeavour has great outreach potential for RCS impact as the centres aggregate to more than 118 networked organisations, representing around '95% of health and medical researchers and around 80% of hospitals nationally' (p.2).[182]

Literature on RCS of the Aboriginal and Torres Strait Islander health researcher workforce

A review of journal articles on RCS of the Aboriginal and Torres Strait Islander health research workforce[183,] 24 articles were identified, with the following key findings:

- Large increases in research production and impact following investment in Aboriginal and Torres Strait Islander RCS

- Seven of the articles (29%) were exclusively on RCS programs

- There was a great need for more research on RCS

- Synthesis arrived at research training model characteristics associated with successful RCS.

There is a complementary literature reporting qualitative research studies on the experiences and views of Aboriginal and Torres Strait Islander students and researchers in higher education generally.[158-162, 184-186] In terms of attention to all 'stages' of research careers, the overall research literature to date has been patchy and there is a shortage of work specifically targeting health research trajectories.

Potentially informative to Aboriginal and Torres Strait Islander-specific health RCS is the growing literature on 'research capacity building', comprised of tracts by:

- Health professional alliances (e.g. allied health[4, 56, 187-189])

- Professional care group (e.g. social workers[190, 191]; dieticians[192]; nurses[193, 194])

- Type of health (e.g. mental health[195])

- Modality (e.g. Research translation capacity[196-198])

- Health care system (e.g. UK National Health Service[199])

- Type of organisation (e.g. community organisations;[200] hospitals[201])

- Setting (e.g. rural[202])

Research training models and programs

Key examples of successful RCS programs in Australia are:

- Masterclass Program: Focused on research learning of personnel in the Aboriginal and Community Controlled Sector.[203]

- Master of Philosophy (Applied Epidemiology), Australian National University (previously, the Master of Applied Epidemiology): Postgraduate training in public health, with international placements.[204, 205]

- Building Indigenous Research Collective, James Cook University: A former collective that concentrated on community-based research projects.[206]

- Centre for Research Excellence Knowledge Exchange Program: Research learning by community members in regional and remote areas, and tied to the SEARCH research project (Study of Environment on Aboriginal Resilience and Child Health).[207]

- Hunter New England Health Aboriginal Health Partnership: Training workshops, establishing community researchers in NSW, Queensland and Western Australia.[208]

- Building Indigenous Research Capacity, Telethon Institute and partners: A former cohort model of research learning in Western Australia.[175]

Common elements of these programs were applied research learning, training workshops and cross-sector partnerships.

For an overview of in-depth research of Aboriginal and Torres Strait Islander experiences during HDR and faculty work, see Item 2 in the Supplementary Materials.

For background on features and outcomes of the RCS models and programs mentioned above, see Item 3 in the Supplementary Materials found at https://www.lowitja.org.au/page/research/research-categories/health-services-and-workforce/workforce/projects/workforce-review

For research training program characteristics connected with successful RCS and workforce development, as exemplified by these programs, see Table 1 (pp.39).

For a full-text download of the literature review of Aboriginal and Torres Strait Islander health RCS[183], go to: https://human-resources-health.biomedcentral.com/articles/10.1186/s12960-019-0344-x

For related reviews on Aboriginal and Torres Strait Islander HDR experiences, see Nikki Moodie et al.[146] and Kate Hutchings et al.,[209] and on the broader higher education sector, see Jennifer Gore et al.[210]

International research capability strengthening

Aboriginal and Torres Strait Islander and other First Nations peoples work with other minoritised groups to advance more ethical, inclusive and effectual higher education and research.

Increased internationalisation of collaborative learning and action

There has been increased internationalisation or global cross-engagement, such as the World Indigenous Nations Higher Education Consortium.[211] Commonly shared objectives include self-determination, decolonising education and securing cultural safety and appropriateness.

In RCS, key exchanges and co-learning have been with Indigenous peoples and their colleagues in Aotearoa New Zealand and Canada:[212]

- Aotearoa New Zealand: The Ngā Pae o te Māramatanga (Centre of Research Excellence for Māori Development and Advancement), comprising the Māori and Indigenous Support Network,[213] Capability Building Program[5] (including the Māori and Indigenous Support Program[214]), and Kaupapa Māori research.[13, 215] In 2002, the aim was set for 500 Māori PhD students (graduated and/or underway) in five years, and was reached within this timeframe.[216] In the Māori and Indigenous Support Program there are mentors for all PhD candidates, complemented by wide-ranging structures and activities (e.g. conferences, workshops).[214, 217]

- Canadian Institutes of Health Research: One of the 13 institutes is the Institute of Aboriginal People's Health,[218] representing First Nations, Inuit and Metis peoples. Core structures have been the ACADRE Program (Aboriginal Capacity and Developmental Research Environment) since 2002, and the NEAHR Program (Network Environments for Aboriginal Health Research). Features of these programs are community research priorities, research fellowships and knowledge transfer, guided by 'the four R's': Respect, Relevance, Reciprocity and Responsibility.[219]

In terms of RCS programs by and/or for Indigenous peoples, three are highlighted here:

- 'Imi Hale Native Hawaiian Cancer Network: Research collaborations outside of universities, guided by community-based participatory research principles. The Nā Liko Noelo (budding researchers) Program provides research training (e.g. support creation of pilot study grant proposals), mentors, Listserv and mailing list, and has 98 research training students and 79 working on research projects. Robust support mechanisms included funding for health practitioners to secure time to do research.[220-222]

- Arctic Community Research Partnership: Inuit communities in Canada were partnering with universities. The program featured 'cross-cultural research training workshops' held twice a day over three days. Community member co-researchers were remunerated, and some went on to become research assistants on further research partnerships. Program participants indicated that the workshops resulted in enhanced learning on research ethics and research methods. [223, 224]

- Native Investigator Development Program: Focused on American Indian or Alaskan Native post doctorate-level researchers in ageing and health research (four cohorts, 14 overall) at the University of Colorado Health Sciences Centre and the University of Washington's Native Elder Research Centre. Training was for two years. The first year involved mentoring, mini-courses, seminars and workshops. The second included mock reviews of grant applications. Outcomes were new publications and research positions on National Institutes of Health grants.[225, 226]

RCS is often framed in terms of diversity (women, Latin@, African American, American Indian and Native Hawaiian) in the USA, where there are two major programs:

- Building Interdisciplinary Research Careers in Women's Health (BIRCWH): This program has facilitated early-career women's health researchers since 2000 (80% women as of 2016), with more than 39 institutions involved.[227] A major mechanism was funding for protected time to undertake 75 per cent for research. It featured a unique interdisciplinary mentoring team for each participant. Training attributes include career and science mentors, and a national meeting once a year. A key outcome was 66 per cent competitive grant attainment by BIRCWH graduates.[227-229]

- National Research Mentoring Network (NRMN): This large program seeks to ensure continuity of mentorship across the education pipeline (college to senior research in biomedicine) for minority researchers. The NRMN features in-person and online mentoring, mentor training and certification, and grant writing coaches. A Coordination Centre was set up for evaluating and comparing the various NRMN mentorship models and programs.[230-232]

As well as research literature on national and regional RCS programs, there has been some research and commentary on the challenges and opportunities in health RCS between the Global North and Global South, and countries grouped by income or resource level.[233-239]

Globally there are wide-ranging initiatives and evidence to inform RCS strategic planning. Concerted investment in RCS of minoritised groups have translated into higher research involvement and enriched learning opportunities for all stakeholders.

The international literature review of 25 research capability-strengthening programs will be available in 2020 on the Lowitja Institute website project page: https://www.lowitja.org.au/page/research/research-categories/health-services-and-workforce/workforce/projects/workforce-review

For a list of national and international higher education and research organisations by and/or for minoritised peoples, see Item 4 in the Supplementary Materials found at: https://www.lowitja.org.au/page/research/research-categories/health-services-and-workforce/workforce/projects/workforce-review

Policy relating to RCS

The following organisations and their predecessor entities have engaged in policy relating to RCS, higher education and health that have had a bearing on the Aboriginal and Torres Strait Islander health researcher workforce:

- (Former) Aboriginal and Torres Strait Islander Higher Education Advisory Council (ATSIHEAC)

- (Former) Indigenous Higher Education Advisory Council

- Australian Government Department of Education and Training (current)

- Australian Government Department of Industry, Innovation and Science Cooperative Research Centres Program

- National Aboriginal and Torres Strait Islander Health Standing Committee

- Universities Australia

At a national level, the policy frameworks and recommendations that have most directly affected Aboriginal and Torres Strait Islander researcher RCS are:

- Aboriginal and Torres Strait Islander Higher Education Advisory Council Recommendations: Accelerating the pace of change in Indigenous higher education[240]

- Australian Council of Learned Academics Review of Australia's Research Training System (ACOLA Review)[148]

- Growing the Indigenous Academic Workforce: ATSIHEAC recommendations to government[241]

- Implementing a Whole-of-University Approach to Improving Indigenous Access and Achievement[242]

- National Indigenous Higher Education Workforce Strategy[243]

- Review of Higher Education Access and Outcomes for Aboriginal and Torres Strait Islander People (Behrendt Review)[1]

- Review of Australian Higher Education (Bradley Review)[244]

- Strategic Review of Health and Medical Research (McKeon Review)[245]

- Universities Australia Indigenous Strategy 2017–2020[246]

Key trends in this complex policy landscape have been:

- greater Aboriginal and Torres Strait Islander representation within conventional policy organisations

- growing recognition of the contribution of Aboriginal and Torres Strait Islander health researchers to knowledge production and the knowledge economy

- 'sector-wide' and 'whole-of-university' foci on Indigenous strategy

- development of targets (e.g. student enrolment, retention, completions, funding percentages) and modest accountability mechanisms

- more partnerships, with several including higher education and research reform in Reconciliation Action Plans.

These federal and national policies operate alongside state and regional policy-making on Aboriginal and Torres Strait Islander RCS, and that of bodies such as the Cooperative Research Centres of the Lowitja Institute Research Facilitated Development Approach.[15]

Funding for RCS

Funding is a critical feature of policy enactment in health research and education. At a federal level, the Research Training Program and the Commonwealth Government Scheme fund HDRs. Key funding bodies at a federal level are the National Health and Medical Research Council (NHMRC) and the Australian Research Council (ARC).

National Health and Medical Research Council

The NHMRC is the largest health research funding body in Australia. There has been increased concentration on Aboriginal and Torres Strait Islander research by the NHMRC and connected to this, change internally to this organisation through Aboriginal and Torres Strait Islander committees;[126] currently, the NHMRC Principal Committee Indigenous Caucus.[247]

There have been three NHMRC 'Road Maps' for Aboriginal and Torres Strait Islander health research, each with successively more focus on Aboriginal and Torres Strait Islander RCS.[248-251] The stated action plans in Road Map 3 include:[252]

- 'Maintain Aboriginal and Torres Strait Islander representation on Council of NHMRC and Principal Committees'

- 'Fund the establishment of a national network of Aboriginal and Torres Strait Islander health researchers through the Centres of Research Excellence scheme, to further strengthen capacity and capability through developing cohorts of postgraduate and early career Indigenous health researchers'

- 'Introduce a new target, for the number of Aboriginal and Torres Strait Islander health researchers who are lead Chief Investigators on NHMRC grants, that is based on the capacity of the sector and can increase as capacity grows'.

NHMRC People Support Grants comprise a major funding arm for health research, in the form of salaries for individual researchers. These include:[253]

- Postgraduate Scholarships

- Early Career Fellowships

- Career Development Fellowships

- Research Fellowships

- Practitioner Fellowships

- Translating Research into Practice Fellowships.

The NHMRC, particularly through the Capacity Building Grant in Population Health Research, has played an important role in supporting the establishment of cohort-based RCS structures, such as:

- BIRC Collective–JCU[206]

- Indigenous Offender Health Research Capacity Building Group, Kirby Institute (University of New South Wales), National Centre for Indigenous Studies (Australia National University), Winnunga Nimmityjah Aboriginal Health Service, Curtin University of Technology, and National Drug Research Institute[254]

- Indigenous Capacity Building Grant, the Telethon Institute for Child Health Research, Curtin University of Western Australia and Combined Universities Centre for Rural Health[175]

Formal analyses of data up to 2006 indicated that the Population Health Capacity Building Scheme had been more supportive of Aboriginal and Torres Strait Islander RCS than the People Support Scheme, both in terms of individual researchers and communities.[126, 255]

The NHMRC Centres of Research Excellence Grants Program in Clinical, Population Health and Health Services Research, each funded for five years, has also been an important RCS platform and led to the establishment of the following centres:

- Centre for Research Excellence Cancer – DISCOVER-TT (2012–17)

- Centre of Research Excellence in Aboriginal Chronic Disease Knowledge Translation and Exchange (2013–18)

- Centre of Research Excellence in Ear and Hearing Health of Aboriginal and Torres Strait Islander Children (2014–19)

- Australian Centre for Research Excellence in Aboriginal Sexual Health and Blood Borne Viruses (2015–20)

- Centre for Research Excellence: Indigenous Health and Alcohol (2016–20)

In 2017 there were '32 active grants led by Indigenous researchers' and '214 Indigenous researchers on active grants'.[256] For the financial year 2017–18 the NHMRC had two Aboriginal and Torres Strait Islander staff members employed out of a total of 192.[247]

'Research capacity building' is a priority area of the NHMRC Road Map 3: A strategic framework for improving Aboriginal and Torres Strait Islander health through research. The NHMRC is deliberating on the establishment of a national-level network, a concept discussed during a 2018 workshop that included 35 Aboriginal and Torres Strait Islander participants and working group members.[257] The NHMRC is also deliberating on an improved peer-review system.

Australian Research Council

In the medical and health sciences, from 2002 to 2017, the ARC funded 13 projects and received 58 project proposals from Aboriginal and Torres Strait Islander researchers. For the first six years of the Discovery Indigenous Scheme (2012 to 2017) six medical and health science projects were funded. The ARC also funds the National Indigenous Research and Knowledges Network (NIRAKN), which has flow-on effects to health research.

Funding is important for supporting research based directly on RCS approaches – i.e. building the evidence base, informing policy and redirecting practice. For instance, the ARC Discovery Indigenous Scheme was important in supporting Michelle Trudgett, Susan Page and colleagues to conduct their research on Aboriginal and Torres Strait Islander doctoral students and supervisors.[164, 186]

Other funding sources

In early 2019, the Australian Government's Minister of Health announced funding of $160 million over 10 years to be led by Aboriginal and Torres Strait Islander health researchers.[258] Funding (e.g. of scholarships) is also provided by state and territory departments, universities, medical research institutions, not-for-profit organisations such as Rotary, and philanthropists. Examples of university-specific scholarships include:

- CQUniversity Research Stipend Scholarship (Australian Indigenous)

- Griffith University Indigenous Australian Postgraduate Research Scholarship

- Indigenous Macquarie University Research Excellence Scholarship

- Monash Indigenous Research Award.

Policy has leaned more to review and deliberation than implementation, and remains highly siloed. Nonetheless, policy remains crucial to the upscaled and better managed resourcing of Aboriginal and Torres Strait Islander health researcher RCS.

For commentary and review of NHMRC 'research capability building' activities, drivers of internal reforms, and funding commitments see Sophia de la Barra et al.[126, 255]

For names of several funding schemes that have been in operation at the NHMRC from 2003 to 2017, see Item 5 in the Supplementary Materials found at: https://www.lowitja.org.au/page/research/research-categories/health-services-and-workforce/workforce/projects/workforce-review

For a timeline of Aboriginal and Torres Strait Islander higher education policy, from 1965 to 2013, see Judith Wilkes and Katie Wilson,[259] downloadable at: https://www.voced.edu.au/content/ngv%3A62192

Timelines

Figure 4, on the following pages, provides timelines of Aboriginal and Torres Strait Islander health RCS, from 2000 to 2018. It demonstrates an intensification of RCS activities and events, especially from 2011 to 2018.

Figure 4
Timelines for 2000 to 2018

2000 - 2005

National Aboriginal & Torres Strait Islander Health Strategy: Draft for Discussion, National Aboriginal & Torres Strait Islander Health Council

Links Reports on the Indigenous Research Reform Agenda, released by the CRCATH

National Strategic Framework for Aboriginal & Torres Strait Islander Health

International Network for Indigenous Health Knowledge & Development Inaugural Forum

Workshop on Social Determinants of Health, Adelaide

Healthy Futures: Defining best practice in the recruitment & retention of Indigenous medical students, Australian Indigenous Doctors Association

2000 | 2001 | 2002 | 2003 | 2004 | 2005

First NHMRC Road Map

NHMRC plan for 5% annual budget commitment to fund Indigenous health research

Start of the Cooperative Research Centre for Aboriginal Health

Indigenous Research Reform Agenda Links Monograph 5

Strategy for Building Capacity in Aboriginal & Torres Strait Islander Health Research

Second forum of the International Network for Indigenous Health Knowledge & Development, Vancouver

2006 - 2010

Learning Circles Indigenous Capacity Building Grant

National Indigenous Health Equality Campaign

Community Workshops by the Onemda VicHealth Koori Health Unit, in Brisbane, Echuca, Geelong & Melbourne

A blueprint for action: Pathways into the health workforce for Aboriginal & Torres Strait Islander people, National Aboriginal & Torres Strait Islander Health Council

Establishment of the National Indigenous Health Equality Council

Building Australia's Research Capacity, House of Representatives

Indigenous Offender Health Research Capacity Building Group: Inaugural Meeting

Cooperative Research Centre for Aboriginal & Torres Strait Islander Health established

Launch of the Lowitja Institute

4th International Network of Indigenous Health & Knowledge & Development Conference

2006 | 2007 | 2008 | 2009 | 2010

James Cook University Building Indigenous Research Capacity grant

Certificate IV in Indigenous Research Capacity Building at AHCSA-RTO

First Poche Centre for Indigenous Health, University of Sydney

Supporting Indigenous Researchers: A Practical Guide for Supervisors, CRCAH

Establishment of the South Australian Health & Medical Research Institute

1st Congress Lowitja, in Sydney

NHMRC Road Map II

2011 - 2015

Above the timeline:

National Indigenous Higher Education Workforce Strategy

National Best Practice Framework for Indigenous Cultural Competency at Australian Universities

Establishment of the Aurora Education Foundation

Strategic Review of Health & Medical Research (McKeon)

NHMRC Forum: Research Excellence through Building Capacity of Indigenous Health Researchers, Brisbane

Workshop: Initial discussion Aboriginal & Torres Strait Islander Health researcher workforce, Congress Lowitja

Lowitja Institute Workforce Roundtable, Brisbane

National Aboriginal & Torres Strait Islander Health Workforce Strategic Framework 2011-2015

Establishment of the Aboriginal & Torres Strait Islander Higher Education Advisory Council

Indigenous Mentorship Workshop & Tripartite Agreement Mentorship Workshop, Melbourne

Launch of the National Indigenous Research & Knowledges Network

First South Australia Aboriginal Health Research Showcase

Aboriginal & Torres Strait Islander Higher Education Advisory Council Recommendations: Accelerating the pace of change in Indigenous higher education

Timeline: 2011 | 2012 | 2013 | 2014 | 2015

Below the timeline:

Researching Indigenous Health: A Practical Guide for Researchers, CRCAH

Growing our Future: Final report on the Aboriginal & Torres Strait Islander Health Worker Project, Health Workforce Australia

Review of Higher Education Access & Outcomes for Aboriginal & Torres Strait Islander People (Behrendt Review)

Lowitja Institute workshops on Indigenous Health Research Futures Thinking, nation-wide

Launch of The Lowitja Institute Aboriginal & Torres Strait Islander Health Cooperative Research Centre

Lowitja Institute Aboriginal & Torres Strait Islander Health Research Workshop, Melbourne

NHMRC Indigenous Scientific Forum

Centre for Research Excellence in Urban and Aboriginal Health: 'Two way capacity building'

International Group for Indigenous Health Measurement Meeting, Montreal

National Indigenous Breast Cancer Research Roundtable, Melbourne

Start of the Melbourne Poche Centre for Indigenous Health

Inaugural Indigenous PhD Familiarisation Program, University of Melbourne

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2016 - 2018

Above the timeline:

ACOLA Review of Australia's Research Training System

Peak year in Research Doctorate completions (48, with 12 in health fields)

Uluru Statement from the Heart

Indigenous Data Sovereignty Symposium, Melbourne

COAG Health Council Indigenous Roundtable

International Indigenous Allied Health Forum

The Lowitja Institute International Indigenous Health and Wellbeing Conference

Universities Australia Indigenous Strategy 2017-2020

Tripartite Agreement: NHMRC, Health Research Council of New Zealand & Canadian institutes of Health Research

Launch: Ngangk Yira Research Centre for Aboriginal Health & Social Equity, Murdoch

NIRAKN workshops, Surfers Paradise

NHMRC Road Map III

NHMRC Ethics Guidelines

Timeline: 2016 | 2017 | 2018

Below the timeline:

Certificate II Community Health Research graduates

1st National Aboriginal & Torres Strait Islander Postgraduate Association Conference, Meadowbrook

Formation of the Maiam nayri Wingara Aboriginal & Torres Strait Islander Data Sovereignty Collective

Symposium on Research Translation, co-hosted by NHMRC and the Lowitja Institute, Brisbane

Indigenous Data Sovereignty Summit, Canberra

National Conference on Indigenous Health Workforce Leadership, Brisbane

Systemic racism workshop, Lowitja Institute, Melbourne

Indigenous Tertiary Education Conference, Melbourne

Canada-Australia Roundtable on Indigenous Health & Wellness, Canberra

NHMRC Aboriginal & Torres Strait Islander Health Researcher Workshop, Melbourne

World Indigenous Research & Education Conference, Norway

Indigenous Research Forum, Australia National University, Canberra
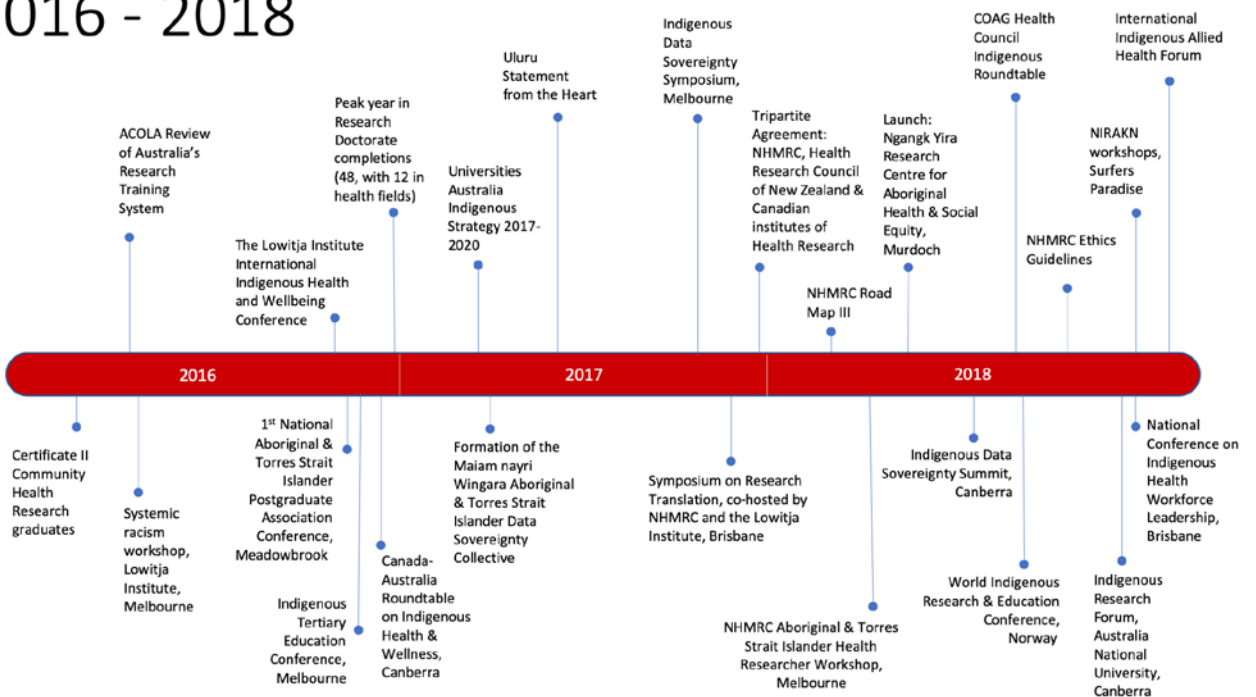
Findings of Interviews and Survey

The main research component of this project was learning from the experiences and views of Aboriginal and Torres Strait Islander researchers, who described their own journeys through qualitative interviews and an Internet survey. As several interviewees were engaged in the RCS of others, and of organisations, they also reflected on these experiences.

The primary findings of the interviews were the significance of peer power in RCS, and Aboriginal and Torres Strait Islander agency in navigating tensions between the academy, community and family. Before exploring these, first reported are the specific findings on research interests, pathways, mentoring and supervision, sources of research education, and training quality.

Interest in health research: Community wellbeing

Interviewees were keen to actualise health research of benefit to communities. Improving the lives of Aboriginal and Torres Strait Islander peoples is an intrinsic energiser underpinning an attraction to research. Inter-related reasons for doing and learning about health research included:

- seeing first-hand inappropriate research and changing that

- influencing policy and programming

- recording and retaining knowledge of communities

- giving back to community

- correcting and advancing knowledge

- addressing outdated ideas about Aboriginal and Torres Strait Islander peoples witnessed in Australia and overseas

- backing up one's health practice work

- informing how to change teaching and health services

- upping job security in one's organisation and the job market

- gaining autonomy and flexibility while raising children.

Recurrent across interviews was describing the HDR experience as challenging, a source of enjoyment and being privileged to engage in one's research, especially when one could do the PhD on a full-time basis:

> I'm in an extremely privileged position to be able to even do a PhD, to have enough flexibility in my life that I can not work full-time and actually focus on study, but it's also I think yeah, it's just I feel really lucky to be able to focus on something that I'm passionate about and that I enjoy. I've really enjoyed the kind of flexibility and openness that a PhD allows, which means I've been able to just think about things, read about things and go and speak to people, which yeah it's been a real luxury. (Int.9)

In the survey it was asked: 'What have been key motivators to you undertaking education/training in health research?'. Participants were asked to indicate any on the list that

may apply, as well as invited to provide comments. About 80 per cent chose 'to make a positive difference to the community'; this was the highest percentage and in keeping with the interview findings.

A health research career as a motivator was not common, with 17.1 per cent indicating this in the survey. Career prospects figured at a somewhat higher proportion (28.6%), while the proportion for engagement with a particular research question, and for knowledge advancement, was 57 per cent.

Change and leadership across generations

All interviewees described significant change, for instance – level of support for HDRs, community engagement in research, and interest of non-Aboriginal and Torres Strait Islander staff in partnerships. Nonetheless, it was asserted that there remains a great need for further change in how health research is done and by whom.

There was a strong inter-generational awareness with respect to research, with many acknowledging:

- earlier generations in bringing about positive change through struggle, innovation and perseverance, and that they should be honoured

- emerging generations that build on the success of previous and current ones.

Interviewees described being uplifted and inspired by seeing:

- Aboriginal and Torres Strait Islander people who were keen about research

- Aboriginal and Torres Strait Islander researchers being appreciated in the academy as experts in their own right

- their former students advance in their education.

Pathways and transitions

The majority of interviewees had first engaged in community-health sector work (e.g. social work), and then entered health research with several doing both simultaneously.

In the survey:

- 28 per cent took a 'conventional' path such as an undergraduate degree straight after secondary school, then Honours and Masters

- 61 per cent worked in the community sector, then did a HDR

- 11 per cent gained all their knowledge on conducting health research through on-the-job experiences/training.

Familiarising with research during undergraduate years was aired as an imported part of the journey to HDRs (e.g. coursework, placement at a research institute, summer break research program). However, it was mentioned that some places were removing research learning from undergraduate programs.

There were also concerns that some Aboriginal and Torres Strait Islander students were entering doctoral research not adequately prepared for this degree.

Experiences of research training

Research training organisations and curricula

Interviewees found the following organisations, networks and courses valuable for research learning, teaching or both:

- The Lowitja Institute and the CRCs in Aboriginal and Torres Strait Islander Health

- NIRAKN

- BIRC Collective–JCU

- Master of Applied Epidemiology, Australia National University

- Professional Certificate and Graduate Certificate in Indigenous Research, The University of Melbourne

- Leaders of Indigenous Medical Education Network

- Indigenous Allied Health Association.

For instance, the Lowitja Institute was referred to as valuable for being part of multiple research projects, engaging with several partners and developing others' research by linking them in to a wider network.

Survey participants were asked:

Of the programs, activities and organisations (whether local, regional or national), please list ones that in your view have been vital to collective Indigenous health researcher capability expansion and strengthening, especially establishing community led health research.

Responses stated a variety of organisations and networks, including Aboriginal and Torres Strait Islander-led entities, government bodies and university-based centres, such as: Australian Institute of Aboriginal and Torres Strait Islander Institute Studies, The Lowitja Institute, Menzies School of Health Research, (former) Onemda, NIRAKN, South Australia Health and Medical Research Council, The University of Melbourne and University of Queensland Poche Centres, and the NHMRC.

Indigenous methodologies in research

Interviewees detailed how Indigenous methodologies were not a feature of all health research training programs. Courses, conferences and work experiences led by Aboriginal and Torres Strait Islander researchers on Indigenous methodologies were critical preparations for the PhD, as Indigenous research was often not covered in the mainstream curriculum. For instance, two interviewees argued that a positive feature of the BIRC Collective–JCU was the prioritising of Indigenous methodologies in research training and group discussions.

For several interviewees, identity is a strength that is strongly connected to Indigenous methodologies:

> I think those Indigenous methodologies are really important to get a background on that, strengthen that area because as Aboriginal academics coming through, I think that probably it's a fundamental thing that if we're going to use our identity in this space, we should have a really clear understanding of where we're coming from if we're going to use that in our work… there is probably researchers that are Indigenous but aren't focusing on that in their research, and so it's probably a different thing for them, but for me as an Aboriginal person coming into this, I wanted to really make sure that that was the foundation… (Int.2)

Supervision

Most interviewees recounted good experiences with research supervisors (e.g. 'my direct supervisor, she's brilliant', Int.11). Generally, the following aspects of supervisory relationships and supervisors were valued:

- Help in decision-making on what opportunities to take and what to turn down; for instance, ensuring the student does not get distracted until the degree is completed (e.g. job offers during candidature).

- Opportunities to lead a research arm of larger projects during candidature.

- Emphasis on student ownership and creativity.

- Advice on good quality writing.

- Being proactive in seeking advice from a trustworthy source on occasions where the supervisor does not know something, or is not well positioned to advise.

- Non-Indigenous supervisors who don't mind, and are willing, to discuss the dominant culture openly (e.g. 'secret white man's business', Int.13).

- Advice on what's needed to plan and succeed in academia, such as how to establish a track record and career path.

Interviewees also mentioned:

- Supervisors with teaching experiences or lead coursework programs are better at constructive feedback, e.g. on one's writing

- Cases of committed supervisors who were less familiar with indigenous health research but were 'under confident or overly directive' (Int.8)

- The Lowitja Institute's Guide for Supervisors[10] as being a useful resource

In the survey, around half indicated experiences of excellent mentoring, and about 70 per cent reported good support in developing research expertise. For PhD graduates, around 36 per cent had the same supervisor throughout candidature. Seven of the nine current HDRs indicated experiencing a sense of isolation.

For respondents employed in health research, Figure 5 shows their ratings of the standard of research training provided by their employer. One in five respondents saw research training as exceptional in quality.

Figure 5

Rating of research training provided at organisation where employed in health research, n=20
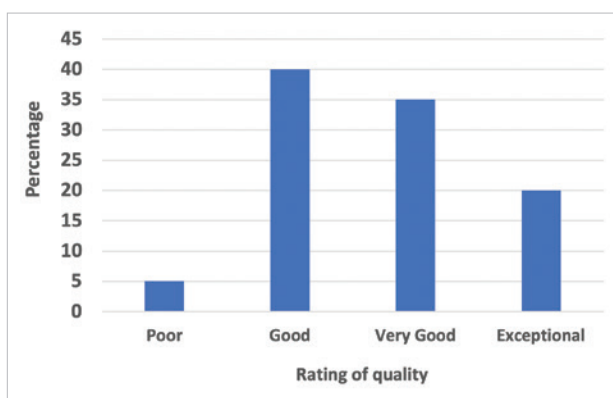
Other findings

Additional findings from the interviews and survey included:

- Indigenous units were supportive, e.g. tutoring services, computer facilities, peers.

- The value of opportunities for learning outside of the health sector, and inter-disciplinary projects.

- Tokenism by universities: e.g. recruitment of Aboriginal and Torres Strait Islander staff and students, but no support for them after they have started.

- Several were working full-time while doing HDR to support family.

- Funding was very helpful, e.g. in the BIRC Collective–JCU, individual-targeted funding was yearly and flexible (e.g. autonomy in use of funds).

- Research training at universities outside of Australia was seen as liberating (e.g. to be oneself and get on with the research), and the standard of research education rated as high (Int.7).

- A lot of skill attainment comes from job and community experiences and opportunities outside of formal education, which are often generously provided by Aboriginal and Torres Strait Islander communities, service organisations and consultancies.

- Many research projects depend on research assistants, particularly for recruitment and data collection, as they provide a bridge between research teams and communities, yet there is little or no support for their career progression and structured planning, including non-PhD pathways.

Aboriginal and Torres Strait Islander emerging and senior researchers have diverse experiences, but generally they viewed research training positively. Those who had been in higher education and research settings for many years described some striking positive changes, but maintained that further change was needed.

For experiences of survey respondents who had completed a PhD or were currently doing an HDR, see Item 6 in the Supplementary Materials found at: https://www.lowitja.org.au/page/research/research-categories/health-services-and-workforce/workforce/projects/workforce-review

Aboriginal and Torres Strait Islander contributions to RCS

I've been trying to do... is talk to students about what kind of skills development they want and need and find ways to either connect people to stuff that's already happening or running some masterclasses. (Int.9)

While undertaking research training and/or research during paid employment, Aboriginal and Torres Strait health researchers educate, train and contribute in other ways to the health research and education institutions in which they are located.

Figure 6, based on the survey, presents the overall percentage of engagement in different activities while undertaking a HDR. The most common engagements were panels/advisory groups (over 60%) and mentoring Aboriginal and Torres Strait Islander students (just over 50%). Around four out of ten were also mentoring non-Aboriginal and Torres Strait Islander students and researchers.

Interview discussions revealed that a recurrent scenario seemed to be universities acquiring public relations capital from their Aboriginal and Torres Strait Islander students (e.g. media attention at graduations), coupled with a lack or absence of recognition and support of those students during candidature.

Figure 6

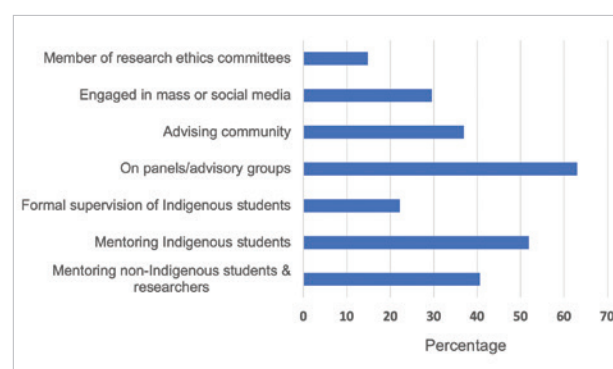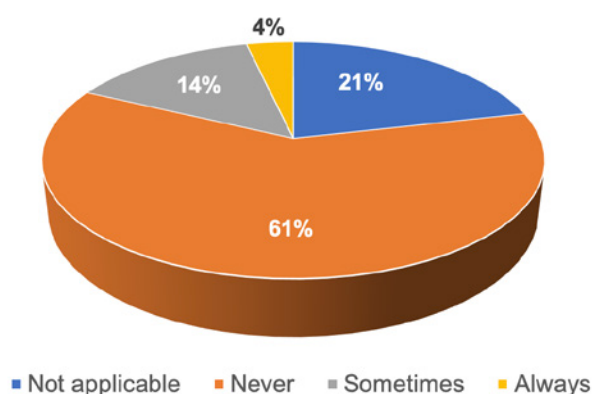**Percentage of HDRs (current and graduated combined) engaged in activities**

Figure 7

Reimbursement for contributions beyond formal research role

Legend: ■ Not applicable ■ Never ■ Sometimes ■ Always

Values shown: 21%, 61%, 14%, 4%

In the survey, participants were asked: Are you reimbursed or paid for activities / contributions that you make on top of your official role in the organisation? Figure 7 shows that almost two-thirds (61 per cent) of survey respondents were not reimbursed for contributions that were not part of their research role.

It is commonplace for Aboriginal and Torres Strait Islander contributions to RCS to be under-stated. Thus, within-institution contributions and achievements should be highlighted much more and appropriately remunerated.

During research training and/or paid research employment, Aboriginal and Torres Strait Islander students and researchers actively contribute in diverse ways to enriching the academy, university life and culture. They do this not only through their research capabilities, but by their contributions to specific events university-wide and by connecting Aboriginal and Torres Strait Islander communities with universities. However, there are gaps between recognition and remuneration, as well as the level and scope of the work done by Aboriginal and Torres Strait Islander people at universities and other institutions. For example, both emerging and established Aboriginal and Torres Strait Islander health researchers frequently have workloads beyond their formal roles or employment arrangements.

Peers and peer generative power

Peer researchers, the other Indigenous researchers, I learnt a great deal from them... (Int.11)

The key finding of the overall project was the value of Aboriginal and Torres Strait Islander peers in RCS, which is reflected in the theme – peer generative power.

While peers are understood in the research literature as important in higher education,[260-263] Aboriginal and Torres Strait Islander peer relational structures are not merely a form of bonding in terms of sharing a subject of study or research, but have unique strengths that propel RCS. Among Aboriginal and Torres Strait Islander people of diverse backgrounds there is a shared historical experience and co-understanding of problems with health research and shared aspirations to reform it.

Aboriginal and Torres Strait Islander peer generative power is a type of research capability. For instance, peers generate:

• new research partnerships

• inspire and nurture upcoming generations of researchers

• shared identities

• new groups and RCS processes.

Figure 8 presents the sources of development, functions and outcomes of peer generative power. As shown at the bottom of the figure, peer cohorts grow from a diversity of endeavours, such as informal networks, group facilitated research environments, and university departments led and driven by Aboriginal and Torres Strait Islander researchers. Peer formations enable opportunities for researchers to combine shared experiences and identities, to grow understandings of research, and to build efforts for a collective push to impact on, Aboriginal and Torres Strait Islander health outcomes. Peer generative power is emergent (indicated by the upward arrow): it is a form of power that is not reducible to individual Aboriginal and Torres Strait Islander health researchers. The top segment of Figure 8 outlines the range of outcomes of peer generative power.

RCS training programs were a precursor to peer networks and instrumental in their establishment. Some took a cohort-driven approach, which may have been the most effective at peer relation strengthening. This interviewee recounted a strong peer atmosphere:

'... the best bit about it [the BIRC Collective—JCU was] like having other blackfellas around you who were on exactly the same stage of the journey and then every now and then other people started to go ahead and fall behind, and I think you really

defaulted to an Aboriginal way of supporting your way through and up that process. So I think within that...we almost replicated what is an Aboriginal community within that space, so the support for each other, the validation of our knowledges, the sharing of the challenges and the fear, and then as we got closer to the end there's the challenges of the fear of success and then what that means because you fluctuated in and out of being very, very clear about what you... where you were heading... the blackfellas around you helped to remind you why you were doing it, and others that had been through it who could share that experience.' (Int.13)

Eight peer-to-peer functions (see Figure 8) derived from a selection of the interview findings were summarised and listed in the survey, and rated on a scale ranging from 'undermining/counterproductive' to 'very important'. For 'being informed about opportunities' by peers, the most frequent response was 'somewhat important'. For all other 'functions' the most frequent response was 'very important'. The proportions for 'very important' were highest for role models (79%), and 'confiding in and gaining advice from someone who really understands what I am working through' (68%).

Peer structures and successful endeavours by Aboriginal and Torres Strait Islander researchers to produce peer networks have been critical drivers of RCS. Peer generative power emerges out of peer structures. Aboriginal and Torres Strait Islander peer cohorts are often unrecognised in RCS policy and practice.

For all survey responses to peer functions, see Item 7 in the Supplementary Materials found at:

https://www.lowitja.org.au/page/research/research-categories/health-services-and-workforce/workforce/projects/workforce-review

A journal article detailing peer generative power and its implications for education frameworks is forthcoming. In 2020, a link to this publication will be provided on the project webpage: https://www.lowitja.org.au/page/research/research-categories/health-services-and-workforce/workforce/projects/workforce-review
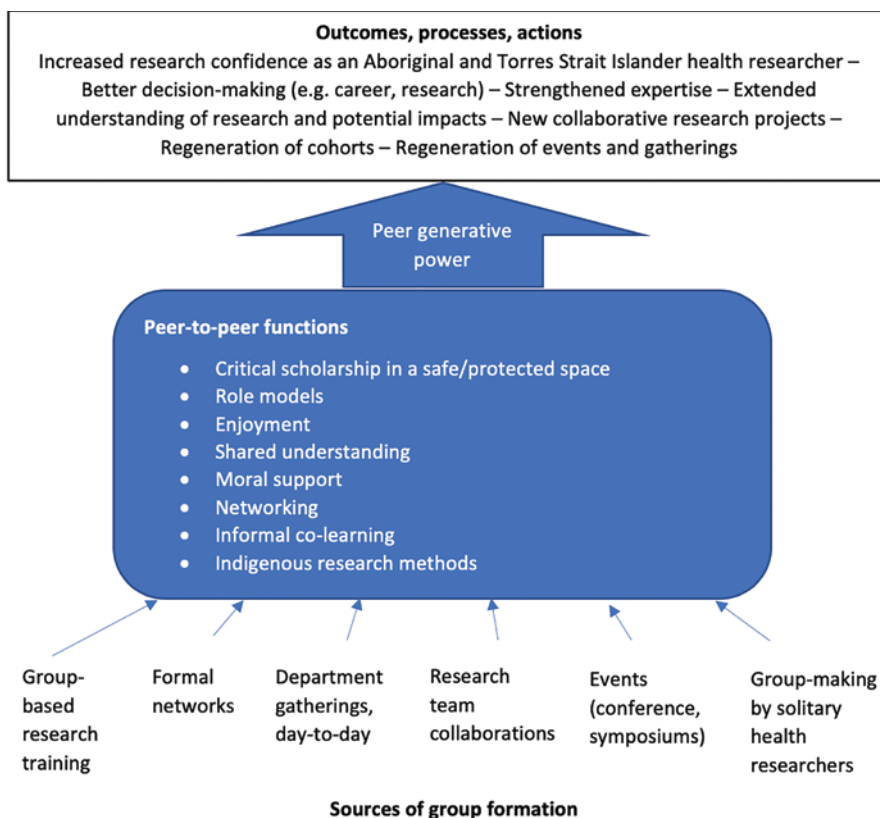

Figure 8

Peer structures – Development, forms of solidarity, generative power and outcomes

Navigating tensions

People need to understand that being in the Academy is a big responsibility one for the community, and two to the Academy, and three to yourself and your own integrity. (Int.11)

The second key finding from the interviews was how Aboriginal and Torres Strait Islander researchers distinguished between three domains – academy, community and family – and the need to constantly navigate these.

Researchers experienced 'push and pull' within and across these domains (e.g. diverse expectations, responsibilities, values). There was considerable diversity as to whether the three domains converged or diverged, and if so, how this impacted on research capability processes and health research outcomes.

Examples of convergences included:

- The academy valuing and committing to genuine partnerships with Aboriginal and Torres Strait Islander families and communities. Aboriginal and Torres Strait Islander academics actively supported by the academy in strengthening relationships.

- In response to mainstream media criticism of an Aboriginal and Torres Strait Islander health researcher's identity: 'I had family and extended family, so I had [name] Elders ring me up and say – how do you want us to respond to this? – and that support was worth its weight in gold.' (Int.5)

Examples of divergences included:

- Research grants coming through that are not community-led research projects and that put non-Indigenous researcher careers before Aboriginal and Torres Strait Islander communities.

- Being constantly judged on unjustifiable terms by other academy members (e.g. going to community during work hours seen as 'slacking off').

Outcome of a structural divergence:

- Having to leave health research, as continuing would require a sacrifice of commitments to one's community and family.

Aboriginal and Torres Strait Islander health researchers deliver high-standard health research while exercising diverse forms of innovative agency to navigate the tensions between, and cross-connect, the academy, community and family by:

- being a conduit between communities, health services and academy

- constantly and flexibly moving across social settings

- carefully timing when to lead visibly and when to work in the background

For Aboriginal and Torres Strait Islander researchers, these navigations entail an accumulation of workloads, and addressing them 'takes a lot of intellectual energy... and... emotional energy' (Int.13). On top of any self-initiated commitments, their common experience involved juggling an accumulation of invitations and requests within the academy (e.g. run cultural awareness training for university staff and students, be the representative at a NAIDOC event, join a research advisory group, revise and review Aboriginal employment plans and Reconciliation Action Plans).

There was often ambivalence attached to these requests. While they were often seen positively, as they could signal openness and interest by others in learning about Aboriginal and Torres Strait Islander cultures and partnering in research, they could also represent tokenistic gestures and unstated and unfair expectations (e.g. if you meet my request, don't expect anything in return).

A resulting conundrum for Aboriginal and Torres Strait Islander researchers was that such invitations could either contribute to worthwhile endeavours (and so 'turning it down' was a missed opportunity to effect change), or lead to time wasted committing to a tokenistic event. Thus, their effectiveness as a researcher and change agent, as well as their own wellbeing, seemed to hinge on decision-making around these matters. Ultimately, being pulled and pushed across the domains was connected with experiences of frustration, guilt and a resolve to persevere.

Individual researcher agency involves navigation of complex positionings mainly brought about by social distancing of academic research systems from Aboriginal and Torres Strait Islander communities and families. Agency includes strengthening one's own capabilities and capability infrastructures for further growing the Aboriginal and Torres Strait Islander health researcher workforce. Yet, sometimes, irrespective of individual agency, due to structural divergences and intra-academy structures (e.g. under-representation of Aboriginal and Torres Strait Islander researchers), one could 'end up... being so over-capacity, over-committed' (Int.5).

Survey participants were asked briefly about whether the community and the academy aligned or not, in terms of their HDR experiences and/or their relationship with community for those employed in health research. There was a leaning towards 'agree' that community members support the researcher in navigating relations between the academy and community, although no one strongly agreed. There was general disagreement that 'the academy pulled me away from connecting with community'.

When it came to those employed in health research, there were more diverse levels of (dis)agreement as to community–academy relations. This group tended to see the academy as supportive of connecting with community, perhaps because the majority of them were working in organisations where there were ten or more Aboriginal and Torres Strait Islander health researchers.

While a strength of Aboriginal and Torres Strait Islander researchers (individually, groups) has been their innovative agency in transcending inequities to achieve excellence in health research, these inequities need to be addressed. Conventional higher education and health research institutions need to take more responsibility in this area so that Aboriginal and Torres Strait Islander health researchers can get on with the research and be judged on that work rather than by prejudiced attitudes.

For details of survey responses on (non-)alignment of the community and academy, see Item 8 in the Supplementary Materials found at: https://www.lowitja.org.au/page/research/research-categories/health-services-and-workforce/workforce/projects/workforce-review

Health researcher plans and learning interests

I'd like to grow more Indigenous researchers. (Int. 4)

Plans over the next five years

When asked during interviews their about intentions over the next couple of years, especially in health research, respondents brought up a variety of plans:

- Increase the number of Aboriginal and Torres Strait Islander HDR students to upscale leadership

- Change institutions and embed culturally safe research

- Nurture research leadership, including building the capacity of non-Aboriginal and Torres Strait Islander researchers in health service contexts

- Work up to a large research study

- Publish books and attain grants

- Reconnect with community and support community control of research (e.g. data sovereignty)

- Support peers completing HDRs

- Write papers and internationalise research

- Establish health practice training that incorporates community expectations.

Survey participants were asked: what do you plan to do over the next five years? By far the most common response was to further establish community-driven research (60%).
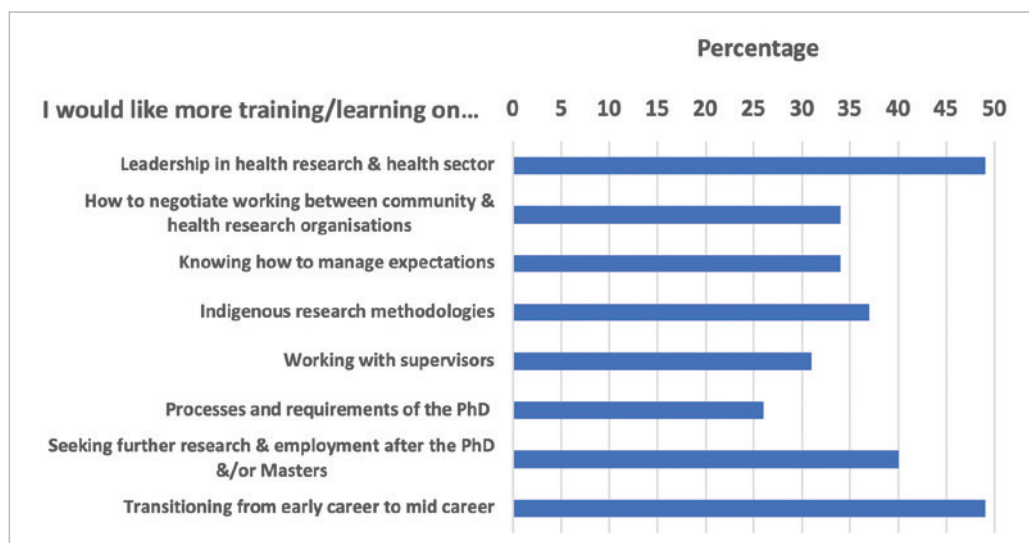

Figure 9

Indicated interest in further research learning

Courses for research learning

Towards the end of the survey, participants were presented with a list of content areas and asked about their research learning interests. Findings from the earlier interview study determined what was included on this list. Figure 9 presents the percentage of responses for each subject. The highest percentages were for leadership in health research and the health sector, and for learning related to progression of employment and career (seeking further research and employment after the PhD and/or Masters degree, and transitioning from early to mid-career). More than 35 per cent indicated they would like more training in Indigenous research methodologies.

In survey open comments, respondents mentioned other subjects of interest in research training, such as 'How to shape strategy of the university to meet our needs.'

> *Over the next five years, Aboriginal and Torres Strait Islander health researchers plan to advance health research significantly, including through (re)connecting with Aboriginal and Torres Strait Islander communities, leadership and research career development. To meet such ends, there is interest in learning about a wide range of subjects through research training.*

Open comments on interests in research training are presented in Item 9 in the Supplementary Materials found at: https://www.lowitja.org.au/page/research/research-categories/health-services-and-workforce/workforce/projects/workforce-review

Improvements to research capability strengthening in the future

> *I think the idea of kind of using the collectivity as leverage is fundamental...if we're all off on our individual paths, you know that's not right, but something like that where we come together, we connect but that's fundamentally what we do as Indigenous people, you know that sort of relational engagement and worldview...If we're together... the capacity building is much greater, your voice is strengthened, and you'll stride further just because of the very nature of the strength that's built from being together.' (Int. 10)*

Towards the end of the interviews and the survey, questions were asked as to how best to go about RCS. Generally, research participants called for:

- a move from 'opportunistic', 'blinkered' and 'ad hoc' to strategic, collective and collaborative RCS

- an Aboriginal and Torres Strait Islander health researchers' network to facilitate collaboration and mentoring

- 'senior mob' to lead collective strategic direction

- the need to foreplan 10–25 years ahead

- keeping in mind that small change can accumulate into significant change

- ensuring representation of Aboriginal and Torres Strait Islander researchers across all areas that impact on health (e.g. legal, housing, connection to country).

Collective research capability strengthening

Participants strongly expressed the need for *collective efforts, with more connectedness via collaborative networks, intergenerational solidarity, and national-level steering of linkages from micro to macro*, including:

- An organisation 'that has got money... got influence' and that 'supports us so we change universities from within' (Int.3).

- Having an Aboriginal and Torres Strait Islander-led place that is multidisciplinary and interdisciplinary.

- Aboriginal and Torres Strait islander cross-networked collectives 'within the university and between us and across universities and internationally' (Int.10).

- A national organisation, such as the Lowitja Institute, to coordinate an events program.

- Sustaining relationships developed during Aboriginal and Torres Strait Islander-led events (e.g. Lowitja,

NIRAKN) through follow-up gatherings (both face-to-face and virtual).

- More linking of senior/high profile Aboriginal and Torres Strait Islander researchers with the next generation, and more trust by them in the incoming researchers.

- People 'working toward a common goal with common values... that really championed Aboriginal voice and ways of working, but without sort of sidelining non-Aboriginal people' (Int.6).

- An event for HDR students to meet up for one or two weeks yearly.

University responsibilities and commitments and Aboriginal and Torres Strait Islander leadership

Interviewees and survey respondents identified the need for:

- More universities going out, and 'feeding back', to communities (Int.2).

- Expanded means for communities to go to universities and develop partnerships.

- More Aboriginal and Torres Strait Islander pro-vice-chancellors.

- Advocating for PhD students by Aboriginal-led, university-based organisations.

- Universities and other research institutes to recognise, understand, know how to support, and celebrate the level and breadth of work done by Aboriginal and Torres Strait Islander health researchers.

- An increase in faculty-level capabilities to organise regular meetings of local Aboriginal and Torre Strait Islander PhD candidates.

- Universities to support and organise more Aboriginal and Torres Strait Islander mentors for PhD students (or, given demands on their time, even a few meetings).

- More supervisors of Aboriginal and Torres Strait Islander health researchers by increasing the capabilities of non-Indigenous researchers through 'engage[ment] with Indigenous peoples and Indigenous knowledges' (Int.12).

Pathways and career progression

Interviewees asserted the need for:

- Forethought in setting full pathways and early entry points.

- Early identification of high-performing undergraduates.

- Tailoring support of PhDs by age/generation.

- Ensuring that Masters degrees have adequate research training so that graduates are well prepared to do a PhD.

- Attending to the undergraduate-to-Honours degree transition.

- A holistic approach to supporting undergraduates in their planning of pathways, i.e. Don't 'treat every step as independent' (Int.10).

- Recognition that increased completion rates of undergraduates help at the HDR level, and translate into less load on supervisors.

- Indigenous methodologies in the curriculum as vital for the retention of Aboriginal and Torres Strait Islander university students.

- Employing Aboriginal and Torres Strait Islander undergraduates as researchers.

- Training and mentoring on how to navigate demands and commitments, partly to prevent 'burnout' later.

- Aboriginal and Torres Strait Islander researchers leading the development and support of research assistants, including those not seeking to do HDRs or to make research a career; this should include formal recognition of current and new skills to support later employment options, and pay levels commensurate with contribution and qualifications.

- Consideration of research assistants completing projects as a potential pathway into postgraduate research.

National-level network

Interviewees mentioned various research and knowledge networks (regional, state, national) and the potential value of a national network by and for Aboriginal and Torres Strait Islander health researchers. As a result, possible functions and values of such a network were touched on in a sub-section of the survey with the following prompt:

Several people have suggested establishing a network of Aboriginal and/or Torres Strait Islanders in health research at the national level. The broad purpose of the network would be to concentrate research capability at collective level and be a source of support for Aboriginal and Torres Strait Islander health researchers. It would be led by Aboriginal and/or Torres Strait Islanders.

When asked 'How likely would you join such a network?', 60 per cent responded very likely, 20 per cent likely, 5.7 per cent neither likely nor unlikely, 5.7 per cent unlikely, and 8.6 per cent did not respond.

Survey participants were also asked to rate the level of need for the type of network described above using the response categories 'not needed', 'little need', 'moderate need', 'great need' and 'not sure'. About fifty-seven per cent indicated a 'great need' for a national level network to support current research students. Proportions were high on a 'great need' for a network to support early career researchers (63%), and connecting the different groups of researchers (also 63%).

There were some suggestions both in the interviews and the survey that current Aboriginal and Torres Strait Islander-led national bodies should establish such a national Aboriginal and Torres Strait health researcher network, or rework their current networks to achieve this.

Prioritising strategies

The survey listed 13 national-level strategies to inquire into views about what should be prioritised (e.g. 'Expand research training experiences in undergraduate degrees'). The response options were 'should be a priority', 'important, though not a priority', 'not needed', 'already achieved', 'counter-productive', and 'not sure'. The five strategies rated the highest (all over 70%) were for:

- Career progression support programs for early- and mid-career Aboriginal and Torres Strait Islander health researchers

- Anti-racism programs implemented at health research organisations

- Aboriginal and Torres Strait Islander-led development of a national plan for expanding the Aboriginal and Torres Strait Islander health researcher workforce

- Stronger connecting of generations of Aboriginal and Torres Strait Islander health researchers

- National-level network by and for Aboriginal and Torres Strait Islander health researchers.

Given the particular intricacies that people work with in their settings, and the consequent need for local experts to determine responses, there is no single best or ideal way to make structural change in health research. A shared view was that several inroads have been made in centring Aboriginal and Torres Strait Islander peoples within health research, and that foreplanning and comprehensive strategies are needed (across levels and areas of the system) to capitalise on this and to accelerate change. Closer and more consistent collaborations between generations of Aboriginal and Torres Strait Islander health researchers should also figure prominently in RCS strategy making.

For survey responses to questions regarding RCS strategy prioritisation, and views about a national research network, see Items 10, 11 and 12 available at: https://www.lowitja.org.au/page/research/research-categories/health-services-and-workforce/workforce/projects/workforce-review

Integrated Research Capability Strengthening Framework

This research culminated in an Integrated Research Capability Strengthening Framework (see Figure 10). The framework distinguishes between capabilities that vary in type and level, and that are dynamically inter-related through:

- internal capabilities (e.g. data analytic skills) and external capabilities (e.g. political freedom to develop individual and collective capabilities)

- capabilities within and across Aboriginal and Torres Strait Islander communities, higher education, the health workforce, and international networks.

The framework affords renewed appreciation of the effectiveness of RCS programs such as BIRC Collective–JCU, as these programs:

- create new RCS systems that directly attend to issues of power relations (equalise power in research, challenge inequitable or discriminatory systems)

- produce capabilities in higher education and research environments – freedom to do research and be researchers

- demand diverse forms of change in wider health research educational and practice institutions.

The framework also emphasises:

- RCS for undertaking and leading health research that leads to better wellbeing outcomes

- capabilities can never be understood outside of a social–historical, political and economic context

- Aboriginal and Torres Strait Islander leadership as a key capability, with peer generative power an emergent capability from this leadership

- plurality of individual and organisational capabilities

- reciprocal RCS within and across systems: research capabilities strengthen broader capabilities and vice versa

- Aboriginal and Torres Strait Islander and research institution capabilities and their application in converging academia, families and communities, thereby securing capabilities-as-freedoms.
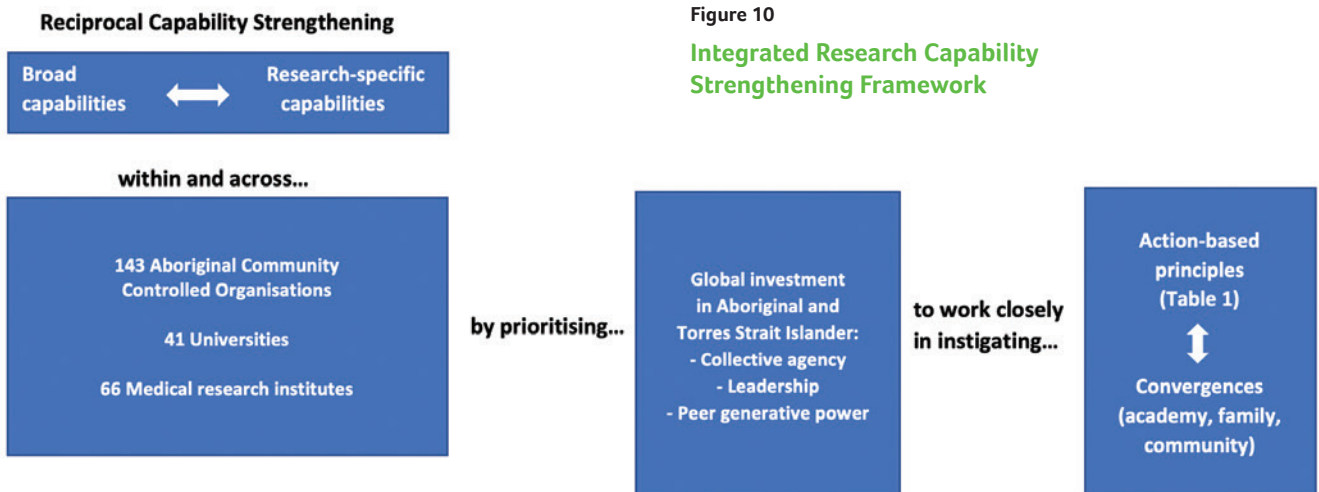

Figure 10

Integrated Research Capability Strengthening Framework

The Integrated RCS Framework developed at the three-way interface – system theory and perspectives, critical research on power relations and the Capabilities Approach – introduced on p. 13. In redressing racism in health research environments, this tripartite overlap highlights:

- the challenges of eradicating racism because of systems-wide pervasiveness[264]

- the reproduction of domination functions simultaneously with other minoritising systems[265]

- how racism is a significant impediment to RCS by undermining the conditions for capabilities-as-freedoms and the development and exercise of internal and collective capabilities.

Peer generative power is a strong collective research capability that goes some way to overcoming marginalising practices in higher education and research institutions by realising the cross-convergences of families and communities with research institutions. The policy implication is to centralise peer research capability to improve the capabilities of universities.

Research training: Action-based characteristics

The project's research points to a set of action-based principles connected with RCS success. Table 1, on the next page, lists these principles, which are based on a synthesis of various components of the project (e.g. interview findings, international literature review). The list was developed through the project's first literature review,[183] and the interviews, survey and second literature review affirmed and verified it subject to minor refinements. Overall, these principles address the project's research question: what research training model characteristics are associated with success?

These principles are also a critical part of the Integrated RCS Framework as they simultaneously represent a redressing of power relations, systems and capabilities. Each principle targets some aspect of the system, along with a restructuring of power, and an opening up of capabilities-as-freedoms for more effective strengthening of internal individual and organisational research capabilities.

The recommendations for policy in this Review (p.9) are that conventional institutions need to prioritise partnering with communities (including Elders, Traditional Owners and Aboriginal and Torres Strait Islander researchers) in a bid to address the cross-way divergences between the academies and Aboriginal and Torres Strait Islander families and communities. Capability-as-freedom expansion and strengthening, led by Aboriginal and Torres Strait Islander people, supports internal reform by conventional institutions.

The main domains in need of increased research capabilities are conventional higher education and research institutions. In order to build capabilities, these institutions need to create the conditions whereby Aboriginal and Torres Strait Islander researchers are freed up to further consolidate and apply their strong capabilities.

Table 1

Research Education Model characteristics associated with indicators of educational and workforce success

Organisational features	Training supports
• Privilege Aboriginal and Torres Strait Islander worldviews, identities, experiences, knowledges, research, and pedagogical philosophies and methods, including inter-cultural workings.[175, 206, 266]	• Support trainees through social, cultural, emotional and financial structures and mechanisms that are responsive to needs.[175, 206, 266, 267]
• Recognise, value, and invest in Aboriginal and Torres Strait Islander health researchers as being Aboriginal and/or Torres Strait Islander.[175, 206, 266]	• Deliver support infrastructure that is attuned to the diversity of expertise, entry pathways, lived experiences, community/familial commitments, aspirations and mobilities of trainees.[206, 208, 229, 270]
• Deliver excellence-based research training strategies that are responsive to Aboriginal and Torres Strait Islander research trainees' desire for high-quality, ethical, actionable and impactful health research.[205, 206, 208]	• Secure trainee access to experienced supervisors and mentors, both Aboriginal and Torres Strait Islander and non-Indigenous.[175, 206]
• Support sole or co-leadership and management of research program development and implementation by Aboriginal and Torres Strait Islander academics.[206, 267]	• Support supervisors and mentors, particularly those who are non-Indigenous, in cultural competence and cultural safety.[11]
• Prioritise program-level research wedded to a long-term vision (including critical mass and outcomes-based research) over single-investigator or single-study orientations.[15, 127]	• Establish a diverse composition of research program members, such as by discipline, level of experience and specialist expertise, with a range of research interests, e.g. social determinants of health, knowledge translation, services planning and evaluation.[175, 206, 255, 270]
• Build (intergenerational) cohorts of Aboriginal and Torres Strait Islander health researchers.[206, 267]	• Ensure a sustained set of relationship building-focused and learning-focused meeting structures (courses, seminar series, workshops, writing retreats, lectures, reading groups).[175, 198, 205, 206, 267, 269, 271, 272]
• Orientate the program to close partnerships with Aboriginal and Torres Strait Islander communities, to the shaping of research directions by Elders and to utilising Aboriginal and Torres Strait Islander expertise.[206, 208, 267, 268]	• Deliver research training across the spectrum of research skill sets (e.g. writing, research plans, conference presentations, grant applications, project management).[175, 206, 223, 269]
• Secure and sustain funding for the RCS model.[205, 206, 255, 267, 269]	• Provide spaces for welcoming and collaborative in-person engagement on a regular basis, including meetings exclusively between Aboriginal and Torres Strait Islander peoples.[206, 267]
• Gain and retain support for Aboriginal and Torres Strait Islander research and researchers at the executive level of the institution.[205, 229, 270]	• Provide ample opportunities for early and later career researchers to intermingle and join new research projects.[175, 206, 269]
• Commit to organisational policy for research and training that factors in the time and flexibility needed to fortify relationships.[34, 175, 206, 208, 229, 269]	
• Provide clear and viable post-completion pathways into health research careers and leadership positions.[126, 204]	
• Network strategically as an organisation:[205, 208, 229, 269] for instance, install mechanisms to optimise trainee network spread and outreach within-cohorts, cross-cohorts, cross-institutions, cross-nations and internationally.	
• Be open and commit to navigating complex discipline intercultural values and priorities, and be cognisant of shared values (respect, integrity, responsibility, reciprocity).[175, 206, 266]	
• Monitor and review RCS approaches, and deploy mechanisms to attain data on outcomes and progress (e.g. feedback on training, post-completion employment, publications).[198, 205, 206, 227, 269, 271, 272]	

Research Primer

There is a drastic need for more programmatic research supporting RCS by building the evidence base of best practice.[146, 183] The following research primer for the next generation of RCS was directed by the current findings and the Integrated RCS Framework. The research suggestions, for instance, would contribute to evaluating the principles for RCS in Table 1. A common priority in this primer is the privileging of Aboriginal and Torres Strait Islander viewpoints on RCS.

Prospective, detailed, long-term and/or comparative research evaluation of health research education programs

Gaining the views of prospective recipients of research training does not appear to be a common feature of RCS in the Aboriginal and Torres Strait Islander health researcher workforce, even though it figures prominently in other RCS work.[e.g. 197] Research supporting preparatory work in the design of RCS programs, as shown in the Masterclass Program,[203] should be applied more widely.

As context and place are always critical in RCS, detailed accounts have been particularly valuable for informing others seeking to revise or instigate research education platforms. For instance, auto-ethnographic accounts have provided detailed narrating on research capability across time within an institutional context.[273]

There is an urgent need for more Aboriginal and Torres Strait Islander led prospective evaluation of research training programs (process, outcome and combined), especially from the purview of international RCS. A diversification of research program evaluative approaches should be considered, including:

- comparison of different programs[274, 275]

- repeated-measure designs,[269, 276-280] for instance, randomised controlled trials[281]

- comparative tracking of Indigenous and non-Indigenous progress on HDRs in conjunction with analysis of changes to student support[282]

- mixed-methods.[278, 280]

Close attention should be paid to debates on the merits and limitations of specific designs (e.g. on randomised controlled trials). Evaluation is best guided by a programmatic research agenda. For instance, shared research dialogue is needed on trialling and comparing specific RCS strategies, such as the introduction of a full-time research role into local health services.

The review of the Australian Aboriginal and Torres Strait Islander RCS literature found indicators of program success centred both on publication and presentation frequencies and post-program educational and employment outcomes.[183] A diversification of measures is needed to better capture successes and outcomes of RCS and to extend a critical evaluation of programs. To support considerations, Table 2 lists variables in the international literature that have figured in the evaluation of RCS program success. These features would support strategic RCS.

Network research

As network-based RCS has been a key development in the last 20 years, network analysis (in quantitative, qualitative and mixed forms) should be utilised to further map and measure Aboriginal and Torres Strait Islander-led research (e.g. expansion, centrality, density and influence). Network research may be particularly powerful for strategic work, given the level of complexity and scale of connectivity between Aboriginal and Torres Strait Islander health researchers and cross-institutional collaborations. These avenues would extend both the network analyses of Aboriginal and Torres Strait Islander health research[283] and the impacts of RCS endeavours.[226]

Further research directions

- Research training opportunities in the Vocational Education and Training (VET) sector, the role of VET in health research education and engagement, and VET health research transitions.

- Local community-led or guided health research and on-the-job research training across Australia.

- Charting of the contribution of participative (action) research in local RCS.

- Pathways between secondary school and tertiary education and earlier 'pipelines' in the formal education systems.

Table 2

Outcomes to consider in RCS program evaluation

Organisational features

Research commitment
- Remaining in research career[284]
- New research projects[270]
- RCS program completion rate[278]

Research grants

- Number and type of grant applications / submissions[198, 284-286]
- Grant attainments (e.g. frequency, percentage)[198]
- Person-based funding rate and application-based success rate[287]
- Number of years after training before award of grant[271]
- Increase in professional memberships[288]

Other performance indicators

- Leadership opportunities and positions[284]
- Number of Honours students[271]
- h-index[284]

Trainee views, preferences

- General satisfaction of trainees[278, 280]
- Training views on program features (e.g. location, facilitators, timing, value, impact)[272, 278]
- Skills and knowledge acquired/gained[274, 276, 278, 280]
- Expectations relative to achievements[279]
- Self-efficacy (research, academic, scientific)[232, 269]
- Confidence to conduct research[269]
- Work–family conflict[279]

Research employment and faculty

- Subsequent research posts[223]
- Promotions (e.g. frequency and proportion of program completers)[269, 284, 286, 288]
- Faculty chairs: change in frequency, percentage[289]
- Faculty level: % of professoriate[227]
- Faculty level: % secured a scientific research position[227]

International best practice in RCS demonstrates a commitment to research on RCS strategies and health workforce outcomes. The research primer calls for Aboriginal and Torres Strait Islander-led program-level evaluation of RCS models, diversification of methods and outcome measures, more sharing of knowledge for co-learning, and network charting and analysis.

For an overview of research gaps in need of addressing, see the first literature review, available in full text at: https://human-resources-health.biomedcentral.com/articles/10.1186/s12960-019-0344-x

Conclusion

It's been a bit of a hard road but we've achieved things you know. (Int.14)

A major avenue to addressing inequities in Aboriginal and Torres Strait Islander health outcomes is to overturn inequities in health research, including research training and employment arrangements. The key to more effective RCS and higher quality research is for the central positioning of Aboriginal and Torres Strait Islander health researchers in the higher education, health care and research sectors, both solely and in meaningful partnerships with non-Indigenous researchers.

To support the further success of the Aboriginal and Torres Strait Islander health researcher workforce, this Review has provided an integrated base to inform systematic collective decision-making in RCS. The Project affirmed how a wide array of RCS infrastructures have been firmly established in the last 18 years. Aboriginal and Torres Strait Islander leadership is the common driver to these developments.

One of the most actionable and effective ways that institutions can contribute to research expansion and strengthening is by supporting Aboriginal and Torres Strait Islander peer connection and related activities such as:

- Mobilisation of an international, highly visible and accessible Aboriginal and Torres Strait Islander-led health researcher network

- Valuing, establishing and nurturing peer cohort strengths via a renewed commitment by research funding bodies to cohort-driven RCS

- Measures to centre peer generative power so as to capitalise, and increase pressure, on conventional institutions of health research and education to forge genuine connections with Aboriginal and Torres Strait Islander communities.

The overall conclusion is that collective strategic action, especially at the national level, is needed. Such action must focus on embedding a critical mass of Aboriginal and Torres Strait Islander health researchers within health research and higher education organisations to consolidate direct structural changes. Crucially, this strategising must garner the diversity of the RCS structures achieved thus far.

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