STARS Education and Research Alliance

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STARS Critically Appraised Topic (CAT) Group:

Do Aboriginal and/or Torres Strait Islander people present with adenoma or sessile serrated lesion at a younger age compared to people who are not Aboriginal and/or Torres Strait Islander?

The University Of Queensland AUSTRALIA

Metro North Health | Queensland Government

STARS Critically Appraised Topic (CAT) Group: Do Aboriginal and/or Torres Strait Islander people present with polyps or advanced polyps in the colon at a younger age compared to people who are not Aboriginal and/or Torres Strait Islander?

Specific Question:

Should bowel cancer screening practices be tailored for Aboriginal and/or Torres Strait Islander Peoples?

Clinical bottom line

Colonic polyps (adenomas and sessile serrated lesions) are pre-cursor lesions to bowel cancer. We found no Australian studies that compared the incidence of polyps or advanced polyps in Aboriginal and/or Torres Strait Islander Peoples with non-Aboriginal and/or Torres Strait Islander Peoples.

Therefore, there is no evidence, to date, upon which to justify changes to current recommendations in Australian bowel cancer screening age for Aboriginal and/or Torres Strait Islander. Further research is needed to inform whether there is a need for tailored screening practices for Aboriginal and/or Torres Strait Islander Peoples.

Why is this important?

In Australia, bowel cancer screening is recommended from the age of 50 years, every two years. It is known that Aboriginal and/or Torres Strait Islander people who experience bowel cancer have poorer outcomes. According to the *Cancer In Australia 2021 report*, on average, Aboriginal and/or Torres Strait Islander Australians are 14% more likely to be diagnosed with cancer and 20% less likely to survive at least five years after diagnosis compared those who are not Aboriginal and/or Torres Strait Islander, with survival rates lower in regional and remote areas compared to other areas (Australian Institute of Health and Welfare, 2021). Diagnosis at early stages of bowel cancer is associated with higher survival rates. To increase the uptake of bowel cancer screening, Metro North Health Service recently completed an opportunistic bowel cancer screening program to explore opportunities to improve participation in bowel cancer screening. This CAT group sought to understand whether bowel cancer screening practices should be further tailored (eg. whether we should consider lowering the age to offer screening) for people who identify as Aboriginal and/or Torres Strait Islander.

Inclusion Criteria

See PICOT for details. We searched for and sought to include studies which reported on incidence rates and prevalence of pre-cancerous lesions or polyps (adenoma or sessile serrated lesions) and colorectal cancer and compared the age of presence/detection of adenomas/sessile serrated lesions in Aboriginal and/or Torres Strait Islander Peoples and non-Aboriginal and/or Torres Strait Islander populations to answer the clinical question 'should bowel screening practices (ie. age of enrolment for screening) be tailored for Aboriginal and/or Torres Strait Islander Peoples'. We focused on Australian studies involving Aboriginal and/or Torres Strait Islander populations, but also considered studies from other countries that were focused on indigenous populations.

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Date CAT completed: final meeting 3 October, 2023 To be reviewed: October 2025

Search dates

Last 10 Years: 2012-2023

Type of Study

Epidemiological cohort studies (ie. data from cancer registries, databases, medical records).

PICOT

	Description	Search terms
Population and Setting	Indigenous adults worldwide (Australian Aboriginal and/or Torres strait islander; 'First Nations' peoples in countries other than Australia) and non-indigenous adults. Included studies of indigenous populations internationally as initial searches conducted by librarian indicated that it is likely literature may be limited if only including studies of Australian Aboriginal and/or Torres Strait Islander populations. Furthermore, it is recognised that indigenous populations have worse outcomes with respect to cancer worldwide.	See search strategy
Intervention or Exposure (ie what is being tested)	Presence of pre-cancerous lesions or polyp (adenoma or sessile serrated lesions) or bowel cancer in indigenous adults.	See search strategy
Comparison, if any	Presence of pre-cancerous lesions or polyp (adenoma or sessile serrated lesions) or bowel cancer in non-indigenous adults.	See search strategy
Outcomes of interest	Are there unique characteristics (eg. younger age) at the time of presentation with colonic polyps (adenoma, sessile serrated lesion) or cancer for those who are indigenous compared to non-indigenous	See search strategy
Types of studies	Epidemiological studies describing or comparing the characteristics (eg. age) of indigenous and non-indigenous populations at different stages on the continuum of presentation (adenoma, advanced adenoma, bowel cancer).	See search strategy

Databases Searched

PubMed, Embase, CINAHL

Date of search

07/06/23

Search Strategies (including subject headings)

PubMed 147 results

(("rectal neoplasms"[MeSH Terms] OR "colorectal neoplasms"[MeSH Terms] OR ((((("carcinoma*"[Title/Abstract] OR "adenocarcinoma*"[Title/Abstract] OR "neoplasm*"[Title/Abstract] OR "neoplasia"[Title/Abstract] OR "tumor"[Title/Abstract] OR "malignan*"[Title/Abstract] OR "cancer"[Title/Abstract] OR "cancers"[Title/Abstract]) OR "tumour"[Title/Abstract]) OR "mass"[Title/Abstract] OR "masses"[Title/Abstract] OR "adenoma*"[Title/Abstract] OR "polyp*"[Title/Abstract] OR "sessile serrated adenoma"[Title/Abstract] OR "sessile serrated adenoma*"[Title/Abstract]

OR "pseudopolyp"[Title/Abstract] OR Precancer*[tiab] OR Pre-cancer*[tiab]) AND ("colorectal"[Title/Abstract] OR "pararectal"[Title/Abstract] OR "rectal"[Title/Abstract] OR "rectum"[Title/Abstract] OR bowel[tiab]))) AND ((("Australian Aboriginal and Torres Strait Islander Peoples"[MeSH Terms] OR ((("australia"[MeSH Terms] OR "australia*"[Title/Abstract]) AND ("Native Hawaiian or Other Pacific Islander"[MeSH Terms] OR "aborigin*"[Title/Abstract] OR "indigenous"[Text Word] OR "first nations"[Title/Abstract] OR "first nation"[Title/Abstract])) OR "torres strait islander*"[Title/Abstract])) OR ((Maori[tiab] or "tangata whenua"[tiab]) OR ((New Zealand[Mesh] or (New Zealand[tiab] OR Aotearoa[tiab])) AND ("Native Hawaiian or Other Pacific Islander"[Mesh] or (Aborig*[tiab] or Indig*[tiab])))))) OR ((American[tiab] OR "north american"[tiab] OR canada*[tiab] OR "united states"[tiab] OR mexic*[tiab]) AND (Indian[tiab] OR Indians[tiab] OR aborigin* OR "first nation" OR "first nations" OR indigenous[tiab] OR tribe[tiab] OR tribes[tiab] OR tribal[tiab]) OR American Indian[tiab] OR Native American[tiab] OR First Nation[tiab] OR "Indigenous Peoples"[Mesh] OR "american indian or alaska native"[MeSH Terms] OR "Indians, North American"[Mesh] OR "Inuit"[Mesh] OR Inuit[tiab] OR American Indian[tiab] OR Native American[tiab] OR "Native Hawaiian*" OR (American[tiab] OR "north american"[tiab] OR canada*[tiab] OR "united states"[tiab] OR mexic*[tiab]) AND (Indian[tiab] OR Indians[tiab] OR aborigin* OR "first nation" OR "first nations" OR indigenous[ti] OR tribe[tiab] OR tribes[tiab] OR tribal) OR Metis[tiab] OR Indigen*[ti])))) AND ((age of diagnosis[tiab] OR young*[tiab] OR onset[tiab] OR present* OR early-onset[tiab] OR prevalence[tiab] OR "Early Diagnosis"[Mesh] OR age[ti] OR characteristics[ti])) Filters: in the last 10 years, English Sort by: Most Recent

CINAHL Complete (EBSCOhost) 81 results
Limited to English language

#	Query	Limiters/Expanders	Last Run Via	Results
S4	S1 AND S2 AND S3	Limiters - Published Date: 20120101-20230631; English Language		81
S3	((TI "age of diagnosis" OR AB "age of diagnosis") OR (TI young* OR AB young*) OR (TI onset OR AB onset) OR present* OR (TI early-onset OR AB early-onset) OR (TI prevalence OR AB prevalence) OR (MH "Early Diagnosis+") OR (TI age) OR (TI characteristics))	Expanders - Apply equivalent subjects		1,493,616
S2	((MH "First Nations of Australia+") OR ((MH australia+) OR (TI australia* OR AB australia*)) AND ((TI aborigin* OR AB aborigin*) OR indigenous OR (TI "first nations" OR AB "first nations") OR (TI "first nation" OR AB "first nation")) OR (TI "torres strait islander*" OR AB "torres strait islander*")) OR (MH "Maori") OR (((TI Maori OR AB Maori) OR (TI "tangata whenua" OR AB "tangata whenua")) OR (((MH "New Zealand+") OR ((TI "New Zealand" OR AB "New Zealand") OR (TI Aotearoa OR AB Aotearoa))) AND (((TI Aborig* OR AB Aborig*) OR (TI Indig* OR AB Indig*)))))) OR (((TI American OR AB American) OR (TI "north american" OR AB "north american") OR (TI canada* OR AB canada*) OR (TI "united states" OR AB "united states") OR (TI mexic* OR AB mexic*)) AND ((TI Indian OR AB Indian) OR (TI Indians OR AB Indians) OR aborigin* OR "first nation" OR "first nations" OR (TI "indigenous" OR AB "indigenous") OR (TI tribe OR AB tribe) OR (TI tribes OR AB tribes) OR (TI tribal OR AB tribal)) OR (TI "American Indian" OR AB "American Indian") OR (TI "Native American" OR AB "Native American") OR (TI "First Nation" OR AB "First Nation") OR (MH "Indigenous Peoples") OR (MH "Native Americans") OR (MH "Aboriginal Canadians") OR (TI Inuit OR AB Inuit) OR (TI "American Indian" OR AB "American Indian") OR (TI "Native American" OR AB "Native American") OR "Native Hawaiian*" OR ((TI American OR AB American) OR (TI "north american" OR AB "north american") OR (TI canada* OR AB canada*) OR (TI "united states" OR AB "united states") OR (TI mexic* OR AB mexic*)) AND ((TI Indian OR AB Indian) OR (TI Indians OR AB Indians) OR aborigin* OR "first nation" OR "first nations" OR (TI indigenous) OR (TI tribe OR AB tribe) OR (TI tribes OR AB tribes) OR tribal) OR (TI Metis OR AB Metis) OR (TI Indigen*))	Expanders - Apply equivalent subjects		33,290
S1	(MH "rectal neoplasms+") OR (MH "colorectal neoplasms+") OR (((((TI carcinoma* OR AB carcinoma*) OR (TI adenocarcinoma* OR AB adenocarcinoma*) OR (TI neoplasm* OR AB neoplasm*) OR (TI neoplasia OR AB neoplasia) OR (TI tumor OR AB tumor) OR (TI malignan* OR AB malignan*) OR (TI cancer OR AB cancer) OR (TI cancers OR AB cancers)) OR (TI tumour OR AB tumour)) OR (TI mass OR AB mass) OR (TI masses OR AB masses) OR (TI adenoma* OR AB adenoma*) OR (TI polyp* OR AB polyp*) OR (TI "sessile serrated adenoma" OR AB "sessile serrated adenoma") OR (TI "sessile serrated adenoma*" OR AB "sessile serrated adenoma*") OR (TI pseudopolyp OR AB pseudopolyp) OR (TI Precancer* OR AB Precancer*) OR (TI Pre-cancer* OR AB Pre-cancer*)) AND ((TI colorectal OR AB colorectal) OR (TI pararectal OR AB pararectal) OR (TI rectal OR AB rectal) OR (TI rectum OR AB rectum) OR (TI bowel OR AB bowel)))	Expanders - Apply equivalent subjects		70,007

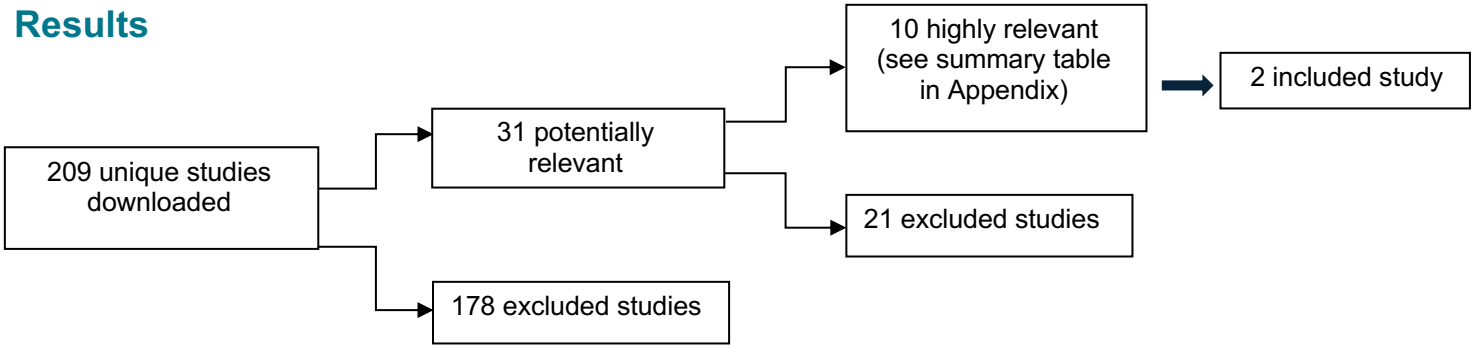
Embase (Elsevier) 93 results
('rectum tumor'/exp OR 'colorectal tumor'/exp OR ((carcinoma*:ti,ab OR adenocarcinoma*:ti,ab OR neoplasm*:ti,ab OR neoplasia:ti,ab OR tumor:ti,ab OR malignan*:ti,ab OR cancer:ti,ab OR cancers:ti,ab OR tumour:ti,ab OR mass:ti,ab OR masses:ti,ab OR adenoma*:ti,ab OR polyp*:ti,ab OR 'sessile serrated adenoma':ti,ab OR 'sessile serrated adenoma*':ti,ab OR pseudopolyp:ti,ab OR precancer*:ti,ab OR 'pre cancer*':ti,ab) AND (colorectal:ti,ab OR pararectal:ti,ab OR rectal:ti,ab OR rectum:ti,ab OR bowel:ti,ab))) AND ('australian aborigine'/exp OR (('australia'/exp OR australia*:ti,ab) AND ('oceanic ancestry group'/exp OR aborigin*:ti,ab OR indigenous OR 'first nations':ti,ab OR 'first nation':ti,ab)) OR 'torres strait islander*':ti,ab OR maori:ti,ab OR 'tangata whenua':ti,ab OR (('new zealand'/exp OR

'new zealand':ti,ab OR aotearoa:ti,ab) AND ('oceanic ancestry group'/exp OR aborig*:ti,ab OR indig*:ti,ab)) OR (((american:ti,ab OR 'north american':ti,ab OR canada*:ti,ab OR 'united states':ti,ab OR mexic*:ti,ab) AND (indian:ti,ab OR indians:ti,ab OR aborigin* OR 'first nation' OR 'first nations' OR 'indigenous':ti,ab OR tribe:ti,ab OR tribes:ti,ab OR tribal:ti,ab) OR 'first nation':ti,ab OR 'indigenous people'/exp OR 'american indian'/exp OR 'alaska native'/exp OR 'inuit'/exp OR 'canadian aboriginal'/exp OR inuit:ti,ab OR 'american indian':ti,ab OR 'native american':ti,ab OR 'native hawaiian*' OR american:ti,ab OR 'north american':ti,ab OR canada*:ti,ab OR 'united states':ti,ab OR mexic*:ti,ab) AND (indian:ti,ab OR indians:ti,ab OR aborigin* OR 'first nation' OR 'first nations' OR indigenous:ti OR tribe:ti,ab OR tribes:ti,ab OR tribal)) OR metis:ti,ab OR indigen*:ti) AND ('age of diagnosis':ti,ab OR young*:ti,ab OR onset:ti,ab OR present* OR 'early onset':ti,ab OR prevalence:ti,ab OR 'early diagnosis'/exp OR age:ti OR characteristics:ti) AND [embase]/lim AND [english]/lim AND ([article]/lim OR [article in press]/lim OR [review]/lim) AND [2012-2023]/py

Search and literature selection process

1. Searches conducted by librarian (LE) as per search strategy
2. 209 unique studies downloaded by LE (after duplicates removed)
3. 31 potentially relevant sources selected following title and abstract screen by LE
4. 31 potentially relevant abstract and titles reviewed by 3 members of the CAT group (ED, KH, NR). Each reviewer was asked to review against the criteria and (a) highlight papers they viewed as highly relevant to answer the question and (b) select up to 3 highest preferences for inclusion
5. ED compared papers highlighted as highly relevant (n=10 across 3 reviewers) and each reviewer's preferences. ED selected included paper/s based on those most commonly selected and preferred across the reviewer group and after final review of papers against criteria for inclusion, considering highest relevance for answering the CAT question.

Results



First Author, year and type of study	Population and setting	Intervention or exposure tested	Study results	Assessment of quality and comments (CASP checklist for cohort study used)
Shepherdson et al. 2022 (Prospective, longitudinal study using cross-sectional analysis of cancer registry data) Only Australian study found that reported on colorectal cancer incidence and compared	Northern Territory, Australia. All data within Australian Northern Territory Cancer Registry 28 years (1990-2017) including all reported cases of gastrointestinal adenocarcinoma	Explored incidence and survival of gastrointestinal adenocarcinoma (included data for rectal and colon cancer) in those 18-50 years and >50 years of age with comparison of Aboriginal and/or Torres Strait Islander people with non-Aboriginal and/or Torres Strait Islander people. N=1608 cases in total.	In the lower age group (18-50yrs), there was a lower incidence of colonic adenocarcinoma found in those identifying as Aboriginal and/or Torres Strait Islander Peoples (IRR=0.51 (95%CI 0.32-0.79, p=0.003). . No differences found in those aged 18-50 years old in incidence of rectal adenocarcinoma. Trend towards increased incidence of gastrointestinal adenocarcinomas in both Aboriginal and/or Torres Strait islander and non-Aboriginal and/or Torres Strait Islander groups aged 18-50 years.	One relatively large study of a cohort in one region of Australia (Northern Territory). Appropriate methods of analysis used to answer the study questions. Most relevant to our question given comparison in Australian sample of Aboriginal and/or Torres Strait Islander Peoples, however focused on colorectal cancer rather than adenoma/sessile serrated lesion detection incidence.

incidence rates of those who were Aboriginal and/or Torres Strait Islander and non-Aboriginal and/or Torres Strait Islander.			Worse survival outcomes following gastrointestinal adenocarcinoma (significantly lower survival rates) of Aboriginal and/or Torres Strait Islander Peoples compared to non-Aboriginal and/or Torres Strait Islander Peoples in both age cohorts (HR=2.06 (95%CI 1.36-3.11; $p < 0.0007$ for 18-50 year cohort) and (HR=1.66 (95%CI 1.32-2.08; $p < 0.00001$ for >50 years age cohort), which was contributed to by the effect of colonic and rectal adenocarcinoma in the 18-50 year group (colonic: HR=2.22 (95%CI 1.06-4.64; $p < 0.03$; rectal: HR=2.55 (95%CI 1.13-5.74; $p < 0.02$).	
Redwood et al. 2023 Only study reporting on the incidence of adenoma detection in <50 years age.	Alaskan Native and American Indian Peoples, Interior Alaska, USA	Retrospective medical record review of cohort of patients referred for screening colonoscopy 2018-2022	Adenoma detection rate of sample by age, showing % incidence by age range. Results indicated 35% women and 33% men had adenoma on screening at 40-49 years of age. Discussion suggested this is higher compared to non-indigenous populations based on data from other studies in the USA.	The CAT Group discussed that whilst this study was less relevant than the Shepherdson study (ie. it was not a comparative study; did not report on Australian Aboriginal and/or Torres Strait Islander outcomes) it was the only study that reported on adenoma detection rates in an indigenous population.

Overview of other highly relevant studies

There were no formal syntheses (scoping or systematic reviews) of the literature found that were relevant to our question. We found a wide range of potentially relevant studies, with most focusing on colorectal cancer incidence rates in younger age groups rather than studies reporting on pre-cancerous polyp incidence/detection (adenoma or sessile serrated lesion). Some studies included comparative data for indigenous and non-indigenous populations in several countries. Studies were mainly in USA populations, with one informal review and one small cohort study reporting on New Zealand populations and two studies reporting on Australian populations in the Northern Territory. These studies are summarised in Appendix 1.

Implications for Practice/research

We found no Australian studies that compared the incidence of adenoma or sessile serrated lesion detection in Aboriginal and/or Torres Strait Islander Peoples with non-Aboriginal and/or Torres Strait Islander Peoples. The most relevant research in Australian populations has examined colorectal cancer incidence in the Northern Territory in younger age groups (18-50 years), finding a lower incidence in the Aboriginal and/or Torres Strait Islander cohort and worse survival outcomes for Aboriginal and/or Torres Strait Islander Peoples regardless of age group (ie. < and > 50 years of age). The Australian study reported data prior to 2017, and since this time bowel screen technology has advanced, further enabling more sensitive detection of pre-malignant lesions (such as flat sessile serrated lesions).

There is no evidence, to date, upon which to justify changes to current recommendations in Australian bowel cancer screening age for Aboriginal and/or Torres Strait Islander Peoples. Further research is needed to inform whether there is a need for tailored screening practices for Aboriginal and/or Torres Peoples (ie. earlier age of screening).

What would you tweet? (140 characters)

Further research is needed to identify if future bowel cancer screening programmes should be tailored for those who identify as Aboriginal and/or Torres Strait Islander.

Critical Appraisal Topic Group Team Members

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References

Australian Institute of Health and Welfare (2021). "**Cancer in Australia 2021.**" Cancer series no. 133. Cat. No. CAN 144. Canberra: AIHW.

Kratzer, T. B., et al. (2023). "**Cancer statistics for American Indian and Alaska Native individuals, 2022: Including increasing disparities in early onset colorectal cancer.**" CA Cancer J Clin **73**(2): 120-146.

McLeod, M., et al. (2021). "**Bowel cancer screening age range for Māori: what is all the fuss about?**" N Z Med J **134**(1535): 71-77 https://journal.nzma.org.nz/journal-articles/bowel-cancer-screening-age-range-for-maori-what-is-all-the-fuss-about

Movsisyan, A. S., et al. (2021). "**Increasing Rates of Colorectal Cancer Among Young People in California, 1988-2017.**" J Registry Manag **48**(4): 152-160 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10198412/.

Petrick, J. L., et al. (2021). "**Racial Disparities and Sex Differences in Early- and Late-Onset Colorectal Cancer Incidence, 2001-2018.**" Front Oncol **11**: 734998 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8459723/.

Rahman, R., et al. (2015). "**Increased risk for colorectal cancer under age 50 in racial and ethnic minorities living in the United States.**" Cancer Med **4**(12): 1863-1870.

Read, D. J. and I. Hayes (2019). "**Do Indigenous patients in Australia's Northern Territory present with more advanced colorectal cancer? A cohort study based on registry data.**" ANZ J Surg **89**(10): 1296-1301.

Redwood, D. G., et al. (2023). "**Elevated Adenomatous Polyp Detection Rate Among Alaska Native and American Indian People in Interior Alaska, 2018-2022.**" Public Health Rep: 333549221143204.

Shepherdson, M., et al. (2022). "**Young-Onset Gastrointestinal Adenocarcinoma Incidence and Survival Trends in the Northern Territory, Australia, with Emphasis on Indigenous Peoples.**" Cancers (Basel) **14**(12).

Swart, E. M., et al. (2013). "**Ethnicity and rectal cancer management in New Zealand.**" N Z Med J **126**(1384): 42-52.

Zahnd, W. E., et al. (2021). "**Rural-urban and racial/ethnic trends and disparities in early-onset and average-onset colorectal cancer.**" Cancer **127**(2): 239-248.

Appendix 1: Summary of study design, country, purpose and findings of other identified papers of relevance to this CAT question

Citation	Compares indigenous to non-indigenous population	Study design and number participants	Country	Summary of purpose of the studies related to the CAT topic question, relevant findings and reason for inclusion/non-inclusion.
McLeod et al., 2021	Y	Viewpoint paper presenting data (not research study or formal review of literature)	New Zealand (Maori people)	Paper reviews the current epidemiology of colorectal cancer in New Zealand, including the number of new bowel cancers diagnosed by age (2013-2017), cumulative bowel cancers as age increases and percentage of the Maori and non-Maori population with colorectal cancer in age categories. Presents data that over half of bowel cancers in Māori present before the age of 60 years (58% in females and 52% in males), whereas just under a third of bowel cancers in non-Māori population are diagnosed before the same age (27% in females and 29% in males), providing an argument for extending the bowel screening age range down from 60 to 50 years in New Zealand, due to greater percentage of bowel cancers in Māori occurring before the age of 60 years, when screening starts. (note chosen: *not a formal research study/review relevant to the Australian context).*
Read et al., 2019	Y	Cohort study of NT cancer registry (2005-2014 n=504)	Northern Territory, Australia (Aboriginal and/or Torres Strait Islander people)	Compares people who have and don't have an Aboriginal and/or Torres Strait Islander background with colorectal cancer on likelihood to present with advanced stage tumour compared with early stage, finding no differences (*not chosen: focus on advanced stage colorectal cancer)*.
Kratzer et al., 2023	Y	Cohort study population based data from National Cancer institute and Centers for Disease Control and Prevention and North American Association of Central Cancer Registries (2014-2019)	United States (non-Hispanic, American Indian and Alaska Native peoples)	Reports on incidence rates of early onset colorectal cancer (aged 20-29) cases per 100,000 for indigenous and non-indigenous populations entation), finding greater incidence in indigenous populations with increasing gap (*not chosen: focus on US population data and colorectal cancer incidence).*
Movsisyan et al., 2021	N	Cohort study (Californian cancer registry data n=39,298, 1988-2017)	United States (non-Hispanic, Hispanic, Asian/pacific islander, American Indian peoples)	Reports on all people diagnosed with colorectal cancer (characterised as early/late stage) at age 20-49, dividing into 10-year intervals (20-29, 30-39 and 40-49 years) and categorised by ethnicity including non-Hispanic, Hispanic, Asian/pacific islander and American Indian groups. The results showed significant increases in late stage colorectal cancer most notable among Hispanic females in 20-29 year age group and substantial increases in 30-39 Hispanic male group, and significant increases in average annual percent change in colorectal cancer incidence in 30-39 year and 40-49 year old groups among American Indian people with colorectal incidence rates increasing among 40-49 years age groups in all race/ethnic groups except for non-Hispanic black group (decreasing annual percent change observed). Authors concluded a need

				for further review of screening guidelines in younger age groups in California and particularly targeted care in Hispanic population groups (*not chosen: focus on US population data and colorectal cancer incidence)*
Petrik et al., 2021	Y	Cohort study (US Cancer statistics Database's cancer registry data.	United States (non-Hispanic, Hispanic, Asian/pacific islander, American Indian peoples)	Reports on early (20-49 years) and late (50-74 years) onset colorectal cancer and categorises data by ethnicity (non-Hispanic, Hispanic, American Indian/Alaskan Native, Asian/Pacific Islander) comparing trend in cancer rates over time. Shows over time, rates of early-onset colorectal cancer significantly increased among indigenous and non-indigenous groups, with the highest rates of early and late onset colorectal cancer in indigenous populations compared to non-indigenous population (*not chosen: focus on US population data and colorectal cancer incidence)*
Zahnd et al., 2021	Y	Cohort study using Surveillance, Epidemiology and End Results 21 program data (represents 35% US population living jurisdictions of 21 cancer registry programs) 2000-2016.	United States (Hispanic, Asian/Pacific Islander, American Indian)	Examines differences in early and average onset colorectal cancer by ethnicity – focussed on incidence over time (*not chosen: focus on US population data and colorectal cancer incidence)*
Rahman et al., 2015	Y	Cohort study using Surveillance, Epidemiology and End Results database 1973-2009 and North American Association of Central Cancer Registries 1995-2009 dataset.	United States (African American, Hispanic, non-hispanic, Asian/Pacific Islander, American Indian, Alaskan Native peoples)	Reports on colorectal cancer incidence across ethnic groups, reporting % by ethnic group group diagnosed < 50 years. Found significantly larger % incidence diagnosis before 50 years of colorectal cancer in minority groups, and diagnosis with more advanced stages of cancer *(not chosen: focus on US population data and colorectal cancer incidence.*
Swart et al., 2013	Y	Cohort study (New Zealand cancer registry data 2006-2008, n=194 including medical record review)	New Zealand (Maori)	Reports on age when diagnosed with rectal cancer, finding Maori group were younger at diagnosis (mean age=63.5 years compared to 69.2 years or non-Maori group) *(not chosen: focus on New Zealand population)*