

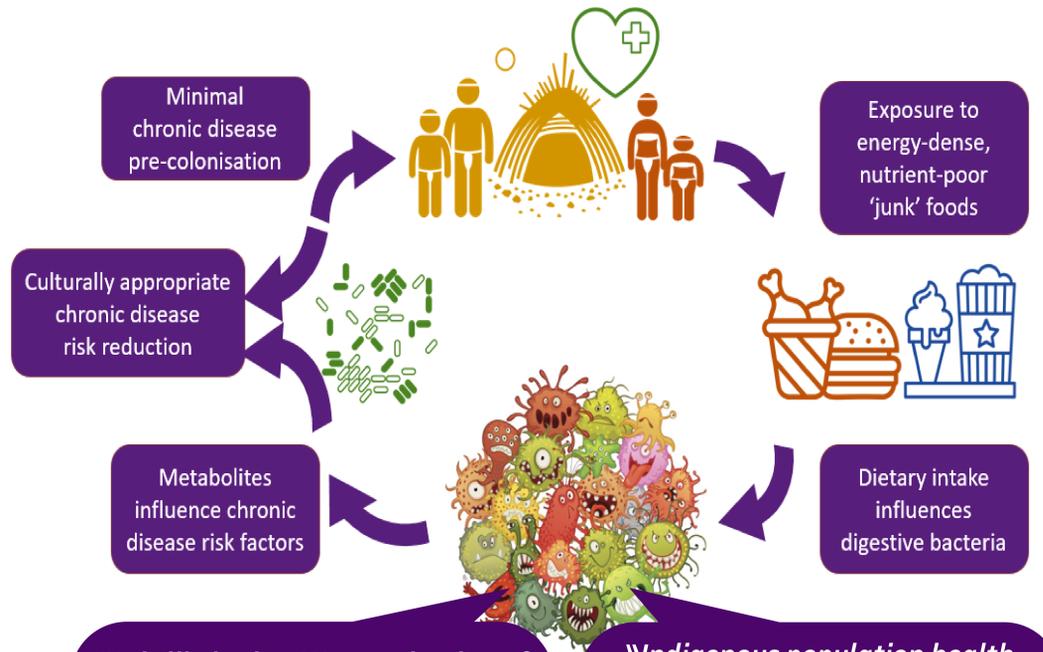
Influences of diet on gut microbiome in Indigenous populations: a rapid review

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BACKGROUND

- Indigenous populations world-wide did not generally suffer from lifestyle-related diseases prior to introduction of energy-dense, nutrient-poor food with colonisation.
- Diet is the biggest risk factor in global burden of disease.
- Diet plays a central role in modulating gut microbiota.
- Gut microbes subsequently influence food-related metabolic activities and metabolites.
- These metabolites potentially influence chronic disease prevention and management.
- Therefore, an improved understanding of gut microbiota in Indigenous populations affords an opportunity to reorient and increase cultural acceptability of dietary interventions.



AIMS

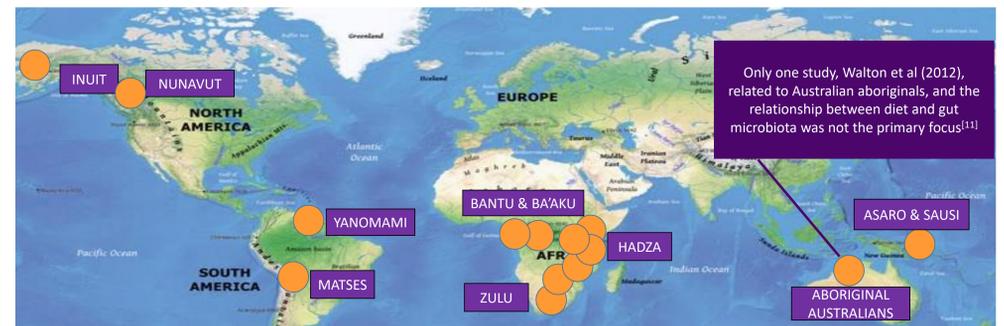
- To investigate relationships between diet and gut microbiome in Indigenous populations with hunter-gatherer lifestyle.
- To inform culturally appropriate, community led interventions aimed at reintroduction of 'bush foods'.

"It is likely that Westernisation of dietary practices has shaped the gut microbiota of Australian Aboriginals towards a reduced diversity.....perhaps to an even greater extent than reported in the literature"
(Walton, 2012) [11]

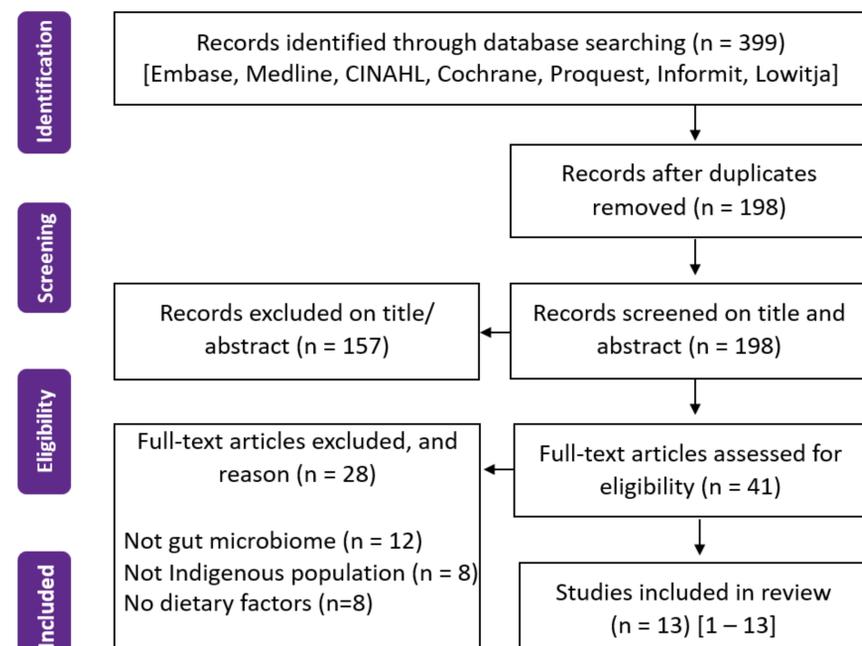
"Indigenous population health may suffer from disrupted microbial ecosystems..... historical colonialism may have interrupted the established relationships between the environment, indigenous lifestyles and gut microbiota"
(Skelly, 2018) [14]

METHODS

- A literature review of seven databases and repositories (Medline, Embase, Cochrane, CINAHL, Proquest, Informit, Lowitja) was conducted in February 2019.
- Databases searched from inception, with no limits applied to language, publication type and animal/human.
- Due to the known paucity of evidence in the field, conference abstracts and editorials etc. were not excluded from search.
- Hand searching of reviews and included papers was conducted.



FINDINGS



PREVALENCE OR ABUNDANCE

- Greater Bacteroidetes, primarily from *Prevotella lineages* (7 studies)^[2, 4-6, 8, 10, 13] and Bacteroidetes (unclassified)^[2, 4, 13]
- Increased "butyrate producing"^[8], Proteobacteria^[7], *Streptococcus*^[13], *Helicobacter* and *Pseudomonas*^[13]
- Lesser relative abundances of *Bacteroides*^[5, 6, 10, 13], *Ruminococcus*^[7], and *Bifidobacterium*^[4]
- Profile variations driven more by geography than host genetics^[3]
- Polymicrobial signature of a subsistence lifestyle^[7]
- Similarity of genus-level profiles of hunter-gatherers between continents^[10]
- Taxonomic profiles show seasonal variations^[5]

DIVERSITY

- Greater bacterial diversity highlighted^[3, 6, 7, 9, 10, 13]
- Gender-based microbial differences reflect labour tasks^[4]
- Diversity may enhance the ability to digest and extract valuable nutrition from fibrous plant foods^[4]

LINKS TO DIET

- Individual diet x gut microbiome associations not directly analysed in any studies.
- Dietary intake features reported included berries, honey and baobab^[2], tubers^[2, 10], game meats^[2, 12] fish/seafood^[10], frequent meals^[9], rare dairy or processed foods^[10], low fat and fibre based diets^[8]

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