


Prevalence of eating disorders and disordered eating in First Nations Peoples in high-income, colonial settler countries: a scoping review

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ABSTRACT

Disordered eating (DE) is often a feature of the eating disorder (ED) prodrome. EDs are complex mental health conditions which affect approximately 4% of Australians. However, research on DE and EDs in Aboriginal and Torres Strait Islander Australians is scarce, with fewer than ten peer-reviewed studies available. These studies suggest Indigenous Australians may experience DE and EDs at equal or higher rates than non-Indigenous Australians. This scoping review aimed to map the literature on the prevalence and presentation of eating disturbances in populations comparable to Indigenous Australians—that is, First Nations Peoples from high-income, colonial settler countries—in order to identify translatable knowledge gaps and research priorities. Following Joanna Briggs Institute (JBI) methodology and PRISMA-ScR guidelines, a systematic literature search of seven databases, data extraction, and narrative synthesis were conducted. Publications in English reporting the prevalence or presentation of DE or EDs among First Nations Peoples in Australia, New Zealand, the United States, Canada, and Scandinavian countries were eligible. Sixty-four publications met eligibility criteria. Lifetime ED prevalence in First Nations adults ranged from 3.3% to 4.3% for females and 0.4% to 2.6% for males. For children/adolescents, prevalence ranged from 10% to 15.6% for females and 4.4% to 5.3% for males. Body mass index, age, self-concept, psychosocial stressors, substance use, and social connection were linked to eating disturbances. Colonisation and racism affect ED experiences and treatment-seeking. Future research must include culturally validated models and tools, with leadership and co-design by Aboriginal and Torres Strait Islander communities.

INTRODUCTION

Mental health and substance use disorders are the largest contributors to disability-adjusted life-years affecting Indigenous Australian communities.¹ Disordered eating (DE) describes behaviours that are referenced in ED diagnostic criteria but do not meet the full clinical criteria for ED diagnosis.

Eating disorders (EDs) are life-threatening mental health conditions affecting approximately 4% of Australians² and involve eating or eating-related behaviour which adversely impacts physical health or psychosocial function.³ Understanding of eating disturbances within Indigenous populations is limited worldwide, and in Australia, less than 10 peer-reviewed studies have been published. These studies show significant rates of eating disturbances among Indigenous Australian communities, with higher rates among Indigenous adolescents⁴ and equal or higher rates affecting Indigenous adults than non-Indigenous Australians.^{5–7} Poorer psychosocial⁴ and mental health-related quality of life (QoL), younger age and higher body mass index (BMI)⁵ are likely predictors of eating disturbances affecting Indigenous Australians. Similarly, there is very limited research on the presentation of EDs in this population. However, two studies suggest that binge eating could be a common feature of EDs among Indigenous Australians.^{4,5} The prevalence of EDs affecting Indigenous Australians has been reported in a limited number of communities, and the multifaceted aspects of ED presentation have remained largely unexplored.

Given the lack of research on EDs in Indigenous Australian communities, this scoping review aimed to examine the current literature to determine the prevalence and presentation of eating disturbances among First Nations Peoples living in sociocultural contexts with similar economic and historical features across the world. We aimed to answer the research question ‘What is the prevalence and presentation of DE and EDs in First Nations Peoples in high-income, colonial

settler countries?’ with the hope of informing knowledge gaps and future research opportunities in Australia.

MATERIALS AND METHODS

We adhered to the Joanna Briggs Institute methodology for scoping reviews⁸ and the protocol was drafted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Review guidelines,⁹ as detailed in online supplemental table 1.

Systematic search strategy

The search terms were based on keywords associated with prevalence rates, incidence rates and symptomatology of eating and feeding disorders, feeding and EDs generally, and terms associated with Indigenous culture. The search strategy key terms are presented in online supplemental table 2. Key terms were combined with Boolean operators to systematically search relevant databases. The databases that were searched included MEDLINE, Scopus, PsycINFO, Embase, CINAHL, Global Health and Aboriginal and Torres Strait Islander Health via Informit. The search strategy did not restrict by publication date or format. The database searches were completed on 11 June 2023.

Eligibility

Eligible studies included First Nations Peoples of any age or gender including children (less than 13 years old), adolescents (13–17 years old) and adults (18 years or older). Included contexts were high-income, colonial settler countries. High-income countries were defined as countries with a gross national income per capita of US\$13 205, or more for the 2023 fiscal year.¹⁰ Colonial settler countries were defined as countries in which White racial majority communities have outnumbered and removed First Nations Peoples through long-term colonial policies and practices.¹¹ Under these definitions, Australia, New Zealand, Canada, the USA and Scandinavian countries (Denmark, Norway, Sweden, Finland, Iceland, the Faroe Islands, Greenland and Åland) were included.

EDs were understood as those classified by the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition, Text Revision (DSM-5-TR)¹² or International Classification of Diseases 11th Revision (ICD-11).¹³ This includes pica, rumination disorder, avoidant restrictive food intake disorder, anorexia nervosa (AN), bulimia nervosa (BN), binge ED (BED), other specified feeding or ED (OSFED) and unspecified feeding or ED (UFED). DSM-IV EDNOS (Eating Disorders Not Otherwise Specified) was also included. DE included behaviours that form part of the DSM-5-TR or ICD-11 diagnostic criteria for any ED but do not meet clinical criteria for diagnosis. Any studies that only examined non-behavioural aspects of eating disturbances were excluded as current diagnostic models use behavioural features to delineate pathological eating. Prevalence denoted any measure of a condition’s frequency in a population including incidence

rate, and point, period, and lifetime prevalence. Presentation referred to individual characteristics and illness features that may be assessed in a clinical context as relevant to treatment pathway and outcome. ‘Presentation’ features included age, gender, eating behaviours (nature, severity, frequency, duration), cognitions, family, medical and psychological history as well as morbidity and genetic markers associated with DE and EDs.

There were no limitations placed on publication dates. Studies must have been published in English. Quantitative, qualitative and mixed-methods research studies, systematic reviews and meta-analyses were considered eligible publications for the scoping review. Grey literature, such as preprints, theses and dissertations, was also included. Scoping reviews, narrative reviews, opinion pieces and conference abstracts were excluded.

Screening and data extraction

Citations from the database search were uploaded to Covidence¹⁴ and duplicates were removed. Two independent reviewers (a combination of AM/EB/KW) screened titles and abstracts against the eligibility criteria. Two of the reviewers (AM/EB) then assessed the full text of relevant papers for eligibility. Any conflicts between reviewers were resolved through discussion or the input of a third reviewer (KW). Inter-reliability was reported using Cohen’s kappa.

A single reviewer (AM) used a data extraction tool to extract first author, publication year, publication format, country, study design, participant demographics including gender, age range and/or mean, ethnicity and characteristics used in recruitment, measures of DE/ED prevalence and presentation, and outcomes. An assessment of research quality was conducted by the same reviewer (AM) using The Aboriginal and Torres Strait Islander Quality Appraisal Tool.¹⁵ As the primary objective of a scoping review is to map the existing literature rather than conduct a formal critical appraisal, the quality assessment was included as an additional step to provide contextual insight into the included studies, rather than to serve as a basis for inclusion/exclusion or formal synthesis.

Data analysis

Descriptive statistics were used to analyse demographic information, prevalence rates and associations with eating disturbances. The prevalence and presentation of each DE behaviour and ED were analysed independently for children/adolescents and adults, males and females, and for clinical psychiatric and general populations. Cross-cultural analyses of the prevalence of eating disturbances were disaggregated by comparisons of First Nations Peoples with White/non-First Nations Peoples and with other minority ethnicities. Aspects of eating disturbance presentation were grouped thematically. Publication characteristics and presentation of eating disturbances were analysed and presented in a narrative format.

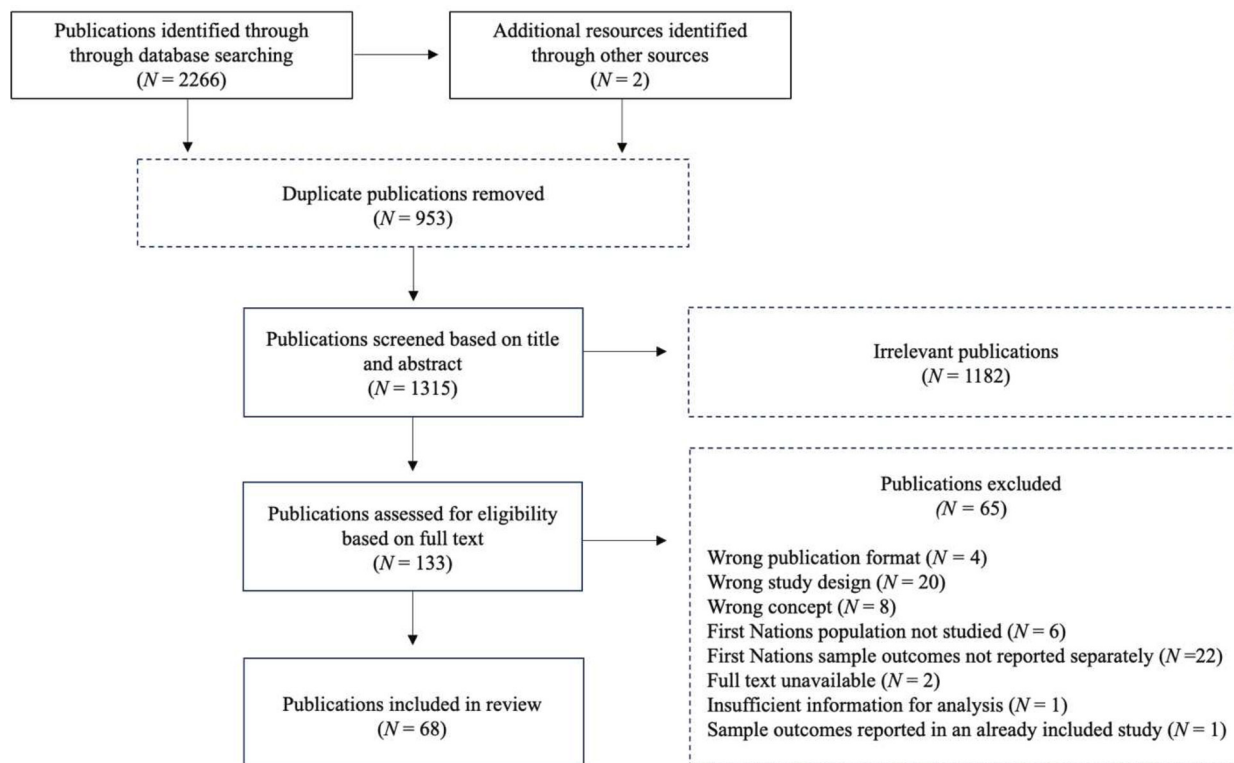


Figure 1 Preferred Reporting Items for Systematic Review and Meta-Analysis Extension for Scoping Reviews selection of publications flow diagram.

Patient and public involvement

This study was led by the Aboriginal and Torres Strait Islander Co-Production workstream of the Australian Eating Disorders Research and Translation Centre. Aboriginal experts and individuals with lived experience of EDs contributed to the design, methodology, write-up and review of the study through authorship and as members of the First Nations Advisory of the workstream.

RESULTS

Systematic database searching identified 2268 publications (figure 1). Two additional resources were identified through other sources. The final review included 68 publications (online supplemental table 3). The inter-rater reliability was moderate for title and abstract screening by AM and EB ($\kappa = 0.61$) and by AM and KW ($\kappa = 0.61$) and strong for full text screening by AM and EB ($\kappa = 0.88$).

Publication characteristics

Characteristics of the included publications are displayed in online supplemental material. The five countries represented were Australia, New Zealand, Canada, the USA and Norway. Most publications were conducted in the USA (N=45) and involved Native Americans (N=42). There were no publications from Denmark, Sweden, Finland, Iceland, the Faroe Islands, Greenland or Åland. Approximately 50% reported results for females only (N=35) and 23 publications reported results for males only. The remaining studies (N=27) did not

independently analyse by gender. Only one study investigated eating disturbances in gender minorities.

The prevalence of ARFID, EDNOS, OSFED, subthreshold BN, night eating syndrome and subjective binge eating was each reported in only one publication (online supplemental table S5). No studies measured the prevalence of pica, rumination disorder, orthorexia, recurrent night eating, repeated and intentional food regurgitation, eating or feeding disturbances associated with ARFID or behaviour reflecting preoccupation with one's weight or shape. No publications assessed the prevalence of elevated ED risk or excessive exercise in children and adolescents, nor subthreshold BN or night eating syndrome in adults.

PREVALENCE OF DE AND EDS

The lifetime, period and point prevalence of eating disturbances are presented in tables 1–3.

General/community population

Reported ED lifetime prevalence in First Nations Peoples in the general population was 3.3%–4.3% for adult females,^{16 17} 0.4%–2.6% for adult males^{17 18} and in children and adolescents ranged from 10% to 15.6% for females^{19 20} and from 4.4% to 5.3% for males.^{19 20} ED point prevalence in First Nations adult males in the general population was 1.7%.¹⁸ No general population studies reported lifetime or point prevalence of DE in any First Nations population nor ED point prevalence in First Nations children and adolescents or female adults.

Table 1 Prevalence of EDs and DE in First Nations Adults

ED or DE	Lifetime prevalence	Period prevalence	Point prevalence
ED	Aboriginal Canadian ▶ Male inmates: 2.6% ¹⁸ Native American ▶ Females: 3.3% ¹⁶ , 4.3% ¹⁷ ▶ Males: 0.4% ¹⁷	Native American ▶ Psychiatric outpatients: 1.6% ⁸⁷ (31 weeks) ▶ Female psychiatric outpatients: 2.9% ⁸⁷ (31 weeks) ▶ Male psychiatric outpatients: 0% ⁸⁷ (31 weeks)	Aboriginal Canadian Male inmates: 1.7% ¹⁸ Native American Inpatients/outpatients with a substance use disorder: 1% ²¹
High ED risk	No data	Sami ▶ Females: 10.8% ³⁸ (4 weeks) ▶ Males: 12.3% ³⁸ (4 weeks)	Native American ▶ Females: 28.0% ⁸⁸ ▶ Males: 16.3% ⁸⁸ ▶ Gender minorities: 19.7% ⁸⁸ (N=1) Native American/White ▶ Females: 29.6% ⁸⁸ ▶ Males: 16.4% ⁸⁸ ▶ Gender minorities: 53.6% ⁸⁸ (N=16) Native American/black ▶ Females: 17.1% ⁸⁸ ▶ Males: 9.6% ⁸⁸ ▶ Gender minorities: 41.4% ⁸⁸ (N=2) Native American/Hispanic ▶ Females: 48.6% ⁸⁸ ▶ Males: 29.8% ⁸⁸ ▶ Gender minorities: 100% ⁸⁸ (N=1) Pacific Islanders (including native Hawaiians) in the USA: ▶ Females: 41.9% ⁸⁸ ▶ Males: 19.4% ⁸⁸ ▶ Gender minorities: 66.6% ⁸⁸ (N=3) Pacific Islanders (including native Hawaiians) in the USA/white: ▶ Females: 35.6% ⁸⁸ ▶ Males: 30.2% ⁸⁸ ▶ Gender minorities: 3.5% ⁸⁸ (N=1) Pacific Islanders (including Native Hawaiians)/Asian in the USA ▶ Females: 32.3% ⁸⁸ ▶ Males: 36.3% ⁸⁸ ▶ Gender minorities: 3.0% ⁸⁸ (N=1)
BN or BED	No data	No data	Native Americans: 0% ⁸²
AN	Alaskan Native ▶ Males: 0% ⁸⁹ ▶ Females: 0.9% ⁸⁹	No data	Native American: ▶ Females: 0% ⁹⁰ Native American: ▶ Female inpatients with a substance use disorder: 0% ⁹¹ Pacific Islanders (including native Hawaiians) in the USA: ▶ Females 0% ⁹⁰
BN	Alaskan Native ▶ Males: 0% ⁸⁹ ▶ Females: 5.0% ⁸⁹	No data	Native American ▶ Females: 3.7% ⁹⁰ (N=1) ▶ Female inpatients with a substance use disorder: 5% ⁹¹ Pacific Islanders (including native Hawaiians) in the USA: ▶ Females 0% ⁹⁰

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Table 1 Continued

ED or DE	Lifetime prevalence	Period prevalence	Point prevalence
BED	No data	Native American: Females: 9.4% ⁹² (6 months)	Native American: ▶ Native American (males and females): 8% ⁴⁰ ▶ Females: 0% ^{*90} Pacific Islanders (including Native Hawaiians) in the USA: ▶ Males and females: 7% ⁴⁰ ▶ Females: 0% ^{*90}
Restrictive eating	No data	Native Americans: 25.5% ²⁴ (6 months)	Native American: ▶ Females: 19.6% ^{*90} Pacific Islanders (including native Hawaiians) in the USA: ▶ Females: 3.6% ^{*90}
Fasting/skipping meals	No data	Native American: ▶ Females: 32.8% (fasting for 1 day), 64.5% (skipping meals) (12 months) ⁹²	No data
Vomiting or laxative use	No data	Native American: ▶ Females: 8.0% ¹⁶ (28 days)	No data
Vomiting or laxative or diuretic use	No data	Native American: ▶ Females: 1.3% ¹⁷ (7 days) Native American: ▶ Males: 0% ¹⁷ (7 days)	No data
Vomiting or laxative, diet pill or diuretic use, excessive exercise, or other compensatory behaviours (without binge eating)	No data	No data	Native American: ▶ Females: 34.3% ^{*90} (N=12) Pacific Islanders (including native Hawaiians) in the USA: ▶ females: 15.2%* (N=1) ⁹⁰
Vomiting	No data	Native Americans: 13.0% ²⁴ (6 months) Native American females: 6.4% ⁹² (12 months) 5.0% ³¹ (28 days, any use) 5.0% ³¹ (28 days, regular use)	Native American ▶ Females: 7.1% ^{*90} Pacific Islanders (including native Hawaiians) in the USA: ▶ Females: 0% ^{*90}
Laxative use	No data	Native Americans: Males and females: 16.4% ²⁴ (6 months) Females: 3.0% ⁹² (12 months) 6.7% ³¹ (28 days, any use) 5.0% ³¹ (28 days, regular use)	Native American: ▶ Females: 12.9% ^{*90} Pacific Islanders (including native Hawaiians) in the USA: ▶ Females: 0% ^{*90}
Diuretic use	No data	Native Americans: ▶ Males and females: 5.5% ²⁴ (6 months) ▶ Females: 3.5% ⁹² (12 months)	Native American ▶ Females: 10.8% ^{*90} Pacific Islanders (including native Hawaiians) in the USA: ▶ Females: 0% ^{*90}

Continued

Table 1 Continued

ED or DE	Lifetime prevalence	Period prevalence	Point prevalence
Diet pill use	No data	Native American Females: 14.3% ⁹² (12 months)	Native American ▶ Females: 43.5% ^{*90} Pacific Islanders (including native Hawaiians) in the USA: ▶ Females: 18.6%* (N=1) ⁹⁰
Excessive exercise	No data	Native Americans: ▶ Males and females: 7.3% ²⁴ , 11.1% ²⁴ , 18.9% ²⁴ (6 months) ▶ Females: 43.4% ³¹ , 44% ¹⁶ (28 days, any use) 5.0% ³¹ (28 days, regular use)	Native American ▶ Females: 48.2% ^{*90} Pacific Islanders (including native Hawaiians) in the USA: ▶ Females: 10.4%* (N=1) ⁹⁰

*Reported as point prevalence as the original publication did not report the period during which prevalence was assessed/indicates participants of mixed ethnicity (ethnicity 1/ethnicity 2).
AN, anorexia nervosa; BED, binge ED; BN, bulimia nervosa; DE, disordered eating; EDs, eating disorders.

Clinical psychiatric population

The point prevalence of EDs in First Nations adults in clinical psychiatric populations was 1%,²¹ with no publications independently analysing by gender. For clinical psychiatric populations, no publications reported ED lifetime prevalence in First Nations adults, nor lifetime or point prevalence of EDs in First Nations children and adolescents.

Comparisons of prevalence of DE, ED risk and EDs by ethnicity

Subjective binge eating was reported to be more prevalent in First Nations Peoples compared with White or non-First Nations Peoples (N=2),^{6 22} as was diet pill use (N=1)²³ and use of multiple purging methods including vomiting, laxatives or diuretics (N=2).^{20 24} Most publications exploring other DE behaviours including objective binge eating (N=8),^{5 24-30} vomiting (N=2),^{24 30} laxative use (N=4)^{24 29-31} and diuretic use (N=2)^{24 30} reported no significant difference in prevalence in First Nations Peoples compared with White or non-First Nations Peoples. However, for all these DE behaviours, there was at least one publication reporting significantly lower and higher prevalence in First Nations Peoples. Reported prevalence of DE (N=1),³² binge eating (N=2)^{25 29} and laxative use (N=1)²⁹ was equivalent in US First Nations and Hispanic participants.

Most studies showed that First Nations Peoples were equally likely to be at risk of developing an ED compared with White or non-First Nations Peoples (N=7)^{25 33-38} or various ethnic minorities (N=6).^{25 34-37} Other studies reported either significantly lower (N=2)^{35 39} or significantly higher ED risk (N=3)^{19 36 40} compared with white or non-First Nations Peoples and significantly lower (N=1)³⁹ or significantly higher ED risk (N=2)^{35 41} compared with other ethnic minorities.

In studies that examined all EDs, the reported comparative prevalence between ethnicities varied. Some studies reported significantly lower prevalence in First Nations Peoples than in white or non-First Nations Peoples (N=2),^{21 42} others reported equal prevalence (N=5),^{17-20 41}

and some reported significantly elevated prevalence in First Nations Peoples (N=4).^{5 19 20 43} Studies investigating specific diagnostic groups found no significant differences between First Nations and White or non-First Nations ethnic groups in the prevalence of BN (N=3),^{44 45} BN risk (N=1),³⁹ BED (N=3),^{4 22 26} atypical AN (N=1),⁴ subthreshold BN (N=1),⁴ purging disorder (N=1),⁴ night eating syndrome (N=1),⁴⁴ EDNOS (N=1)⁴⁵ or diagnosis with both AN and BN across an 8-year period (N=1).⁴⁵ Similarly, BN (N=1)⁴⁶ and BN risk (N=1)³⁹ occurred at equivalent rates in First Nations and Hispanic participants. Some studies reported a significantly higher prevalence of AN (N=1),⁴⁷ BN (N=1),⁴⁷ night eating syndrome (N=1),⁴ UFED (N=1)⁴ and OSFED (N=1)⁴ in First Nations Peoples (N=1).⁴ Another study reported First Nations participants were significantly less likely to experience AN than non-First Nations participants (N=1).⁴⁵

PRESENTATION OF DE OR EDS IN FIRST NATIONS PEOPLES

Associations between demographic, medical and psychological factors, eating disturbances in First Nations Peoples and cross-cultural eating disturbance presentation were investigated (see online supplemental material figures S1–S6). BMI,^{5 6 23 25 38 48 49} age^{5 23} and perception of being overweight^{17 23 48 50} were significantly associated with the greatest number of eating disturbances. All three were positively associated with binge eating, vomiting and diet pill use. High BMI and younger age were significantly positively associated with DE, EDs and ED risk. Perception of being overweight was positively associated with diuretic use. Concerns regarding weight, shape and appearance were positively associated with DE and significantly mediated the positive association between BMI and ED risk.⁵¹

Poor self-concept, which was strongly defined by weight, shape and age, was positively associated with ED risk.²⁵ The role of cultural identity had varied associations with DE and EDs. ED risk was positively associated with identification with the majority culture and

Table 2 Prevalence of EDs and DE in First Nations children/adolescents

ED or DE	Lifetime prevalence	Period prevalence	Point prevalence
ED	Native American ▶ Females: 10% ²⁰ , 15.6% ¹⁹ ▶ Males: 4.4% ²⁰ , 5.3% ¹⁹	Native American: psychiatric outpatients: 3.4% ⁸⁷ (31 weeks)	No data
AN, BN, BED, OSFED or UFED	No data	No data	Indigenous Australians: 28.62% ⁴
AN, BN or BED	No data	No data	Indigenous Australians: 7.53% ⁴
AN	No data	No data	Indigenous Australians: 0.89% ⁴
BN	No data	No data	Indigenous Australians: 5.11% ⁴ Native American: ▶ Females: 6% ⁴⁶
BED	No data	No data	Indigenous Australians: 1.80% ⁴
OSFED	No data	No data	Indigenous Australians: 15.22% ⁴
OSFED—atypical AN	No data	No data	Indigenous Australians: 3.92% ⁴
OSFED—subthreshold BN	No data	No data	Indigenous Australians: 1.50% ⁴
OSFED—subthreshold BED	No data	No data	Indigenous Australians: 0.30% ⁴
OSFED—purging disorder	No data	No data	Indigenous Australians: 5.11% ⁴
OSFED—night eating syndrome	No data	No data	Indigenous Australians: 7.14% ⁴
UFED	No data	No data	Indigenous Australians: 5.32% ⁴
Any DE	No data	Native American: ▶ Females: 62.9% ⁵⁷ (12 months) ▶ Males: 46.4% ⁵⁷ (12 months)	No data
Vomiting, laxative, diuretic or diet pill use	Native American: Females: 22.3% ⁵⁰	Native American ▶ Females: 13.6% ²⁰ (weeks) 17.6% ²⁰ (12 months) Males: 2.9% ²⁰ (week) 9.7% ²⁰ (12 months)	No data
Vomiting or laxative use after consuming a large amount	Native American: Females: 20% ⁴⁶	No data	No data
Fasting/skipping meals	Native American: Females: 43% ⁴⁶	Indigenous Australians: 27.6% ⁴ (1 month, at least 4 episodes) Native American: ▶ Males and females: 40.8% ²⁹ (12 months) ▶ Females: 47.6% ⁵⁷ , 22.7% ²⁰ , 45.1% ²⁰ (12 months) ▶ Males: 18.2% ⁵⁷ , 14.5% ²⁰ , 15.7% ²⁰ (12 months)	No data
Restrictive meal volumes	No data	Native American: ▶ Females: 48.4% ²⁰ (12 months) ▶ Males: 28.2% ²⁰ (12 months)	No data
Vomiting	Native American: ▶ Females: 27.1% ²³ , 19.2% ³⁰ ▶ Males: 11.8% ²³ , 9.6% ³⁰	Indigenous Australians: 17.4% ⁴ (1 month, at least 4 episodes) Native American: Females: 17.8% ¹⁹ (3 months) 14.2% ⁵⁷ , 13.3% ²⁰ (12 months) males: 11.8% ¹⁹ (3 months) 2.6% ⁵⁷ , 5.6% ²⁰ (12 months)	Native American: ▶ Males and females: 10.7% ²⁹ (at least once a month)* ▶ Females: 2.4% ²³ (weekly frequency), 8.1% to 11.3% ⁴⁸ ▶ Males: 1.2% ²³ (weekly frequency), 3.9% to 5.8% ⁴⁸

Continued

Table 2 Continued

ED or DE	Lifetime prevalence	Period prevalence	Point prevalence
Laxative use	Native American: ▶ Females: 0.6% ²³ ▶ Males: 1.2% ²³	Native American: ▶ Females: 2.4% ⁵⁷ , 3.3% ²⁰ (12 months) ▶ Males: 3.1% ⁵⁷ , 0% ²⁰ (12 months)	Native American: ▶ Males and females: 5.8% ^{29*} ▶ Females: 2.1% ³⁰ ▶ Males: 0.7% ³⁰
Diuretic use	Native American ▶ Females: 1.2% ²³ ▶ Males: 0.8% ²³	Native American: ▶ Females: 1.1% ²⁰ (12 months) ▶ Males: 5.6% ²⁰ (12 months)	Native American: ▶ Females: 2.7% ³⁰ ▶ Males: 0.7% ³⁰
Diet pill use	No data	Native American: ▶ Females: 13.2% ⁵⁷ , 6.6% ²⁰ (12 months) ▶ Males: 5.4% ⁵⁷ , 2.8% ²⁰ (12 months)	Native American: ▶ Females: 3.1% to 3.6% ⁴⁸ , 5.1% ²³ ▶ Males: 0.8% to 3.3% ⁴⁸ , 1.8% ²³
Excessive exercise	No data	Indigenous Australians: 9.2% ⁴ (1 month, at least 20 episodes) Native American ▶ Females: 15.2% ¹⁹ (3 months) ▶ Males: 2.7% ¹⁹ (3 months)	No data
Binge eating	Native American ▶ Females: 29.0% ^{30 50} , 41.8% ²³ , 41.5% to 48.2% ⁴⁸ ▶ Males: 21.0% ³⁰ , 30.4% to 35.6% ⁴⁸ , 31.5% ²³	Native American ▶ Females: 27.1% ⁵⁷ (12 months) 10.2% ¹⁹ (3 months) ▶ Males: 21.4% ⁵⁷ (12 months) 19.2% ¹⁹ (3 months)	Native Americans: 56.6% ²⁹ (any frequency)* 14.2% ²⁹ (greater than once a month and identify as a binge eater)*

*Reported as point prevalence as the original publication does not specify prevalence period.
AN, anorexia nervosa; BED, binge ED; BN, bulimia nervosa; DE, disordered eating; EDs, eating disorders; OSFED, other specified feeding or eating disorder; UFED, unspecified feeding or eating disorder.

idealisation of thinness but negatively associated with identification with one’s traditional culture.⁵² However, identification with the majority culture was negatively associated with BN risk.⁵³ Identification with traditional culture had no significant association with binge eating or purging behaviours (including vomiting or use of laxatives, diuretics or diet pills)⁴⁹ and cultural connection was cited by Māori with EDs as promoting recovery.⁵⁴

Psychosocial stressors including physical and sexual abuse,⁵⁵ racism and thoughts about loss related to colonisation⁵⁶ and emotional distress^{55 56} were positively associated with some DE behaviours. Physical and sexual abuse was associated with purging,⁵⁵ racism and thoughts about loss related to colonisation were associated with binge eating,⁵⁶ and emotional distress was associated with purging⁵⁵ and binge eating.⁵⁶ Māori with EDs cited psychosocial stressors as both precipitants for DE as a maladaptive coping mechanism and predisposing factors for EDs by disrupting childhood emotional development.⁵⁴ Māori also reported poverty precipitating binge eating due to food insecurity and limiting access to ED treatment.⁵⁴ Conversely, emotional well-being,⁵⁷ and psychosocial⁴ and mental health-related QoL⁵ were negatively associated with DE and EDs, respectively. A desire to be a present and good role model for family was a protective factor for Māori with EDs.⁵⁴

Depression and anxiety were positively associated with ED risk.³⁸ Substance use disorder⁵⁸ and binge drinking⁵⁷ were not significantly associated with DE or EDs,

respectively. However, alcohol consumption, cigarette smoking^{55 57} and recreational use of at least two drugs were positively associated with purging,⁵⁵ and alcohol consumption in females and smoking in males was associated with some DE behaviours.

The reported significance of social connection for DE in children and adolescents varied. Peer support and social connectedness within school were not significantly associated with DE in boys or girls.⁵⁷ In contrast, connectedness within and outside one’s family and peer acceptance concerns were positively associated in girls.⁵⁷ The role of social connection in DE in adults was not studied.

PRESENTATION OF EATING DISTURBANCES IN NON-FIRST NATIONS AND FIRST NATIONS PEOPLES

Presentation of EDs or DE in First Nations and non-First Nations Peoples is displayed in online supplemental table S6. Regarding DE behaviours, native Americans were significantly more likely to use multiple methods of purging than white adults and several other ethnic minorities in the USA.²⁴ Additionally, First Nations Peoples with EDs may be uniquely impacted by western social narratives of the condition. Studies have hypothesised that Māori women (Māori being the indigenous Polynesian people of New Zealand) would have higher body image satisfaction than Pakeha women (Pākehā being New Zealanders of European descent) given the ‘thin ideal’ is often referred to as a western concept. However, in one

Table 3 Prevalence of EDs and DE in First Nations children/adolescents/adults

ED or DE	Lifetime prevalence	Period prevalence	Point prevalence
ED	No data	Proportion of public mental health patients in New Zealand that are Māori with EDs (0 to 101 years old): 0.35% ⁹³ (5 years) Proportion of public mental health patients in New Zealand that are Pacific Islanders with EDs (0 to 101 years old): 0.15% ⁹³ (5 years) Native Hawaiian/Pacific Islander psychiatric inpatients/outpatients (mean age 36.6, range not reported): 1.6% ⁵⁸ (12 years)	Indigenous Australians (over 15 years old): 27% ⁵
New ED diagnosis	No data	Proportion of native American patients in a private hospital network (8 to 18 years old): 0.3% ⁹⁴ (4.5 years) Proportion of native Hawaiian or Pacific Islander patients in a private hospital network (8 to 18 years old): 0.5% ⁹⁴ (4.5 years)	No data
AN or BN	Pacific Islanders in New Zealand (over 16 years old): 4.4% ⁹⁵	Pacific Islanders in New Zealand (over 16 years old): 1.5% ⁹⁵ (12 months)	
AN with BN	–	Māori undergoing ED treatment (over 10 years old): 4.2% ⁴⁵ (8 years)	No data
AN	Māori (over 16 years old): 0.7% ⁹⁶	Māori (over 16 years old): 0.0% ⁹⁶ (12 months) Māori undergoing ED treatment (over 10 years old): 27.8% ⁴⁵ (8 years)	Indigenous Australians (over 15 years old): 2.2% ⁵
BN	Māori (over 16 years old): 2.4% ⁹⁶ Pacific Islanders in New Zealand (over 16 years old): 3.9% ⁹⁵	Māori (over 16 years old): 1.0% ⁹⁶ (12 months) Māori undergoing ED treatment (over 10 years old): 24.3% ⁴⁵ (8 years) Pacific Islanders in New Zealand (over 16 years old): 1.5% ⁹⁵ (12 months)	Indigenous Australians (over 15 years old): 3.2% ⁵
BED	No data	No data	Indigenous Australians (over 15 years old): 1.1% ⁵
OSFED	No data	Māori undergoing ED treatment (over 10 years old): 0.4% ⁴⁵ (8 years)	–
OSFED—atypical AN	No data	No data	Indigenous Australians (over 15 years old): 1.1% ⁵
OSFED—purging disorder	No data	No data	Indigenous Australians (over 15 years old): 1.1% ⁵
EDNOS	No data	Māori undergoing ED treatment (over 10 years old): 43.3% ⁴⁵ (8 years)	–
ARFID	No data	No data	Indigenous Australians: (over 15 years old): 1.1% ⁵
UFED—recurrent binge eating without marked distress	No data	No data	Indigenous Australians (over 15 years old): 14.0% ⁵
Restrictive eating, vomiting, laxative, diuretic or diet pill use or fluid restriction	Native Americans (12 to 55 years old): 55% ⁹⁷	No data	No data
Restrictive eating (eg, strict dieting/ fasting)	No data	Indigenous Australians (over 15 years old): 1.4% ⁶ , 9.4% ⁶ (3 months, at least weekly)	No data

Continued

Table 3 Continued

ED or DE	Lifetime prevalence	Period prevalence	Point prevalence
Fasting/skipping meals	Native Americans (12 to 55 years old): 33% ⁹⁷	Indigenous Australians with an ED (over 15 years old): 24% ⁵ (3 months) Indigenous Australians without an ED (over 15 years old): 0% ⁵ (3 months)	No data
Self-induced vomiting, or laxative or diuretic use	No data	Indigenous Australians (over 15 years old): 2.4% ⁶ , 5.7% ⁶ (3 months, at least weekly) Indigenous Australians with an ED (over 15 years old): 4.00% ⁵ (3 months) Indigenous Australians without an ED (over 15 years old): 0% ⁵ (3 months)	No data
Self-induced vomiting	Native Americans (12 to 55 years old): 12% ⁹⁷ Native Americans (12 to 18 years old) ▶ Without chronic illness or disability: 22.0% ⁹⁸ ▶ With chronic physical illnesses: 23.8% ⁹⁸ ▶ With chronic learning, behavioural or emotional conditions: 28.8% ⁹⁸ ▶ With chronic physical illness and a learning, behavioural or emotional condition: 32.4% ⁹⁸	No data	Native Americans (12 to 18 years old): ▶ Without chronic illness or disability: 3.6% ⁹⁸ (at least weekly) ▶ With chronic physical illnesses: 5.8% ⁹⁸ (at least weekly) ▶ With chronic learning, behavioural or emotional conditions: 8.0% ⁹⁸ (at least weekly) ▶ With chronic physical illness and a learning, behavioural or emotional condition: 5.3% ⁹⁸ (at least weekly)
Laxatives	Native Americans (12 to 55 years old): 6% ⁹⁷	No data	No data
Diuretics	Native Americans (12 to 55 years old): 6% ⁹⁷	No data	No data
Diet pills	Native Americans (12 to 55 years old): 41% ⁹⁷	No data	No data
Fluid restriction	Native Americans (12 to 55 years old): 13% ⁹⁷	No data	No data
Binge eating		No data	Aboriginal Canadians (11 to 19 years old): 0% ²⁷
Objective binge eating	No data	Indigenous Australians (over 15 years old): 31.0% ⁴ (1 month, at least 4 episodes) 17% ⁶ , 8.5% ⁶ (3 months, at least weekly)	No data
Subjective binge eating	No data	Indigenous Australians (over 15 years old): 5.7% ⁶ (3 months, at least weekly)	No data

AN, anorexia nervosa; ARFID, avoidant restrictive food intake disorder; BN, bulimia nervosa; DE, disordered eating; ED, eating disorder; EDNOS, Eating Disorders Not Otherwise Specified; OSFED, other specified feeding or eating disorder; UFED, unspecified feeding or eating disorder.

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study, Māori women were just as dissatisfied as Pakeha women with their physical appearance,⁵⁹ and in another, Māori with EDs reported additional body image insecurities from existing outside Pakeha beauty ideals.⁵⁴ Also, Māori people with EDs reported that health professionals and wider society prioritised Western experiences of EDs, which impacted beliefs about EDs not existing among Māori communities and for some, led them to question their Māori identity.⁶⁰ Some cross-cultural differences in the affective aspects of DE varied by gender. Most studies showed that embarrassment^{17 61} and/or fear of losing control over one's eating were significantly higher among Native American women than White females, but no significant difference was reported for males.¹⁷

First Nations and non-First Nations Peoples with EDs presented similarly in many respects. BMI, age, sex and socioeconomic status of adolescents with EDs did not differ significantly between Indigenous and non-Indigenous Australians⁴; however, some aspects of ED presentation differed cross-culturally in other populations. In studies of Māori populations, comorbid mental disorders were significantly more prevalent among Māori people compared with non-Māori people undergoing ED treatment.⁴⁵ Depression and anxiety were also significantly more prevalent among Māori people with an ED, with an 8-year prevalence of 47.9% and 43.7%, respectively. Likewise, substance use disorder, schizophrenia, personality disorders and self-harm hospitalisations were significantly more prevalent among Māori populations.⁴⁵ One study found a much more significant difference in the increase in hospital admissions for an ED during the COVID-19 pandemic for Māori individuals (RR 2.55) than for the non-Māori population (RR 1.43).⁶²

DISCUSSION

This scoping review mapped 64 publications examining the prevalence and presentation of eating disturbances among First Nations Peoples in high-income, colonial settler countries. The review identified an international paucity of research in this area which echoes existing national scoping reviews showing research on DE and EDs in First Nations communities is broadly limited,^{63–65} dated⁶⁶ or lacks specific understandings such as pathways of ED development.⁶⁷ Hence, the findings from this review need to be regarded as provisional and subject to methodological weaknesses, and equally importantly, a lack of culturally appropriate concepts and measures, making conclusions of any kind difficult to draw. The impact of this type of marginalisation on First Nations experiences has not been widely studied. However, prioritisation of Western ED narratives may increase stigma and disrupt the cultural identity of First Nations individuals experiencing EDs.⁶⁰ Given the significant associations shown between eating disturbances and familial connection, as well as identification with traditional culture and ill-defined self-concept, prioritisation of Western ED narratives may also indirectly impact the experience of EDs

in this population. Thus, greater understanding of how eating disturbances affect First Nations communities is necessary, which was the aim of this scoping review.

In samples including male and female adults, the reported point prevalence of AN (2.2%), BN (3.2%) and BED (1.1%–8%) affecting First Nations Peoples in high-income, colonial settler countries was generally equal to or higher than reported in previous studies surveying the general population in the same countries.^{68–75} Researchers have hypothesised that reduced psychosocial⁴ and mental health-related QoL, lower mean age and elevated mean BMI⁵ may drive the elevated ED prevalence affecting Indigenous Australians. Several studies with Native American communities have reported positive associations between BMI and DE which are consistent with the findings of Burt *et al*⁶⁵ examining Australian samples. However, no studies outside Australia in this review have studied the associations of EDs with QoL, BMI or age.

Burt *et al* have also found overeating to be a common feature of EDs affecting Indigenous Australians,^{4 5} which is congruent with the results of this review that show BE and BED have the highest reported point prevalence of DE/EDs in First Nations Peoples outside Australia. However, the significance of this elevated prevalence could not be assessed.

There are limitations to this scoping review. A single reviewer conducted data extraction, precluding evaluation of inter-rater reliability for the extracted data. Additionally, the number of First Nations participants in study samples ranged greatly from 8 to over 47 000. The precision of prevalence data presented by several studies was limited by their low sample sizes, especially when the specific EDs studied occur at low rates in the general population. Moreover, all studies that assessed ED presentation were observational studies which limited the capacity to establish true causality between aspects of presentation with eating disturbances. Some studies increased their ability to make causal inferences by controlling for potential confounding variables. However, a current gap in the literature is that no publications have undertaken longitudinal, repeated assessments of outcomes within the same sample, which is necessary for temporal sequencing of covariation for between-person and within-person effects.⁷⁶ Furthermore, only academic publications were eligible for inclusion. While the inclusion of grey literature strengthened this review, the privileging of written forms of communication favoured by Western science introduces a selection bias by omitting sources of traditional knowledge on eating disturbances that are more often passed down orally.⁷⁷

A major gap in the extant literature is that while First Nations Peoples in high-income, colonial settler countries generally preference more holistic models of health and well-being,^{78–80} most publications use diagnostic frameworks and assessment tools developed within the Western biomedical model of health. Using standard mental health assessments that have not been validated

in the First Nations population being studied has been recognised as inappropriate.⁸¹ Limited research has been conducted to validate existing ED assessments in specific First Nations communities or to develop new tools that align with First Nations communities' understandings of eating disturbances. Consistent with the scoping review by Burt *et al*,⁶⁵ no publication in this review directly assessed ED diagnostic or screening tools for use with Indigenous Australians. Such validation studies were also limited on an international scale, with only two publications assessing the validity of the Primary Care Evaluation of Mental Disorders⁸² and Eating Disorder Examination Questionnaire 7¹⁶ for use with Native American adults. Several studies assessed cross-cultural variations regarding behavioural and affective presentations of binge eating. No publications in this review directly interrogated whether the eating-related behaviours designated as pathological by Western ED nosology are consistent with First Nations Peoples' conceptualisations of eating disturbances.

Given the distinct and varied experiences of social and emotional well-being for Aboriginal and Torres Strait Islander Peoples,⁸³ future Australian research will benefit from frameworks and assessment tools developed by and in partnership with Aboriginal and Torres Strait Islander communities that incorporate how eating disturbances relate to Indigenous conceptions of well-being, rather than solely relying on western psychiatric classifications.⁸⁴ Closing the Gap is an initiative at all levels of Australian government to improve the life outcomes (including health and well-being, education, employment, justice, safety, housing, land and waters, languages and digital inclusion) of Aboriginal and Torres Strait Islander people.⁸⁵ This requires addressing inequities in research between Indigenous and non-Indigenous people, which must be done in a culturally appropriate way. Mental health disorders should be considered within the broader framework of social and emotional well-being to highlight past colonial injustices.⁸³ A social and emotional well-being framework will be beneficial to understand eating disturbances among Indigenous Australian populations since this review identified associations between DE and experiences of racism and historical loss due to colonisation. The cultural and linguistic diversity of Aboriginal and Torres Strait Islander Peoples' may contribute to the complexity of adapting or designing assessment tools to be culturally appropriate. Yet, Brown *et al* have demonstrated the feasibility of adapting a standard mental health assessment to be valid for use in a specific Aboriginal population,⁸¹ and Westerman⁸⁶ has contributed to building mental health screening tools for use with Indigenous peoples.

Most publications that examined the prevalence of eating disturbances among First Nations Peoples focused on DE compensatory behaviours, AN, BN and binge eating and involved native American

communities. There were few publications examining EDs affecting First Nations Peoples outside the USA, restrictive eating, behaviours reflecting preoccupation with weight or shape, as well as night eating syndrome, rumination disorder, pica and their associated DE behaviours.

Additionally, self-concept, psychosocial stressors, substance use and social connections are factors that have been significantly associated with eating disturbances in First Nations Peoples in high income, colonial-settler countries outside Australia but have undergone little investigation in Australian Aboriginal and Torres Strait Islander Peoples. These constitute potential future areas for research that would broaden current understandings of eating disturbances affecting Indigenous Australians. It is essential that future research be undertaken with Aboriginal and Torres Strait Islander leadership and in partnership with Indigenous communities to ensure lived experience is included and self-determination respected.⁷⁹ Thus, future research should consider both the areas deemed important by the communities in which the research is conducted, and the aforementioned aspects of eating disturbances among First Nations Peoples that are less well understood.

Conclusions

There is very limited literature on the prevalence and presentation of DE and EDs affecting First Nations Peoples in high-income, colonial settler countries across the globe. Most evidence in this review supports that First Nations Peoples experience eating disturbances at equal or higher rates than non-First Nations Peoples. Moreover, while certain aspects of eating disturbances are shared by First Nations populations, there are affective, behavioural and cognitive aspects of ED presentation that may be distinct within First Nations communities. Future research will benefit from investigating the cross-cultural validity of Western ED nosology and assessment tools with First Nations Peoples and longitudinal research to facilitate causal inferences from observational data. Future research must be guided by the priorities and methodologies set by Aboriginal and Torres Strait Islander leaders and communities.

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