A Systematic Review of Bipolar Disorder in Indigenous Peoples

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Indigenous peoples experience well documented health inequities compared to majority ethnic groups. More research into serious conditions like Bipolar Disorder (BD) is needed. A systematic review of published original research involving Indigenous peoples with BD was completed to identify areas of consistency, contradiction and gaps in available literature. Searches identified 396 studies, 25 met inclusion criteria. Six countries including New Zealand were represented. Studies commonly reported small numbers of Indigenous participants, for whom results were often incomplete. The design, population, and methods were also diverse, limiting the review synthesis. The only consistent finding in studies of similar methods suggested BD prevalence may be greater in Indigenous communities. Future research must be designed to inform knowledge about Indigenous peoples with BD, to identify their needs and experiences, and address any factors maintaining health inequities.

Keywords: *Bipolar Disorder, Systematic Review, Indigenous Populations*

Introduction

Recent publications identify pervasive inequities and barriers affecting the health of Indigenous peoples when compared to majority ethnic groups (Anderson et al., 2016; UN Permanent Forum on Indigenous Issues, 2015). These authors also note the limited availability of quality health data within these populations, with calls for international health authorities to address knowledge deficits in order to inform the development of efficacious health policy and services for Indigenous communities. Mental health is particularly under researched in Indigenous populations, with the latest world mental health action plan setting targets to address this imbalance (Anderson et al., 2016; World Health Organization, 2013). These health inequities have global implications as Indigenous peoples, residing in approximately 90 countries throughout the world, tend to experience the greatest levels of socioeconomic disadvantage independent of the wealth of their country of origin (Anderson et al., 2016; Gracey & King, 2009a; Shepherd, Li, & Zubrick, 2012).

Although the privileged physical health status of majority ethnic groups has been increasingly recognised, the need to understand and address Indigenous mental health remains an area of priority (Anderson et al., 2016; World Health Organization, 2013). Despite the differing histories, cultures, languages, countries of origin and traditions of the world's Indigenous peoples, their shared experience of marginalisation through the process of colonisation has been associated with markedly similar mental health outcomes (Durie, 2011; Harris et al., 2012; Hernandez, Ruano, Marchal, San Sebastian, & Flores, 2017; Pihama et al., 2014; Reid, Cormack, & Paine, 2019; UN Permanent Forum on Indigenous Issues, 2015). While inconsistent data collection may mask the extent of inequities, international research consistently reveals disproportionately high rates of suicide and greater levels of exposure to psychosocial stressors and risk factors that would adversely affect the mental health of Indigenous peoples (Baxter, 2008; Black, Kisely, Alichniewicz, & Toombs, 2017; Hernandez et al., 2017; Kirmayer & Pedersen, 2014; UN Permanent Forum on Indigenous Issues, 2015). These differences may be influenced by communities socialised within colonial and racist ideologies that influence systemic and clinician bias, where 'deficit' is seen to arise within the Indigenous person without critical appraisal of the ongoing impacts of colonisation on mental health outcomes (Harris et al., 2012; Pihama et al., 2014; Reid et al., 2019).

Bipolar disorders are heterogeneous, reflect patterns of manic, hypomanic and depressive episodes, and are typically recurrent (American Psychiatric Association, 2013). International research shows that BD tends to follow a chronic course, having a significant impact on a person's functioning across contexts and over time, with the World Health Organization (WHO) describing BD as a condition that contributes to a high health burden globally (Angst, 2004; Hirschfeld, Lewis, & Vornik, 2003; Judd et al., 2003; Judd et al., 2002; Merikangas et al., 2011; Michalak, Yatham, Maxwell, Hale, & Lam, 2007; Ministry of Health, 2014; Morselli, Elgie, & Cesana, 2004; Robson & Harris, 2007; Rosa et al., 2009; Sanchez-Moreno et al., 2009; Simon, 2003; Yatham et al., 2004). Bipolar disorder prevalence rates have been measured in world mental health surveys, the findings of which reveal similarities between countries of differing income levels, indicating that BD is not a condition limited to countries of greater affluence (Merikangas et al., 2011). Evidence suggests that majority ethnic groups experience lower rates of BD than some Indigenous

populations; however, more research is needed in this area (Baxter, 2008; Baxter et al., 2006; Black et al., 2017).

Indigenous peoples have often been subject to problem focused research where knowledge is produced and positioned from a deficit perspective (Drawson, Toombs, & Mushquash, 2017). This study was informed by Indigenous critique of mainstream research and review methods, and recognised the need to avoid maintaining a deficit perspective by considering the structures and systems in which health inequities arise (McDonald et al., 2010; Morton Ninomiya et al., 2017). The aim of this systematic review was to identify all published original research involving Indigenous peoples with BD to determine areas of consistency, contradiction and knowledge gaps. To our knowledge, there have been no prior systematic reviews with this focus.

METHOD

Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA) guidelines were followed and adaptations made to prepare a review that would contribute to the health research needs of Indigenous peoples (McDonald et al., 2010; Moher, Liberati, Tetzlaff, & Altman, 2009; Morton Ninomiya et al., 2017). A study protocol was registered with PROSPERO (number CRD42016053514). The protocol was further refined after presentations were made at two international BD conferences (Haitana, 2017; Haitana, Pitama, Crowe, & Lacey, 2018), and to representatives providing mental health services to Indigenous peoples with BD across three New Zealand sites.

Eligibility Criteria

Studies were included if they presented original research in peer-reviewed journals, with at least two participants, where analysis focused on BD, and results were reported separately for an Indigenous sample. Unpublished data, single case reports, reviews, and conference presentations were excluded. All publication dates and research methods were included enabling the full scope of research of BD in Indigenous peoples to be investigated. One study written in French that otherwise met inclusion criteria was excluded.

Information Sources

Five databases were utilised: Embase, MEDLINE, PsycINFO, Scopus, and Web of Science. A final search was completed on 24 August 2018. Due to the relatively small number of search results returned from the databases, hand searches were also completed of reference lists, review articles, Indigenous health journals and research collections to assist with identifying additional studies for inclusion.

Search

Keywords were tailored and trialled for each database, results from searches were reviewed and the final strategy was refined so as to produce the largest number of records. For each database, variants of terms related to Indigenous Peoples and Bipolar Disorder were combined as follows: (Indigenous People* OR Native People* OR Maori* OR Pacific Islander* OR Polynesian* OR Aborigin* OR Australia* Aborigin* OR Torres Strait Islander* OR Native America* OR America* Indian* OR First Nation* OR Inuit* OR Native Alaska* OR Alaska* Native* OR Native Hawaii* OR Hawaii* Native* OR Autochthonous) AND (Manic Depress* OR Manic Depress* Psychos* OR Bipolar Disorder OR Bipolar Affective Disorder OR Bipolar Mood Disorder OR Bipolar).

Study Selection

The first author completed the initial process of screening article titles and abstracts, and categorised these into three groups (likely include, likely exclude, and potentially include). These categories were then collaboratively discussed and reviewed with all authors to further refine the process of applying eligibility criteria. Full text records that met inclusion criteria were then reviewed by the first author to assess eligibility. In the event of uncertainty, studies were reviewed by all authors to reach consensus.

Data Collection Process

Full text articles were distributed to all authors. Data was extracted into a spreadsheet by the first author for ease of analysis, and the spreadsheet then distributed to all authors for further review and refinement.

Data Items

From each study, relevant research findings, research methods and aims, sample population, number of Indigenous participants and number with BD diagnoses, their age range, method of diagnosis, method of identifying ethnicity, and the country and Indigenous population from which study participants were drawn were summarised in written form.

Risk of Bias in Individual Studies

Based on the designs of included studies, two appraisal tools were selected to assess quality within cross-sectional (Downes, Brennan, Williams, & Dean, 2016) and qualitative research methods (The Joanna Briggs Institute, 2017). A quality appraisal spreadsheet was used by two Māori authors (TH, CL) who independently reviewed and rated each paper according to the Appraisal tool for Cross-Sectional Studies (AXIS) (Downes et al., 2016), and the Joanna Briggs Institute (JBI) Checklist for Qualitative Research criteria (The Joanna Briggs Institute, 2017). In keeping with Indigenous critique of systematic review methods, each appraisal tool and quality question was amended to fit the Indigenous focus by considering the extent to which the study design and results contributed to advances in knowledge about Indigenous peoples with BD (McDonald et al., 2010; Morton Ninomiya et al., 2017). An overall quality estimate was given as low, medium or high based on the number of dimensions present, and the utility of the research to Indigenous populations. This method resulted in a high level of consistency between reviewers, who provided equivalent blind ratings in 24 out of 25 studies. Following a review of scoring and overall quality estimates, a quality score consensus was reached for the remaining study.

Synthesis of Results

Data was extracted according to study design, then grouped by study population. Results were considered in order of quality before descriptive analysis was undertaken for each study method and sample population.

RESULTS

Study Selection

Of the 396 studies identified, the abstracts of 214 potentially relevant papers were reviewed, and full-text

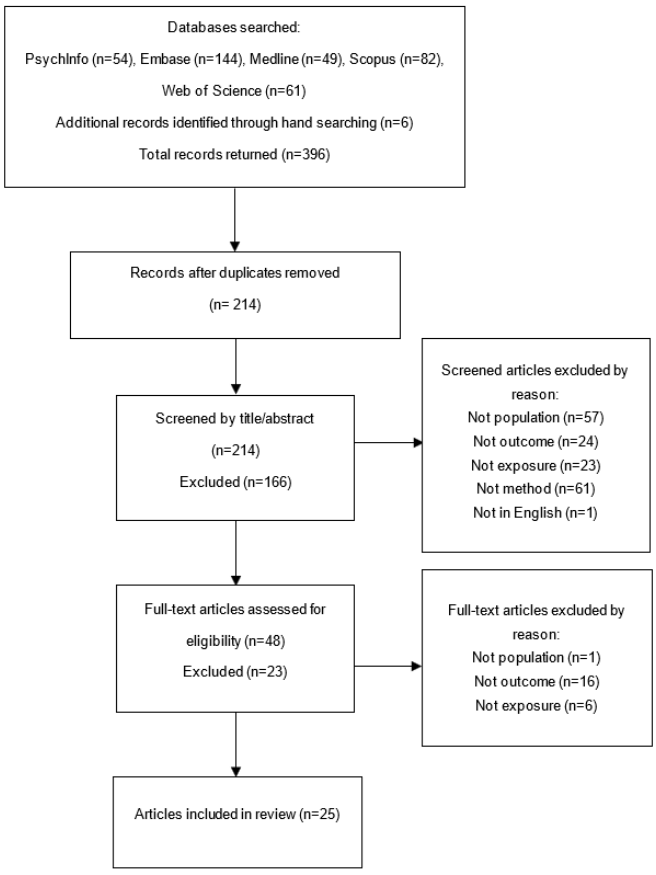

Figure 1: PRISMA flow diagram

records were obtained for 48 of these. A total of 25 studies that met eligibility criteria (see Figure 1) were retained (Almeida & Fenner, 2002; Aoun & Gregory, 1998; Barreto & Segal, 2005; Baxter et al., 2006; Beaglehole, 1939; Bih et al., 2008; Blanco et al., 2017; Butler, Allnutt, Kariminia, & Cain, 2007; Cawte, 1964; Coleman et al., 2016; Dharmawardene & Menkes, 2015; Grant et al., 2005; Harris, Waitoki, & Nikora, 2015; Kuipers, Appleton, & Pridmore, 2012; Mellsop, Dutu, & El-Badri, 2007; Melroy-Greif, Gizer, Wilhelmsen, & Ehlers, 2017; Mitchell & Romans, 2003; Muñoz, Marconi, Horwitz, & Naveillan, 1966; Nasir et al., 2018; Pickner et al., 2016; Rin & Lin, 1962; Sampath, 1974; Schluter, Lacey, Porter, & Jamieson, 2017; Sentell et al., 2013; Tapsell, Hallett, & Mellsop, 2018). Studies were excluded when there were no Indigenous participants (not population), when the focus of the study was unrelated to BD (not exposure), or when results did not present individual analysis of the Indigenous sample (not outcome).

Study Characteristics

The majority of studies (n=23) were quantitative with a cross-sectional research design (Almeida & Fenner, 2002; Aoun & Gregory, 1998; Barreto & Segal, 2005; Baxter et al., 2006; Beaglehole, 1939; Bih et al., 2008; Blanco et al., 2017; Butler et al., 2007; Cawte, 1964; Coleman et al., 2016; Dharmawardene & Menkes, 2015; Grant et al., 2005; Mellsop et al., 2007; Melroy-Greif et al., 2017; Mitchell & Romans, 2003; Muñoz et al., 1966; Nasir et al., 2018; Pickner et al., 2016; Rin & Lin, 1962; Sampath, 1974; Schluter et al., 2017; Sentell et al., 2013; Tapsell et al., 2018). Two used qualitative research methods (Harris et al., 2015; Kuipers et al., 2012). The characteristics of included studies have been outlined in Table 1. Indigenous peoples from six countries were included in the review. Although some studies included participants from more than one Indigenous population, two collapsed these results into an 'other' ethnic category, preventing extraction of the additional Indigenous data (Barreto & Segal, 2005; Coleman et al., 2016). Key results are summarised in Table 2. The total number of Indigenous participants with BD included in each study sample was not always reported, and in two studies it was not possible to determine even an estimate of Indigenous sample size from the published material (Bih et al., 2008; Mellsop et al., 2007). The number of Indigenous participants in the remaining studies with an identified diagnosis of BD ranged from 0 to 430 people. Two studies with no cases of Indigenous patients formally diagnosed with BD were included, as they presented results related to the absence of BD diagnoses in a sample of Indigenous patients with mental health difficulties (Kuipers et al., 2012; Muñoz et al., 1966).

While most studies were published between 2002 and 2018 (Almeida & Fenner, 2002; Barreto & Segal, 2005; Baxter et al., 2006; Bih et al., 2008; Blanco et al., 2017; Butler et al., 2007; Coleman et al., 2016; Dharmawardene & Menkes, 2015; Grant et al., 2005; Harris et al., 2015; Kuipers et al., 2012; Mellsop et al., 2007; Melroy-Greif et al., 2017; Mitchell & Romans, 2003; Nasir et al., 2018; Pickner et al., 2016; Schluter et al., 2017; Sentell et al., 2013; Tapsell et al., 2018), there were also four anthropological studies published between 1939 and 1966 (Beaglehole, 1939; Cawte, 1964; Muñoz et al., 1966; Rin & Lin, 1962).

Participants were accessed from various community health surveys (Baxter et al., 2006; Blanco et al., 2017; Cawte, 1964; Grant et al., 2005; Melroy-Greif et al., 2017; Nasir et al., 2018; Rin & Lin, 1962; Sampath, 1974), clinical (Almeida & Fenner, 2002; Aoun & Gregory, 1998; Barreto & Segal, 2005; Beaglehole, 1939; Bih et al., 2008; Coleman et al., 2016; Dharmawardene & Menkes, 2015; Harris et al., 2015; Mellsop et al., 2007; Mitchell & Romans, 2003; Muñoz et al., 1966; Pickner et al., 2016; Schluter et al., 2017; Sentell et al., 2013; Tapsell et al., 2018) and prison settings (Butler et al., 2007), involved data taken from coronial records (Kuipers et al., 2012), and commentary related to paediatric (Pickner et al., 2016), geriatric (Almeida & Fenner, 2002; Schluter et al., 2017) and genetic samples (Melroy-Greif et al., 2017). The method by which BD diagnoses were made varied, but most were obtained from existing clinical records (Almeida & Fenner, 2002; Aoun & Gregory, 1998; Barreto & Segal, 2005; Beaglehole, 1939; Bih et al., 2008; Coleman et al., 2016; Dharmawardene & Menkes, 2015; Muñoz et al., 1966; Pickner et al., 2016; Schluter et al., 2017; Sentell et al., 2013; Tapsell et al., 2018), or following clinical or research based diagnostic interviews (Baxter et al., 2006; Blanco et al., 2017; Butler et al., 2007; Dharmawardene & Menkes, 2015; Grant et al.,

Table 2. Key descriptive information and findings of 25 reviewed studies

Author	N total n Indig *n Indig BD*	Participant characteristics	Diagnostic method	Research aim	Key findings	Quality
Representative community studies						
Baxter et al (2006)	N:12,992 n:2,595 *n:(119*)*	Sample: Representative community Age: 16-65+ Population: New Zealand Māori	Research interview (CIDI)	To compare 12 month prevalence rates & treatment contact by ethnicity.	• Indigenous participants had highest 12 month prevalence of BD compared to other ethnic groups (4.6%). • This ethnic difference remained significant after adjustment for age, sex, education and income level (3.4%, p<0.0006, as opposed to 1.9% in the comparison ethnic groups. • Unable to report all results as they were not presented for Indigenous sample with BD.	High
Grant et al (2005)	N:43,093 n:NS *n:(87*)*	Sample: Representative community Age: 18+ Population: American Indian, United States	Research interview (AUDADIS-IV)	To present nationally representative data on 12 month and lifetime prevalence, correlates, and comorbidity of BD.	• Indigenous participants had a greater lifetime & 12 month prevalence estimate of BD. • When adjusted for sociodemographic factors these rates were 6.2% and 3.3% respectively, as opposed to 3.3% and 2.0% in comparison ethnic groups. • The lifetime odds of developing BD was also significantly greater in the Indigenous sample (OR 1.5, p<0.05) than comparison ethnic groups. • Unable to report all results as they were not presented for Indigenous sample.	High
Blanco et al (2017)	N:36,309 n:NS *n:(42*)*	Sample: Representative community Age: 18+ Population: American Indian, United States	Research interview (AUDADIS-5)	To present 12 month and lifetime prevalence, correlates, comorbidity, treatment and disability of DSM-5 BD I disorder.	• Indigenous participants had the greatest 12 month (3.9%) & lifetime (5.6%) prevalence rate of BD compared to the total sample (1.5% and 2.1% respectively). • After adjusting for sociodemographic factors, the odds of developing BD remained greater among Indigenous participants than comparison ethnic groups (AOR 1.9 & 2.1 respectively). • Unable to report all results as they were not presented for Indigenous sample.	Medium
Context specific studies: Using mental health care records						
Tapsell et al (2017)	N:2967 n:546 *n:(52)*	Sample: Mental health patients Age: 18-65 Population: New Zealand Māori	Clinical records (ICD-9-CM)	To analyse, document & compare the rate of outpatient and inpatient admission, as a proxy for comparative incidence rates by ethnicity. To compare those rates for schizophrenia, BD and Major Depressive Disorder (MDD) by ethnicity.	• For new Indigenous patients (for whom there was no record of previous service contact between 2009-2013) accessing adult inpatient Mental Health Services (MHS) in 2014, 34 were diagnosed with BD. For new Indigenous patients accessing public MHS in 2014, 18 were diagnosed with BD. • The proxy incidence rate calculated by the authors suggested there were no significant ethnic differences between the Indigenous and non-Indigenous sample in terms of the rate of admission to inpatient or public MHS.	High
Coleman et al (2016)	N:7,523,956 n:30,096* *n:(430)*	Sample: Mental health patients Age: 18+ Population: American Indian, Alaska Natives, United States (Native Hawaiian data subsumed in 'Other' category)	Clinical records (ICD-9)	What racial/ethnic variance exists in the diagnosis and treatment of mental disorders in large not-for-profit health care systems?	• During the 2011 study period, the Indigenous patient sample had the highest rate of BD (1.5%, OR 1.34) compared to majority comparison ethnic group. • Fill rates of psychotropic medications were slightly lower in Indigenous patients with BD, but the difference was not significant (OR 0.80). • Psychotherapy rates for the Indigenous sample with BD were 2.5%, and while the OR was significantly higher that the white comparison group (1.35), this amounted to approximately 11 Indigenous people with BD.	Medium

Table 2. Key descriptive information and findings of 25 reviewed studies (Continued)

Context specific studies: Using mental health care records						
Barreto and Segal (2005)	N:10,262 n:993 *n:(113*)*	Sample: Mental health patients Age: 18+ Population: American Indian, United States	Clinical records	What differences exist in service use by ethnicity, and are differences related to illness severity?	• BD most prevalent diagnosis in Indigenous patients (11.4%) accessing MHS in California during the study period when compared to Caucasian and other Asian-American ethnic groups. • Unable to report all results as they were not presented for Indigenous sample.	Low
Bih et al (2008)	N:136,045 n:1,942 *n:(NS)*	Sample: Mental health patients Age: 15+ Population: Taiwanese Indigenous Peoples	Clinical records (ICD-9-CM)	To estimate the treated incidence and prevalence of BD in Taiwan. To discuss factors associated with the treated incidence in BD.	• Ethnicity was associated with the treated incidence of BD in the Taiwan MHS during the study period. • The Indigenous sample had a lower treated incidence of BD in MHS compared to the non-Indigenous sample (Hazard Ratio, 3.12; 95% CI, 1.26-7.75).	Low
Mellsop et al (2007)	N:NS n:NS *n:(NS)*	Sample: Mental health patients Age: NS Population: New Zealand Māori	NS	To compare clinical profiles of psychiatric patients with BD by ethnicity and consider whether this data informs claims of different ethnic prevalence rates in community research.	• For patients with BD during the study period, it was found that Indigenous patients were given significantly higher clinician ratings during episodes of care than the comparison group for overactivity/disruptiveness, alcohol/drug use, and hallucinations/delusions.	Low
Context specific studies: Using psychiatric inpatient records						
Dharmawardene and Menkes (2015)	N:141 n:59 *n:(14)*	Sample: Psychiatric inpatients Age: 18-68 Population: New Zealand Māori	Mixed-method (clinical records: DSM-IV, clinical interview, and service liaison)	To elucidate patterns of substance misuse, across diagnoses and demographic variables, in patients with severe mental illness.	• Within the inpatient sample, BD featured as a less frequent diagnosis in Indigenous patients than in the comparison group (14/59 patients versus 37/76 patients). • The diagnosis associated pattern of scores on measures of cannabis and alcohol use found little differences by ethnicity for inpatients with BD.	Medium
Sentell et al (2013)	N:6385 n:1,176 *(314*)*	Sample: Psychiatric inpatients Age: 18+ Population: Native Hawaiian, United States	Clinical records (ICD9CM)	To compare psychiatric hospitalisation rates, severity of illness, and length of stay by ethnicity and diagnosis.	• During the study period, 314 Indigenous patients with BD were hospitalised (a rate of 3.52 per 10,000). • This rate of hospitalisation was significantly higher (p=0.45) when compared to some ethnic groups in the sample, but lower than the rate for the caucasian sample (a rate of 12.94 per 10,000). This pattern remained when adjusted for demographic factors. • The mean length of hospital stay for Indigenous patients with BD was lowest when compared to all other ethnic groups, including the Caucasian sample (M 6.53 days, SD 6.18).	Medium
Almeida and Fenner (2002)	N:6,182 n:224* *n:(224*)*	Sample: Psychiatric inpatients Age: NS Population: Indigenous Australian	Clinical records (ICD-9)	Do hospital admission records show differences between early/late onset BD suggestive of a distinct aetiology?	• In Western Australia during the study period, there was an excess of Indigenous people in cases of BD defined as 'early-onset', with first MHS contact prior to the age of 65 years.	Low

Table 2. Key descriptive information and findings of 25 reviewed studies (Continued)

Context specific studies: Using psychiatric inpatient records						
Beaglehole (1939)	N:NS n:230 *n:(NS)*	Sample: Psychiatric inpatients Age: 16+ Population: New Zealand Māori	Clinical records	To compare the insanity rates of two cultural groups over a ten-year period.	• Hospital data during the study period showed a low incidence of psychiatric admission for Indigenous people. • Of the 230 Indigenous patients hospitalised during this period, 52.6% of females, and 27.9% of males were diagnosed with Manic-Depressive Psychosis (MDP). • Trends in the data suggested the incidence of MDP fluctuated over the study period, but rates appeared higher in Indigenous females when compared to Indigenous males and the comparison Caucasian group.	Low
Munoz et al (1966)	N:272 n:136 *n:(0)*	Sample: Psychiatric inpatients Age: NS Population: Mapuche, Chile	Clinical records	To evaluate a cross-cultural definition of psychosis in two culturally different groups. To compare the clinical characteristics of functional psychoses in these groups through review of clinical records.	• During the study period, there were no cases of MDP in those Indigenous patients hospitalised, and six cases in the non-Indigenous group.	Low
Context specific studies: Using general health records						
Schluter et al (2017)	N:71,859 n:3,897 *n:(45)*	Sample: Home-based health care patients Age: 65+ Population: New Zealand Māori	Clinical records	To provide an epidemiological profile of BD in older community residents.	• In the elderly adult general health sample, 1.2% of the Indigenous participants had a BD diagnosis. • Of the 45 Indigenous participants with BD, 36 were women and 9 were men. • When adjusting for sociodemographic factors, the elderly Indigenous sample had a BD prevalence significantly lower than the comparison ethnic group (AOR 0.56).	High
Pickner et al (2016)	N:20,413 n:3974 *n:(15*)*	Sample: Emergency patients Age: 5-18 Population: American Indian, United States	Clinical records (ICD-9 & DSM5)	To examine mental health related ED visits for AI children and identify demographic and clinical factors, types of mental health concerns, and repeat presentations.	• During the study period, 0.2% (versus 0.4% of the comparison ethnic sample) of Indigenous children in the 5-10-year age group, and 3.7% (versus 2.6% of the comparison ethnic sample) in the 11-17-year age group presented to ED with mental health concerns linked to BD.	Low
Context specific studies: Prison setting						
Butler et al (2007)	N:1,470 n:277* *n:(13*)*	Sample: Prison inmates Age: NS Population: Indigenous Australian	Research interview (CIDI)	To compare the mental health of Indigenous and non-Indigenous Australian prisoners.	• In a prison sample, the 1 month and 12 month prevalence rate of a manic episode amongst the Indigenous prisoners in the study (n=226) was 1.8% and 3.1% for males, and 8.5% and 10.2% for females. • Rates did not differ significantly by ethnicity in the prison sample.	Medium

Table 2. Key descriptive information and findings of 25 reviewed studies (Continued)

Studies occurring exclusively with Indigenous participants: Community surveys						
Nasir et al (2018)	N:544 n:544 *n:(13)*	Sample: Community survey Age: 18+ Population: Indigenous Australian	Clinical interview Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I)	To determine the prevalence of mental disorders using SCID-I in a cohort of Indigenous adults, the cultural adaptability of the SCID-I, and rates of comorbidity and concordance with psychiatrists' diagnoses.	• During the study period, the crude prevalence of BD amongst the Indigenous community sample was as follows: 30 day prevalence of 1.7% (9 people); 12 month prevalence of 1.6% (9 people); and lifetime prevalence of 2.4% (13 people). • Unable to report all results as they were not presented separately for Indigenous sample with BD.	High
Cawte (1964)	N:700* n:700 *n:(NS)*	Sample: Community survey Age: NS Population: Indigenous Australian	Multi-method (church records, community informants, and psychiatric interviews)	From a preliminary field study, what rates and types of mental illness are present in Indigenous people, and what overlapping factors influence 'old' and 'new' illnesses in people with 'more' or 'less' exposure to western culture?	• Rates of MDP in the sample were described as extremely rare if not non-existent. • Manic illness was also considered to be rare.	Low
Rin and Lin (1962)	N:11,442 n:11,442 *n:(10)*	Sample: Community survey Age: <14-60+ Population: Taiwanese Indigenous Peoples	Mixed methods (psychiatric interview, and other sources applied to Textbook of Psychiatry 1940 criteria)	To investigate the characteristics of mental disorders in Indigenous subtribes and explore the relationship between mental illness and different levels of social development.	• During the study period, ten Indigenous participants were identified by the research team with MDP. All were from the same tribe. A further four cases were classified as 'other psychosis' due to the brevity of symptoms, the late age of onset, or the history of only a single illness episode. • Of these ten cases, seven were classified as manic being seen mostly amongst males, two were classified as depressive both were in females, and one was cyclic. • This amounted to a rate of 0.9 per 1,000 people, compared to the known rate of 0.7 per 1,000 in the comparison ethnic group. • The natural duration of symptoms varied from <16 weeks to under 24 months, and all ten cases were characterised by multiple episodes of illness. This was in the context of no access to medical or psychiatric treatment.	Low
Sampath (1974)	N:214 n:214 *n:(10)*	Sample: Community survey Age: 15+ Population: Inuit, Canada	Research interview (DSM-II)	To describe the prevalence of psychiatric disorders in an Indigenous settlement.	• In the Indigenous community sample (N=214), ten cases of Affective Psychoses were identified producing an estimated rate of 46 per 1,000. Nine were female, and one male.	Low
Studies occurring exclusively with Indigenous participants: Mental health care study						
Aoun and Gregory (1998)	N:343 n:343 *n:(7)*	Sample: Psychiatric patients Age: 6-18+ Population: Alaska Natives, United States	Clinical records (DSM-III-R)	To report rates of psychiatric disorder in a Alaska Native sample accessing community mental health services, and provide an explanation for these findings.	• In a community health setting servicing an Indigenous community, the rate of patients receiving a BD diagnosis was low (less than 3%). This related to 7 Indigenous patients with BD.	Low

Table 2. Key descriptive information and findings of 25 reviewed studies (Continued)

Studies occurring exclusively with Indigenous participants: Qualitative study						
Harris et al (2015)	N:11 n:11 *n:(11)*	Sample: NS Age: NS Population: New Zealand Māori women	NS	To identify and understand help-seeking patterns and stories of recovery and wellbeing in women with BD.	• Indigenous women reported exposure to childhood adversity and experiences of psychosocial stressors over the life-course that were not addressed by systems or services before or following BD diagnosis. • Indigenous women experienced treatment as primarily medication focused, without psychological intervention or assistance to address psychosocial stressors. • Indigenous women experienced improved wellbeing through psychosocial stability, and involvement in roles/activities including Indigenous arts, healing and family practices.	Low
Studies using other methods						
Kuipers et al (2012)	N:411 n:198 *n:(0*)*	Sample: Coronial records Age: <14-50 Population: Indigenous Australians	NS	To analyse coronial information to identify factors associated with completed suicides over approximately one decade.	• Records of Indigenous deaths revealed symptoms of mental illness in cases of completed suicide, but a complete absence of formal BD diagnosis and lower rates of other diagnoses. • This differed markedly from coroners reports in the comparison ethnic sample and was interpreted as possibly reflecting reduced access to MHS and greater exposure to risk factors arising from the impact of colonisation. • Unable to report all results as they were not presented for Indigenous sample.	Low
Melroy-Greif et al (2017)	N:834 n:299 *n:(113*)*	Sample: Genetic Age: 18+ Population: American Indian	Research interview (SSAGA)	To investigate genetic influences on chronotype in two admixed populations: a young adult sample of Hispanics and a family-based sample of American Indian peoples.	• In a sample including Indigenous participants, findings were replicated from other research, showing that genetic variants associated with BD in the Indigenous sample also weakly predicted the risk for being an owl (i.e. people who are more alert in the evening, and go to bed and wake later).	Low
Mitchell and Romans (2003)	N:81 n:6 *n:(6)*	Sample: Otago Bipolar Register Age: Mdn=45-49 Population: New Zealand Māori	Clinical records (DSM-III-R)	Is religious coping an important factor in managing psychiatric illness, and how does this impact on symptom management and clinical/patient relationships?	• Of the six Indigenous people with BD who completed the questionnaire, there was a greater reported mean level of conflict between the advice of their spiritual leader and of their doctor • This amounted to a m=7.6, SD=3.8 on a scale from 1-10, where the mean for the comparison ethnic group was m=1.7, SD=3.2.	Low

*** approxite calculated from numerical information reported within study**
***AUDADIS* (versions IV; 5) Alcohol Use Disorder and Associated Disabilities Interview Schedule (DSM-IV Version; DSM-5 Version)**
***CIDI* Composite International Diagnostic Interview**
***DSM* (versions III-R; IV; 5) Diagnostic and Statistical Manual of Mental Disorders (Third Edition – Revised; Fourth Edition; Fifth Edition)**
***HoNOS* Health of the Nation Outcome Scale**
***ICD* (versions 9; 9CM; 10) International Classification of Diseases (Ninth Revision; Ninth Revision, Clinical Modification; Tenth Revision)**
***Indig* Indigenous**
***SSAGA* Semi-Structured Assessment for the Genetics of Alcoholism**
***SCID-I* Structured Clinical Interview for DSM-IV Axis I Disorders**
***NS* Not Stated**

2005; Melroy-Greif et al., 2017; Mitchell & Romans, 2003; Nasir et al., 2018; Rin & Lin, 1962; Sampath, 1974). Nine studies had research aims specifically related to BD (Almeida & Fenner, 2002; Bih et al., 2008; Blanco et al., 2017; Grant et al., 2005; Harris et al., 2015; Mellsop et al., 2007; Mitchell & Romans, 2003; Schluter et al., 2017; Tapsell et al., 2018), and the remaining 16 looked more broadly at other factors associated with mental illness (Aoun & Gregory, 1998; Barreto & Segal, 2005; Baxter et al., 2006; Beaglehole, 1939; Butler et al., 2007; Cawte, 1964; Coleman et al., 2016; Dharmawardene & Menkes, 2015; Kuipers et al., 2012; Melroy-Greif et al., 2017; Muñoz et al., 1966; Nasir et al., 2018; Pickner et al., 2016; Rin & Lin, 1962; Sampath, 1974; Sentell et al., 2013).

Risk of Bias

Only five studies were deemed to be high quality for the purpose of this review (Baxter et al., 2006; Grant et al., 2005; Nasir et al., 2018; Schluter et al., 2017; Tapsell et al., 2018). While studies may have used high quality methods for the research question they were designed to answer, for this review the vast majority were given a low quality rating due to their limited focus on producing knowledge about Indigenous peoples with BD. Common characteristics of studies rated as low quality included: that study designs and aims were not tailored to generate knowledge about Indigenous peoples with BD; the size of the Indigenous sample was limited or not justified; the process of participant selection and sample frame used did not evidence recruitment of subjects representative of the Indigenous target population; measures to ensure participation or describe the characteristics of Indigenous non-responders were not reported; results for all analyses were not presented for the Indigenous sample; conclusions derived from the data were not able to inform knowledge about Indigenous peoples with BD; and ethical approval or consent from Indigenous participants was not discussed. While the risk of bias and quality of studies was noted as an outcome of the review, papers were not excluded from the review based on the issues identified (see Table 3 and 4).

Synthesis of Results

Due to the variety of research methods, and the difficulty comparing findings across diverse methodologies a combined data synthesis was not able to be completed. Instead studies were organised and results presented by research design, then by method. This included: representative community studies (Baxter et al., 2006; Blanco et al., 2017; Grant et al., 2005), context specific studies (Almeida & Fenner, 2002; Barreto & Segal, 2005; Beaglehole, 1939; Bih et al., 2008; Butler et al., 2007; Coleman et al., 2016; Dharmawardene & Menkes, 2015; Mellsop et al., 2007; Muñoz et al., 1966; Pickner et al., 2016; Schluter et al., 2017; Sentell et al., 2013; Tapsell et al., 2018), studies occurring exclusively with Indigenous participants (Aoun & Gregory, 1998; Cawte, 1964; Harris et al., 2015; Nasir et al., 2018; Rin & Lin, 1962; Sampath, 1974) and other methods (Kuipers et al., 2012; Melroy-Greif et al., 2017; Mitchell & Romans, 2003). Results for each research method was presented hierarchically beginning with findings from the highest quality papers.

Representative Community Studies

Only three of the 25 studies included in the review examined BD within a representative community sample (Baxter et al., 2006; Blanco et al., 2017; Grant et al., 2005). Across these studies, particular care was taken to ensure the sample recruited was nationally representative by prioritising the inclusion of ethnic minority groups. These studies were conducted in New Zealand (Baxter et al., 2006), and the United States of America (USA) (Blanco et al., 2017; Grant et al., 2005). They reported higher prevalence rates of BD in the Indigenous community samples compared to rates within majority ethnic groups. Differences remained after controlling for sociodemographic factors. In the Indigenous peoples studied, 12 month prevalence rates of BD were found to range between 3.3% and 3.9%, this contrasted with lower rates found in comparison ethnic groups that ranged between 1.5% and 2.0%.

Context Specific Studies

Studies using mental health care records. Five papers analysed data obtained from the clinical records of patients enrolled with mental health services (Barreto & Segal, 2005; Bih et al., 2008; Coleman et al., 2016; Mellsop et al., 2007; Tapsell et al., 2018). One New Zealand study compared rates of inpatient and community mental health service admission during 2014 for the Indigenous and comparison ethnic group and these rates were population adjusted. No discernible differences were found in the rate of service contact for BD by ethnicity. However, the sample size was small, with 52 Indigenous patients with BD included in this study (Tapsell et al., 2018).

Coleman and colleagues reviewed patient records obtained from non-profit health care insurers across 11 states of the USA in 2011. While three Indigenous populations were included in this sample, the results for one group could not be extracted as they were subsumed into an 'other' ethnic category (Coleman et al., 2016). In addition the study may have been biased by including only patients enrolled in the non-profit health care system. The characteristics of patients enrolled may have varied between ethnic backgrounds, obscuring 'true rates' of disorder in the population. For the two remaining samples of Indigenous patients in this study, a significantly higher rate of BD (1.5%) was found in patient records. Despite this, there was a lower rate of filled prescriptions although this did not reach the level of significance. While it was also reported that the Indigenous sample had greater odds of receiving psychotherapy than the comparison ethnic group, this finding was based on approximately 11 patients from the total sample of 430 Indigenous patients with a BD diagnosis (Coleman et al., 2016).

The three remaining studies presented results related to BD in a sample of patients from Taiwan (Bih et al., 2008), the state of California (Barreto & Segal, 2005), and from eight districts where New Zealand mental health services were provided (Mellsop et al., 2007). In two of these it was not possible to establish or approximate the number of Indigenous patients with BD in the sample from which study conclusions were drawn (Bih et al., 2008; Mellsop et al., 2007). The Californian study examined mental health service use where full records were available across six counties, and found more cases

Table 3. AXIS rating for 23 cross-sectional studies

Author	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
Baxter et al	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Grant et al	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	Yes	Yes
Nasir et al	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Schluter et al	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes
Tapsell et al	Yes	Yes	Yes	Yes	Yes	Yes	NS	Yes	Yes	Yes	Yes	Yes	NS	No	Yes	No	Yes	Yes	No	No
Blanco et al	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	No	Yes
Butler et al	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes
Coleman et al	Yes	Yes	No	Yes	No	Yes	NS	Yes	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Yes	No
Dharmawardene & Menkes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	No	Yes
Sentell et al	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No	Yes	No	No
Cawte	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No
Beaglehole	No	No	No	No	No	No	NS	No	No	No	No	No	Yes	No	No	Yes	No	No	Yes	No
Aoun & Gregory	Yes	No	No	No	No	No	NS	Yes	No	Yes	No	No	NS	NS	Yes	No	No	Yes	Yes	No
Bih et al	Yes	Yes	No	No	No	No	NS	No	No	Yes	Yes	Yes	Yes	NS	Yes	No	No	Yes	Yes	No
Almeida & Fenner	No	No	No	No	Yes	Yes	NS	Yes	No	Yes	Yes	No	No	NS	Yes	No	No	Yes	Yes	No
Pickner et al	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	No	Yes	No	No	No	Yes	No	No	Yes	Yes	No
Sampath	No	No	No	Yes	No	No	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No
Rin & Lin	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No	No	No
Mellsop et al	Yes	Yes	No	Yes	No	Yes	No	Yes	Yes	No	No	No	No	No	Yes	No	No	No	No	No
Munoz et al	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes	No	No	No	No
Mitchell & Romans	No	No	No	No	No	No	No	No	Yes	No	Yes	No	No	No	No	No	No	No	Yes	Yes
Barreto & Segal	Yes	No	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No	Yes	No	Yes	No	No	No	Yes	Yes
Melroy-Greif et al	Yes	Yes	No	No	No	No	No	No	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes

Q1: The aims/objectives of the study were clear and of relevance to Indigenous people and BD; Q2: The study design was appropriate for the stated aim(s) and of relevance to Indigenous people and BD; Q3: The sample size of Indigenous participants was justified to inform knowledge about Indigenous people and BD; Q4: The target/reference population of Indigenous people was clearly defined; Q5: The sample frame was taken from an appropriate population base representative of the Indigenous target population under investigation; Q6: The process of selection recruited subjects that represented the target Indigenous population under investigation; Q7: Measures were undertaken to address & categorise Indigenous non-responders: Q8: The risk factor & outcome variables measured were appropriate to the aims of the study and of relevance to Indigenous people and BD; Q9: The risk factor & outcome variables were measured using valid instruments for Indigenous people and BD; Q10: It was clear how statistical significance and/or precision estimates were determined for Indigenous people and BD; Q11: The methods were sufficiently described to allow replication of studies to inform future research about Indigenous people and BD; Q12: The basic data for Indigenous people and BD were adequately described: Q13: The response rate of Indigenous people with BD minimises concerns about non-response bias; Q14: If appropriate, info about Indigenous non-responders is described; Q15: The results are internally consistent for the Indigenous sample; Q16: The results for all analyses described in the methods are presented for Indigenous people and BD; Q17: The authors' discussions/conclusions involving Indigenous people and BD are justified by results; Q18: Limitations involving Indigenous people and BD are discussed; Q19: Funding sources or COI that may affect authors' interpretation were avoided to inform knowledge about Indigenous people and BD; Q20: Ethical approval or consent of Indigenous participants attained. NS = Not Stated

Table 4. JBI rating for 2 qualitative studies

Author	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Harris et al	NS	NS	NS	NS	NS	Yes	No	Yes	NS	No
Kuipers et al	NS	Yes	Yes	No	NS	No	No	No	Yes	No

Q1:There is congruity between the stated philosophical perspective and the research methodology; Q2:There is congruity between the research methodology and the research question; Q3: There is congruity between the research methodology and the methods used to collect data: Q4: There is congruity between the research methodology and the representation and analysis of data pertaining to the Indigenous sample and BD; Q5: There is congruity between the research methodology and the interpretation of results; Q6: There is a statement locating the researcher culturally/theorectically; Q7: The influence of the researcher on the research and vice-versa is addressed; Q8: Indigenous participants, and their voices, are adequately represented; Q9: The research has ethical approval; Q10: The conclusions pertaining to Indigenous participants and BD flow from the analysis or interpretation of the data.
NS = Not Stated

of BD in Indigenous psychiatric patients than was seen in comparison ethnic groups (Barreto & Segal, 2005). The study conducted in Taiwan found that the Indigenous sample of BD patients had a lower treated incidence within services than the comparison ethnic group (Bih et al., 2008). The New Zealand study, which examined the profile of symptoms during a BD episode rather than incidence, found that clinicians rated Indigenous patients with BD differently than other ethnic groups on measures of overactivity/disruptiveness, substance use and psychotic symptoms (Mellsop et al., 2007).

Studies Using Psychiatric Inpatient Records. Five studies investigated BD in psychiatric inpatient settings (Almeida & Fenner, 2002; Beaglehole, 1939; Dharmawardene & Menkes, 2015; Muñoz et al., 1966; Sentell et al., 2013). One conducted in a New Zealand hospital, found lower rates of BD among Indigenous inpatients compared to other ethnicities (Dharmawardene & Menkes, 2015). There were no ethnic differences between inpatients with BD on measures of substance use (Dharmawardene & Menkes, 2015). A study undertaken in Hawai'i examined the hospital records for psychiatric inpatients for whom ethnicity data was recorded. Indigenous patients were found to have lower rates of psychiatric admission for BD and significantly shorter hospital stays than the white comparison group after controlling for sociodemographic factors (Sentell et al., 2013). Study authors also compared rates of psychiatric admission between Native Hawaiian, Asian American and Pacific Island ethnic groups, and noted the importance of doing so as it was commonplace in research for data from these peoples to be combined into an 'Other' ethnic category. This analysis revealed that the Indigenous sample had significantly higher rates of hospitalisation for BD than other Asian American and Pacific Island ethnic groups.

The three remaining studies commented on inpatient admission trends over different time periods (Almeida & Fenner, 2002; Beaglehole, 1939; Muñoz et al., 1966). The earliest study reported 89 cases of inpatient admission for Indigenous patients with BD to New Zealand hospitals between 1925-1935 (Beaglehole, 1939). One found no documented cases of psychiatric admission for Indigenous patients with BD in Santiago, Chile between 1940-1963 (Muñoz et al., 1966). The final study noted that of the 224 Indigenous patients with BD admitted to Western Australian hospitals between 1980-1998, most first admissions occurred in Indigenous patients before the age of 65 (Almeida & Fenner, 2002).

Studies Using General Health Records. Two studies investigated BD in general health care settings (Pickner et al., 2016; Schluter et al., 2017). One developed a profile of BD amongst a sample of older adults in receipt of home-based health care services in New Zealand (Schluter et al., 2017). Clinical records from this study found 45 Indigenous participants with a diagnosis of BD in the elderly sample, a rate of 1.2%. After adjusting for sociodemographic factors, there appeared to be significantly less elderly Indigenous patients in the New Zealand home-based care sample with BD than there were in other ethnic groups (Schluter et al., 2017). The second study sought to identify patterns of Emergency Department (ED) visits for children aged between five and 18 years with mental health concerns (Pickner et al., 2016). Clinical records obtained from six hospitals in upper Midwest USA found 15 Indigenous children and youth presented to the ED for mental health difficulties linked to a diagnosis of BD. It was noted that the proportion of ED visits for mental health difficulties related to BD was greater in Indigenous paediatric patients than was seen in children from comparison ethnic groups.

Prison Study. One study screened a sample of sentenced and reception inmates from New South Wales (NSW), Australia for mental health symptoms (Butler et al., 2007). This study utilised data obtained from research interviews conducted over a four month period during 2001, and identified 11 Indigenous participants with a history of manic episodes. In this prison sample, rates of BD symptoms did not appear to differ by ethnicity.

Studies Occurring Exclusively with Indigenous Participants

Community Surveys. Four studies examined BD exclusively within Indigenous community samples (Cawte, 1964; Nasir et al., 2018; Rin & Lin, 1962; Sampath, 1974). Nasir et al used the SCID-I to identify 13 cases of BD in an Indigenous community sample residing within urban and remote parts of Queensland and NSW, Australia (Nasir et al., 2018). This represented a crude 12 month prevalence rate of 1.6%, and lifetime prevalence rate of 2.4% within the Indigenous Australian sample. The three remaining studies investigated rates of BD in Indigenous communities within Canada, Taiwan and Australia, and identified no more than ten people with BD in each community sample based on information obtained by the research team from various sources (Cawte, 1964; Rin & Lin, 1962; Sampath, 1974).

Mental Health Care Study. One study investigated rates of psychiatric disorders for Indigenous patients attending a community mental health centre in Alaska. Seven Indigenous people with BD were identified as patients utilising this mental health service between October 1990 and April 1993, representing 2.8% of patients seen at the service during the study period (Aoun & Gregory, 1998).

Qualitative Study. One qualitative paper investigated the experiences of 11 Indigenous women living with BD in New Zealand (Harris et al., 2015). Themes from interviews indicated that the Indigenous women with BD experienced childhood adversity and psychosocial stressors that systems and mental health services had consistently failed to address. Improvements to wellbeing over time were attributed by the women to increased psychosocial stability, and through opportunities to engage in meaningful roles and activities including Indigenous arts, healing and family practices. While this study provided valuable insights into the experiences of one group of Indigenous women living with BD, it was limited by the lack of detailed methodology reported.

Studies using Other Methods

A further three studies from populations that differed from those categorised above were included in the review as they presented findings pertaining to Indigenous peoples with BD (Kuipers et al., 2012; Melroy-Greif et al., 2017; Mitchell & Romans, 2003). One of these was an American study that analysed genetic material taken from two ethnic minority groups which included an Indigenous

sample (Melroy-Greif et al., 2017). Findings replicated studies undertaken previously with subjects of European ancestry, and showed that genetic variants associated with BD in the Indigenous sample weakly predicted the risk for a sleep chronotype favouring evening alertness, and a later sleep-wake cycle (Melroy-Greif et al., 2017). An Australian study extracted qualitative data from Northern Territory coronial records in cases of completed suicide that occurred between 2000-2010 (Kuipers et al., 2012). While symptoms of underlying mental illness were found in the coronial records of Indigenous peoples, none had been formally diagnosed with BD prior to their death – a theme that differed markedly from the records of the comparison ethnic group (Kuipers et al., 2012). The final New Zealand study investigated the relevance of religion and spirituality to the management of BD illness (Mitchell & Romans, 2003). Participants were drawn from the Otago BD register, a group of people diagnosed with BD with an interest in contributing to BD research. Questionnaires were posted to all registrants. Responses were received from six Indigenous participants, with researchers noting that they reported a greater degree of conflict between the advice of their spiritual leader and that of their doctor than other respondents (Mitchell & Romans, 2003).

DISCUSSION

Summary of Evidence

The only finding that was consistent in studies of the same methodology suggested the prevalence of BD may be greater in Indigenous peoples after controlling for sociodemographic inequities, using representative community samples. Each of these studies focused on features of the individual, and risked maintaining a deficit-perspective by failing to explore the impact of wider structural influences that may contribute to any differences in BD rates amongst Indigenous peoples. If indeed the prevalence of BD is greater in genetically diverse Indigenous community samples, this is not likely to be due to biological loading alone. There may be many contributing factors that require further exploration including the lack of culturally appropriate tools to aid in the process of differential diagnosis, and potential inadequacies in diagnostic and health systems (Kirmayer & Pedersen, 2014; LoGiudice et al., 2006; Tapsell & Mellsop, 2007). Furthermore, health research itself may contribute to perceived differences, with evidence suggesting that researchers tend to frame and interpret Indigenous experiences of health inequity at a biological or individual level, thus limiting the exploration and implementation of strategies related to the social, environmental and economic determinants of health (Kirmayer & Pedersen, 2014; Palmer et al., 2019).

Inconsistent or contradictory findings, even within similar study designs, was a frequent finding of this review. The higher prevalence rates for Indigenous peoples in community samples were not consistently reflected in health service or hospital admission data, or in rates of BD diagnosed in prison settings. In addition, the rate of Indigenous peoples living with BD appeared to reduce in community settings with advanced age, yet in Indigenous paediatric patients, ED mental health visits for BD were higher. The discrepancy between community sample prevalence, health service access, and changes over age suggest the level of unmet need for people living with BD may be greater among Indigenous populations.

Although this review found little consistent evidence for inequities in BD between Indigenous and non-Indigenous ethnic groups, this is at odds with the extent of concern about the state of Indigenous mental health more broadly (Gracey & King, 2009b; UN Permanent Forum on Indigenous Issues, 2015; World Health Organization, 2013). There is evidence worldwide of a greater burden of mental health inequities affecting the world's Indigenous peoples, with research to date tending to be limited in focus to difficulties reflected by higher rates of schizophrenia, substance use and suicide or self-harm behaviours (Azzopardi et al., 2018; Gynther et al., 2019; Hunter & Harvey, 2002; Jorm, Bourchier, Cvetkovski, & Stewart, 2012; Kake, Arnold, & P, 2008; Lehti, Niemelä, Hoven, Mandell, & Sourander, 2009; Nelson & Wilson, 2017; Williamson et al., 2014). Several studies identify elevated rates of mental distress amongst Indigenous children and young people, raising concerns about the potential risk of greater mental health inequities to come in future generations (Azzopardi et al., 2018; Lehti et al., 2009; Williamson et al., 2014). These findings from the mental health literature are also consistent with other health research, which shows that differences between life expectancy, morbidity, mortality, educational attainment, and economic status predominantly privilege non-Indigenous ethnic groups (Anderson et al., 2016).

The most notable, and significant finding of this review was the paucity of quality published research designed to inform knowledge about Indigenous peoples with BD. The evidence base informing current health initiatives for Indigenous peoples with BD is extremely limited, based almost entirely on descriptive data, reliant on incomplete analysis due to small sample sizes or no cases of BD in the Indigenous sample, and derived from highly heterogeneous research aims. The method of BD diagnosis also varied considerably between studies, with the potential for bias to be introduced particularly in studies relying solely on clinical diagnosis. As a result, the profile of BD in Indigenous peoples is essentially unknown and it is not clear what would be required to begin to improve health equity. While this review has identified that research has produced data related to Indigenous peoples with BD, consistent with the critique of other Indigenous authors, there is a risk of relying on research findings to address inequities when studies were not designed to answer questions about Indigenous peoples with BD (Reid et al., 2019).

Given the vast gaps in knowledge, resources must be invested into the development of study designs where questions aim to understand the profile of Indigenous peoples with BD. A significant gap in knowledge involves research that focuses on the ways in which systemic, societal and lifecourse factors impact Indigenous peoples with BD. To address this, future research will require the utilisation of a decolonised framework (Smith, 2012). Using modified quality appraisal tools informed by Indigenous research principles may be one approach other researchers could employ to improve the utility of future research with

Indigenous peoples with BD (Huria et al., 2019; McDonald et al., 2010; Morton Ninomiya et al., 2017; Smith, 2012).

Limitations

Although the strengths of the review include that this is the first known to investigate BD in Indigenous populations, this study does have limitations that need to be considered. Firstly, there may be community initiatives involving Indigenous peoples with BD, but due to limited resources the results of these may not have been published. Grey literature was also not included, and this may further limit the review by privileging non-Indigenous research agendas. In addition, the reliance on primary data sources reduces the ability to be certain of findings reported in the results. Finally, the exclusion of studies not in English is a further limitation.

Conclusions

In conclusion, this review identified the need to prioritise quality research design specifically aimed towards describing the experiences and needs of Indigenous peoples affected by BD. This research is required to identify the profile of Indigenous peoples with BD, and seek to rectify any factors maintaining current health inequities.

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