

Examining Injury Among Indigenous Young People: A Narrative Scoping Review

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ABSTRACT

Indigenous young people of circumpolar developed countries experience a disproportionate incidence of injury compared with non-Indigenous young people. Much has been published about the experience of injury within the general Indigenous population, but literature is limited with regard to Indigenous young people. Trauma nurses, who are important members of the multidisciplinary team that provides injury intervention to Indigenous populations, need to be aware of this literature, as well as subsequent research gaps, to provide effective care to Indigenous young people experiencing injury. The purpose of this study was to provide an updated comprehensive review of the research-based evidence related to all-cause injury for Indigenous young people. An exploratory scoping review was conducted with a narrative synthesis. To locate literature, 7 electronic

databases were searched from 2003 to 2017. Criteria were applied to all located articles to determine inclusion and then data were extracted from each study's findings. A total of 15 studies were included in this review that met the inclusion criteria. Themes derived from the knowledge synthesis process are as follows: incidence rates, mechanisms of injury, risk factors, and gaps in research. A strong epidemiological focus has emerged from the research found in this review of injury among Indigenous young people. The results of this review serve as a starting point for trauma nurses to successfully assess, build trusting relationships with, and further research injury among Indigenous young people.

Key Words

Indigenous, Injury, Outcomes, Research gaps, Young people

Indigenous peoples are defined as the initial occupants and descendants of a nation who have experienced colonization and allocation to minority status (Glover et al., 2013). In countries such as Australia, Canada, and the United States, this process of colonization has subsequently led Indigenous peoples to a life of inequality and health disparity, with various chronic and acute illnesses experienced at increased rates (Fantus, Shah, Qiu, Hux, & Rochon, 2009; Fines, Bougie, Oliver, & Kohen, 2013; Irie, Lang, Kaltner, Le Brocque, & Kenardy, 2012). Injury is no exception to this trend and appears at overrepresented rates among Indigenous peoples of developed circumpolar nations (Alaghebandan, Sikdar, MacDonald, Collins, & Rossignol, 2010; Allard, Wilkins, & Berthelot, 2004; Irie, Pollard, & Bellamy, 2010).

For young people, defined as youth 10–18 years of age, injury in Indigenous communities is typically the greatest cause of morbidity and mortality (Banerji &

Canadian Paediatric Society, First Nations, Inuit and Metis Health Committee, 2012; Chiefs of Ontario, 2012; Oliver & Kohen, 2012). Although injury rates are often elevated among all populations of young people due to high levels of risk-taking behaviors and new motor skill development, rates of injury among Indigenous young people still exceed the rates of non-Indigenous peers (Byrnes et al., 2015; Smylie & Adomako, 2009). Such heightened rates of injury have intensified cause for concern in Indigenous communities where young people are highly regarded for their place in the protection and continuation of Indigenous culture (Clapham, Senserrick, Ivers, Lyford, & Stevenson, 2008; Greenwood & de Leeuw, 2012; Saylor, 2004). Responding to this concern, scholarly literature is beginning to explore injury among Indigenous young people in greater depth, but research is still limited, and how injury is uniquely experienced in this specific age group of the Indigenous population remains unclear (Bratu, Lowe, & Phillips, 2013; George, McCormick, Lalonde, Jin, & Brussoni, 2013; Hautala, Hartshorn, Armenta, & Whitbeck, 2015; Möller et al., 2017).

Trauma nurses in acute clinical settings have been and continue to be a valuable part of the multidisciplinary health care team that serves patients, families, and communities impacted by injury (Fantus et al., 2009; Helling, Nelson, Moore, Kintigh, & Lainhart, 2005; Lansink, 2017; Spady, Saunders, Schopflocher, & Svenson, 2004). In

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the case of Indigenous communities, trauma nurses have an expanding role in the care of Indigenous peoples injured in urban settings, where higher portions of community members are identifying as Indigenous (Byrnes et al., 2015). In rural locations, Indigenous peoples can make up a significant portion of the population and nurses with general trauma knowledge are often the only health care professional available to treat injury (Byrnes et al., 2015; Fantus et al., 2009; Moller, Thomson, & Brooks, 2004; Stanley, Tomison, & Pocock, 2003). Yet, carrying out nursing interventions for the prevention and treatment of injury effectively in Indigenous communities poses a challenge, as trauma nurses are called to develop an understanding of how injury is uniquely viewed and experienced by Indigenous peoples before offering care (Greenwood & de Leeuw, 2012; Margeson & Gray, 2017; Möller et al., 2017). This extended understanding is called for among Indigenous peoples due the trauma of colonization, which continues to cause heightened vulnerability for Indigenous patients in the therapeutic nurse–patient relationship and often results in mistreatment from health care professionals who tend to be of non-Indigenous ethnicity (Cameron, Plazas, Salas, Bearskin, & Hungler, 2014; Goold, 2001; Reading & Wein, 2009).

This challenge to develop an understanding of injury among Indigenous young people specifically before providing care is further complicated for trauma nurses, as there is limited and unclear literature on this topic from which to draw knowledge and inform practice assessments and interventions. To begin addressing this limited evidence, what is known in the current literature to inform trauma nurses' understanding of Indigenous young people's experience of injury must be evaluated. To improve upon the available evidence with future nursing research, gaps in the research are also addressed.

PURPOSE

The purpose of this literature review was to provide a review of the research-based evidence related to all-cause injury for Indigenous young people by (1) summarizing research findings and (2) identifying research gaps. Serving both purposes will work to inform future trauma nursing assessment, interventions, and research.

METHODS

This literature review utilized a scoping review design that allows for the identification of broad and diverse research findings related to injury among Indigenous young people (Khalil et al., 2016). A broad search covering numerous disciplines of study is critical because there are many stakeholders invested in researching and understanding how different components of injury relate to Indigenous young people (Möller et al., 2017).

In addition, the motivation of these stakeholders is not always related to dissemination of study results through academic channels of literature, as seen with Indigenous organizations and government agencies, and thus a scoping design review is adequately sensitive to capture both published and unpublished data sources (Khalil et al., 2016; Margeson & Gray, 2017).

Finally, a scoping review design supports the purpose of summarizing research findings and identifying gaps in research (Khalil et al., 2016). Following with the scoping review principles of explicit search and literature identification methods, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement was used to reduce bias in the structure of the review and improve reliability of the findings (Khalil et al., 2016; Moher et al. & PRISMA-P Group, 2015).

Search Methods

Using the electronic databases Access Medicine, Scopus, PubMed, EMBASE, CINAHL, ProQuest, and ProQuest Dissertations and Theses, a search was carried out by the first author for research evidence from 2003 to 2017. This 15-year publication range was selected to capture studies after the recommendation of the Canadian-based Romanow (2002) report for governments to designate more health care services to both Indigenous peoples and injury prevention. Inclusion of articles required English-only text with full article availability and evidence in the methodology that the study was based on primary sources (Khalil et al., 2016). Studies were also included that reported outcomes specific to injury among Indigenous young people, aged 10–18 years, but no limitations were placed on the perspectives and measures employed by studies to research this topic (Khalil et al., 2016). Injury was defined for this review as physical damage occurring to the human body over a short period of time caused from accidents, burns, falls, chemical exposures, substance abuse, and acts of violence (McDonald, 2007; Moller et al., 2004). No exclusions of injury literature occurred on the basis of the intentional or nonintentional nature of the act that caused the injury, as all-injury types have been found to create health consequences devastating for individuals, families, and society at large (Alaghebandan et al., 2010; Chiefs of Ontario, 2012; Oliver & Kohen, 2012). As well, studies were not limited from this review based on research design, discipline of study, or peer-reviewed publication. See Figure 1 for full inclusion and exclusion criteria.

Database-specific and key word search strategies guided the location of appropriate literature for this review. Search strategies contained terms related to (young people or young adult or youth or adolescent) and (injury or acute injury or physical injury or trauma) and (Indigenous or Aboriginal or First Nations or Inuit or Metis or Native

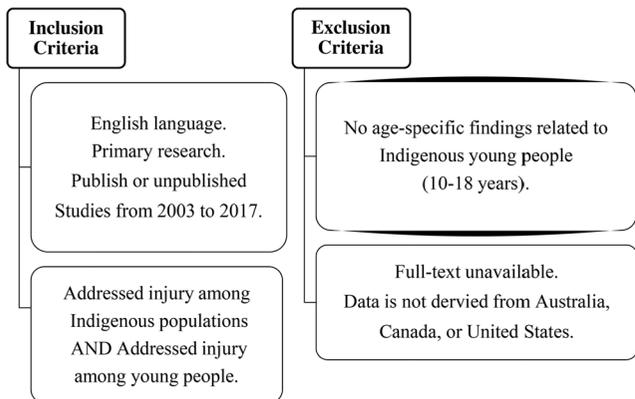


Figure 1. Inclusion and exclusion criteria.

American). Finally, the reference lists of included studies were hand searched for additional relevant articles.

Search Results

Combined searching provided a total of 380 articles for consideration. Titles and abstracts were subsequently screened to remove duplicates ($n = 45$) and studies

conducted outside of the developed circumpolar nations of interest ($n = 108$), Australia, Canada, and the United States. A further 176 articles were removed for being irrelevant to the specific study population of Indigenous young people ($n = 113$) or not being primary research ($n = 65$). Hand searching of the 12 included studies' reference lists identified three more articles for review. Overall, the total number of articles that met inclusion for review was 15, three studies being unpublished gray literature in the form of government or organizational research reports (Chiefs of Ontario, 2012; Edridge, 2008; Smylie & Adomako, 2009). Figure 2 is a flowchart of the process of study selection.

Data Charting and Narrative Synthesis

Data were charted by the first and second authors by reading and rereading included studies in further detail. Relevant study attributes and key research outcomes were then extracted and placed into a table for item-by-item comparison to enable thematic grouping (Khalil et al., 2016; Tricco et al., 2016). To ensure the credibility of information, the third author reviewed the table. This method identified three primary themes to organize and

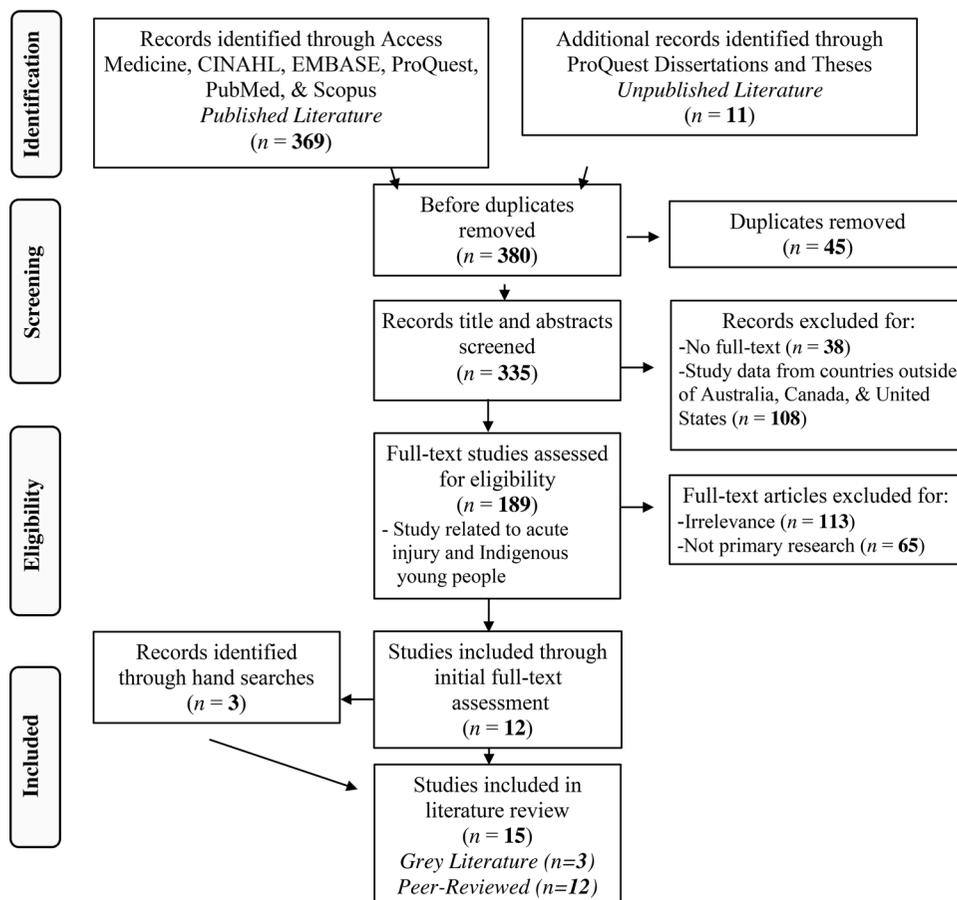


Figure 2. Flow diagram of study selection (PRISMA) (Moher et al., 2015).

summarize the dominant research outcomes of studies exploring injury among Indigenous young people (Khalil et al., 2016; Tricco et al., 2016). From these three themes, we identified study limitations and subsequent research gaps that will limit trauma nursing knowledge of injury among Indigenous young people (Pham et al., 2014). However, no quality assessment of studies ensued on the basis of these limitations as per the scoping review methodology of Khalil et al. (2016).

Narrative synthesis occurred by additionally charting the contextual processes that framed each research outcome of included studies (Tricco et al., 2016). The aim of this methodology is to uphold the purpose of the review, summarizing research and identifying gaps but by creating a mosaic of knowledge in this field as it has evolved over time (Tricco et al., 2016). Thus, exemplars and descriptions of the included research studies of injury among Indigenous young people were used to form the results and create the mosaic of knowledge inherent to narrative synthesis (Tricco et al., 2016).

RESULTS

Study Characteristics

All 15 studies were developed in Australia, Canada, and the United States and had results that discussed injury among Indigenous young people. Although most studies examined Indigenous young people as a part of other age groups ($n = 13$), with adolescents being the most common ($n = 10$). All studies used a quantitative observational design to produce an epidemiological profile of injury within Indigenous communities. As well, most studies recruited participants from administrative data sets ($n = 12$) of hospitals or government institutions and studied injury from the broad perspective of all causes ($n = 13$).

Narrative Synthesis of Studies

Three themes were identified from included studies that emphasize in depth about the research-based evidence related to all-cause injury for Indigenous young people. Therefore, the three main categories of research findings that were derived from studies were incidence rates, mechanism of injury, and risk factors. Table 1 demonstrates which studies contributed to each of these major findings.

Incidence Rates

Incidence rates of injury, or the frequency at which injury is sustained in a population, were a common result in the studies of injury among Indigenous young people reviewed for this article (13/15 included studies) (Edridge, 2008). Examining the findings of injury incidence further, four subthemes arose in classifying and understanding incidence of injury among Indigenous young people.

Incidence rate of all-cause injury among Indigenous young people, hospitalization rate, mortality rate, and demographic-specific rates being the four subthemes. All-cause injury, which sought to produce a rate of injury that encompassed all injury presentations to health care facilities for a geographical area, was examined by three studies (Byrnes et al., 2015; Chiefs of Ontario, 2012; Fantus et al., 2009). Six studies examined hospitalization rates, or admissions to acute care health facilities for 24 hr or longer, by reviewing discharge data and admission diagnoses to locate injured Indigenous young people (Alaghehbandan et al., 2010; Edridge, 2008; Gowing, McDermott, Ward, & Martin, 2015; Irie et al., 2012; Karmali et al., 2005; Oliver & Kohen, 2012). The mortality rates, or rates at which patients died from their injuries, among Indigenous young people were measured in four of the included studies using medical examiners' reports and mortality databases (Bratu et al., 2013; Edridge, 2008; Harrop, Brant, Ghali, & Macarthur, 2007; Irie et al., 2010). Demographic-specific rates of injury, completed by 10 studies, included calculation of injury frequency among Indigenous young people based on gender or geographic location of residence (Alaghehbandan et al., 2010; Byrnes et al., 2015; Edridge, 2008; Chiefs of Ontario, 2012; Fantus et al., 2009; Gowing et al., 2015; Harrop et al., 2007; Irie et al., 2012; Karmali et al., 2005; Smylie & Adomako, 2009).

All 13 studies examining incidence rates compared the rate of Indigenous young people injury with either or both non-Indigenous peers ($n = 7$) and other age groups of Indigenous peoples ($n = 12$) (Alaghehbandan et al., 2010; Bratu et al., 2013; Byrnes et al., 2015; Chiefs of Ontario, 2012; Edridge, 2008; Fantus et al., 2009; Gowing et al., 2015; Harrop et al., 2007; Irie et al., 2010, 2012; Karmali et al., 2005; Oliver & Kohen, 2012; Smylie & Adomako, 2009). In addition, the presentation and processes to calculate injury incidence rates varied greatly among studies. Specifically, six studies used a crude rate of per 100,000 (Alaghehbandan et al., 2010; Chiefs of Ontario, 2012; Edridge, 2008; Harrop et al., 2007; Karmali et al., 2005; Oliver & Kohen, 2012), six studies a percentage (Bratu et al., 2013; Byrnes et al., 2015; Fantus et al., 2009; Gowing et al., 2015; Irie et al., 2012; Smylie & Adomako, 2009), and one study an odds ratio (Irie et al., 2010) to convey their results (Polit & Beck, 2016). Except for the study by Bratu et al. (2013), all the methods of discussing injury incidence rates among Indigenous young people were weighted to account for the smaller population size of Indigenous peoples. Despite these differences in incidence rate calculation, the 12 studies' results were examined altogether in this review as per the method of narrative synthesis (Tricco et al., 2016).

As a collection, findings from these studies were examined to determine what attributes of injury rates among

TABLE 1 Summary of Included Studies

Authors Year, Country of Origin	Injury Investigated	Study Design	Data Collection Method	Sample (Ethnicity, Age Group)	Main Results		
					Incidence Rates	Mechanism of Injury	Risk Factors
Alaghebandan et al., 2010, Canada	Unintentional injury	Cross-sectional observation	Population-based administrative	Indigenous and non-Indigenous children and adolescents	✓		
Bratu et al., 2013, Canada	All-cause injury	Cross-sectional observation	Population-based administrative	Indigenous and non-Indigenous children and adolescents	✓		
Byrnes et al., 2015, Canada	All-cause injury	Cross-sectional observation	Population-based survey	Indigenous and non-Indigenous children and adolescents	✓	✓	✓
Chiefs of Ontario, 2012, Canada	All-cause injury	Cross-sectional observation	Population-based administrative	Indigenous and non-Indigenous all ages	✓	✓	
Edridge, 2008, Australia	All-cause injury	Cross-sectional observation	Population-based administrative and survey	Indigenous and non-Indigenous adolescents	✓	✓	
Fantus et al., 2009, Canada	All-cause injury	Cross-sectional observation	Population-based administrative	Indigenous and non-Indigenous all ages	✓		
Gowing et al., 2015, Australia	All-cause injury	Cross-sectional observation	Population-based administrative	Indigenous and non-Indigenous all ages	✓		
Harrop et al., 2007, Canada	All-cause injury	Cross-sectional observational	Population-based administrative	Indigenous and non-Indigenous children and adolescents	✓	✓	
Hautala et al., 2015, United States and Canada	Intentional injury	Cross-sectional observation	Population-based survey	Indigenous children and adolescents			✓
Irie et al., 2012, Australia	All-cause injury	Cross-sectional observation	Population-based administrative	Indigenous children and adolescents	✓		
Irie et al., 2010, Australia	All-cause injury	Cross-sectional observation	Population-based administrative	Indigenous and non-Indigenous all ages	✓	✓	
Karmali et al., 2005, Canada	All-cause injury	Cross-sectional observation	Population-based administrative	Indigenous and non-Indigenous all ages	✓		
Oliver & Kohen, 2012, Canada	All-cause injury	Cross-sectional observation	Population-based administrative	Indigenous and non-Indigenous children and adolescents	✓	✓	
Pavkov et al., 2010, United States	All-cause injury	Cross-sectional observation	Population-based survey	Indigenous and non-Indigenous adolescents			✓
Smylie & Adomako, 2009, Canada	All-cause injury	Cross-sectional observation	Population-based administrative and survey	Indigenous children and adolescents	✓		

Note. Studies using "all ages" had to provide a discussion of children to be included in this review.

Indigenous young people were unique to this specific population. The three studies examining all-cause injury varied in results when compared with a group of non-Indigenous peers, finding both statistical significance and nonsignificance between the two rates of injury (Byrnes et al., 2015; Chiefs of Ontario, 2012; Fantus et al., 2009). A similar pattern of variability was seen in the 11 studies that presented injury rates among other Indigenous age groups, with the age groups of the middle-aged, the elderly, children, and young people all being found to experience the highest levels of injury across different study samples (Alaghebandan et al., 2010; Bratu et al., 2013; Byrnes et al., 2015; Chiefs of Ontario, 2012; Fantus et al., 2009; Gowing et al., 2015; Harrop et al., 2007; Irie et al., 2010, 2012; Karmali et al., 2005; Oliver & Kohen, 2012; Smylie & Adomako, 2009). Yet, reviewing the results of hospitalization and mortality injury rates among Indigenous young people revealed three trends. First, incidence of all-cause injury hospitalization rates and mortality rates was found consistently higher among Indigenous young people than among non-Indigenous peers (Alaghebandan et al., 2010; Edridge, 2008; Harrop et al., 2007; Irie et al., 2010, 2012; Karmali et al., 2005; Oliver & Kohen, 2012). Second, examining the impact of gender upon incidence rates of Indigenous young people, males were found to have a higher incidence of injury-related mortality and severity than Indigenous young females and non-Indigenous peers (Edridge, 2008; Harrop et al., 2007; Karmali et al., 2005). Third, Indigenous young females had a higher incidence of all-cause injury hospitalization rates than non-Indigenous young females (Alaghebandan et al., 2010; Edridge, 2008; Irie et al., 2012; Oliver & Kohen, 2012). Finally, although injuries to rural Indigenous young people occur, studies suggest that compared with urban counterparts, the rural setting offers a protective environment for Indigenous young people (Byrnes et al., 2015; Edridge, 2008; Irie et al., 2012; Karmali et al., 2005).

Mechanisms of Injury

Utilizing the International Classification of Diseases (ICD) Revision 9 or 10, a universal hierarchical list of all known disease and injuries, five studies retained the mechanisms that caused injury among study participants from administrative health care facility or government records (Chiefs of Ontario, 2012; Edridge, 2008; Harrop et al., 2007; Irie et al., 2010; Oliver & Kohen, 2012; World Health Organization, 2016). The only other study included in this review that did not use a revision of the ICD to determine a mechanism of injury was that of Byrnes et al. (2015), who relied on a self-report survey to collect data. In the study survey, Byrnes et al. (2015) provided respondents with an opportunity to describe the activity that they were engaged in that caused the injury and provided the answer options: sport, fighting, riding/driving a vehicle, work,

walking/running, and other. Attempting to contextualize the cause of injury, the studies of Byrnes et al. (2015) and Irie et al. (2010) also reported characteristics of the injury events along with the mechanism of injury. Injury event characteristics included physical setting, intent, body location, and nature of the injury (Byrnes et al., 2015; Irie et al., 2010). From review of the six studies that discussed mechanism of injury among Indigenous young people, comparisons of prominent mechanisms of injury among Indigenous young people with non-Indigenous peers ($n = 5$) and other age groups of Indigenous peoples ($n = 4$) were presented (Byrnes et al., 2015; Chiefs of Ontario, 2012; Edridge, 2008; Harrop et al., 2007; Irie et al., 2010; Oliver & Kohen, 2012).

From review of the six studies discussing mechanism of injury among Indigenous young people, several similarities between results were recognized. First, in comparing the lists of most frequently occurring injuries experienced by Indigenous young people among studies, with no comparison with other population groups, the causes of motor vehicle accidents, either colliding or being struck, cutting, and poisoning consistently appeared as prominent causes of injury in five studies (Chiefs of Ontario, 2012; Edridge, 2008; Harrop et al., 2007; Irie et al., 2010; Oliver & Kohen, 2012). Second, intentional injury in the form of assault and self-inflicted harm was noted as a significantly elevated cause of injury among Indigenous young people when compared with non-Indigenous peers (Byrnes et al., 2015; Chiefs of Ontario, 2012; Edridge, 2008; Harrop, 2007; Irie et al., 2010). Third, examining mechanisms of injury between different age groups of Indigenous peoples revealed that young people experience higher rates of self-harm in Indigenous populations (Chiefs of Ontario, 2012; Harrop et al., 2007; Irie et al., 2010). Results of other injury events from the studies of Byrnes et al. (2015) and Irie et al. (2010) were found to be similar, as both recognized the activity of organized sports and the physical setting of the neighborhood as contexts for injury occurrence among Indigenous young people. However, Irie et al.'s (2010) study data of these variables were largely incomplete, with 46.4% of the participants unable to specify the activity accompanying the injury and 36.5% unable to state the physical setting of the injury.

Risk Factors

To explore what are the risk factors, or attributes that increase the likelihood that an Indigenous young person will suffer an injury, three studies examined various lifestyle characteristics via surveys to identify such predictors of injury (Byrnes et al., 2015; Hautala et al., 2015; Pavkov, Travis, Fox, King, & Cross, 2010). Specifically, the studies by both Hautala et al. (2015) and Pavkov et al. (2010) sought to understand the risk factors of injury caused by

assault through means of violence. Risk factors of assault-related injury studied by these two articles were identified through previous research of non-Indigenous young people and violence and included substance use, number of sexual partners, delinquency, experience of victimization, and suicidal behavior (Hautala et al., 2015; Pavkov et al., 2010). Meanwhile, Byrnes et al. (2015) examined risk factors of all-cause injury as a part of a larger study comparing injury in less populated and more heavily populated regions. Byrnes et al.'s (2015) study measured socioeconomic status, frequency of motor transport, alcohol use, safety equipment availability, housing, and local sport programs among participants to determine risk factors of injury among Indigenous young people.

Results from all three studies revealed substance use and delinquent behaviors as risk factors highly associated with increased injury, either intentional or unintentional, among Indigenous young people (Byrnes et al., 2015; Hautala et al., 2015; Pavkov et al., 2010). Substance use, even if only reported as once in the past year, of alcohol, marijuana, cocaine, and heroin was found to be associated with a high risk of injury for Indigenous young people when compared with other ethnicities (Byrnes et al., 2015; Hautala et al., 2015; Pavkov et al., 2010). Engaging in fights, carrying a weapon, feelings of anger, impaired driving, and previous participation in violence also appeared as delinquent behaviors that placed Indigenous young people at risk for injury (Byrnes et al., 2015; Hautala et al., 2015; Pavkov et al., 2010). Confirming these results further, Indigenous settlements that prohibited alcohol use experienced fewer injuries among Indigenous young people (Byrnes et al., 2015). As well, the study by Byrnes et al. (2015) provided numerous unique protective risk factors of injury among Indigenous young people in the remote or rural areas, such as no road access, infrequent use of all-terrain motor vehicles, and less time spent in a neighborhood setting. Improving knowledge as it relates to risk factors associated with injury among the Indigenous population of young people is required to develop interventions targeted at mitigating risk (Alaghebandan et al., 2010).

Gaps in Research

Studies included in this review consistently denoted three primary limitations, which restrict how injury among Indigenous young people is currently understood. These common limitations among the studies of this review are cross-sectional methodology, inaccurate data collection, and limited contextual variables.

Five studies explicitly identified the cross-sectional nature of their data as a limitation upon the conclusions that could be drawn from their results as relating to causation (Bratu et al., 2013; Byrnes et al., 2015; Gowing et al., 2015; Hautala et al., 2015; Karmali et al., 2005). As each

study in this review used a cross-sectional method of data collection, authors were prompted to perform a closer review of the included literature to determine why this limitation was ubiquitous in the literature of injury among Indigenous young people. Hautala et al. (2015), who initially adopted a longitudinal design, were unable to establish temporal ordering due to shortcomings in data collection and tribal relations in early years of the study. Other studies that had access to longitudinal study databases found the data too inconsistent to use and related the difficulties in data collection back to troubled relationships between Indigenous communities and government agencies (Bratu et al., 2013; Chiefs of Ontario, 2012; Smylie & Adomako, 2009).

Beyond inconsistencies in longitudinal data, 12 studies identified inaccurate administrative data collection as a limitation to their results (Alaghebandan et al., 2010; Bratu et al., 2013; Byrnes et al., 2015; Chiefs of Ontario, 2012; Edridge, 2008; Fantus et al., 2009; Harrop et al., 2007; Irie et al., 2010; Karmali et al., 2005; Oliver & Kohen, 2012; Pavkov et al., 2010; Smylie & Adomako, 2009). Inability to accurately collect data related to injury was attributed to data sets that included only injuries reported in the hospital setting and disregarded primary care clinic visits or deaths in the community (Alaghebandan et al., 2010; Byrnes et al., 2015; Chiefs of Ontario, 2012; Edridge, 2008; Fantus et al., 2009; Harrop et al., 2007; Irie et al., 2010, 2012; Oliver & Kohen, 2012). Studies that collected data of a sensitive nature, such as assault, hypothesized that they too did not elicit answers that accurately reflected the cause of injury due to the different cultural meaning of words in survey questions for Indigenous respondents (Edridge, 2008; Irie et al., 2010, 2012; Pavkov et al., 2010). Indigenous peoples were also felt to be inaccurately represented in data collection processes of the studies because of government policy failing to recognize all Indigenous peoples legally, reluctance of Indigenous peoples to identify for fear of discrimination, and oversight of health care facilities to record the ethnicity of patients (Alaghebandan et al., 2010; Bratu et al., 2013; Chiefs of Ontario, 2012; Edridge, 2008; Fantus et al., 2009; Irie et al., 2010, 2012; Karmali et al., 2005; Oliver & Kohen, 2012). Because of difficulties with identification of Indigenous ethnicity, eight studies suggested that data were rendered further inaccurate by a portion of participants in the Indigenous sample by being removed from the study, treated as non-Indigenous peoples, or allocated to an ethnicity based on geographical location alone (Alaghebandan et al., 2010; Bratu et al., 2013; Byrnes et al., 2015; Edridge, 2008; Fantus et al., 2009; Irie et al., 2012; Karmali et al., 2005; Oliver & Kohen, 2012).

Finally, eight studies assumed their results were unable to be contextualized to the local community and important health care outcomes due to lack of variables in

databases or surveys (Alaghebandan et al., 2010; Bratu et al., 2013; Byrnes et al., 2015; Gowing et al., 2015; Harrop et al., 2007; Karmali et al., 2005; Oliver & Kohen, 2012; Smylie & Adomako, 2009). Particularly, the variables of risk-taking behaviors, availability of health care services, secondary complications, comorbidities, length of hospital stay, and patient satisfaction were considered important points of understanding injury in Indigenous populations, but variables were unavailable to researchers (Alaghebandan et al., 2010; Bratu et al., 2013; Byrnes et al., 2015; Gowing et al., 2015; Harrop et al., 2007; Karmali et al., 2005; Oliver & Kohen, 2012). To prevent this limitation in future research, five studies recommended improving linking processes between data sets or creating connections with Indigenous organizations to expand the variables for which data are collected (Gowing et al., 2015; Harrop et al., 2007; Karmali et al., 2005; Oliver & Kohen, 2012; Smylie & Adomako, 2009).

DISCUSSION

Trauma nurses have an important role in preventing and treating injury among Indigenous young people. Yet, for interventions to be effective, trauma nurses must be able to understand and recognize what the unique experience of injury is like for Indigenous young people. Thus, this scoping review was guided by the twofold purpose of improving understanding and identifying gaps in the understanding of the experience of injury among Indigenous young people for the nursing profession (Byrnes et al., 2015; Fantus et al., 2009; Plani & Carson, 2008). On completion, 15 studies were analyzed and three overarching themes of study findings were synthesized: incidence rates, mechanisms of injury, and risk factors. As well, the limitations of all included studies were examined in this scoping review for common themes and revealed cross-sectional methodology, inaccurate data collection, and limited contextual variables as typical restrictors of study results on this topic.

None of the studies included in this review were derived from the discipline of trauma nursing or provided guidelines for clinical practice. However, as it is known that trauma nurses require extended knowledge and understanding of Indigenous peoples to provide effective intervention, the results of this review can inform certain aspects of nursing care (Cameron et al., 2014; Stanley et al., 2003). Specifically, results of this review can provide guidance during the trauma nurse's assessment of an injured Indigenous young person presenting to an acute clinical setting through the recognition of common attributes of injury (Polit & Beck, 2016). By forming an understanding of the common attributes of injury among Indigenous young people, trauma nurses will be able to focus their assessments and build more trusting relationships with this unique group during assessment, the first step of the nursing process (Polit & Beck, 2016).

During assessment, a nurse collects relevant data from available sources to later interpret into a nursing diagnosis attributable to the individual and a community health problem (Minnesota Department of Health, 2003; Polit & Beck, 2016). Acting as a source of data, this review's results of injury incidence rates, mechanisms of injury, and general risk factors for injury can help confront trauma nurses with what is likely in the bigger picture of population health when assessing injury among Indigenous young people. Then, turning to their unique individual patient, trauma nurses can use this review's results of common attributes of injury among Indigenous young people to focus their assessments from what is most typical to least possible (Colman et al., 2004). As well, because certain nursing assessments are more sensitive and invasive than others, such as inquiring about assault and self-harm, trauma nurses may be reluctant to engage with their patients on a regular basis about these topics (Berry, Harrison, & Ryan, 2009; Cieslak et al., 2014; Irie et al., 2010; Pavkov et al., 2010). Knowing the results of this review, trauma nurses can start to understand the dominant role such sensitive issues have in the injury of Indigenous young people and consider performing these sensitive assessments with Indigenous young people experiencing injury in greater frequency. From the standpoint of injury prevention, assessment for risk factors such as substance use and delinquent behavior among Indigenous young people may also help trauma nurses focus their needs assessment for health teaching. Although trauma nurses must be aware that this review is only a guide to focus assessments and not a prescriptive outline of injury outcomes, as Indigenous communities are heterogeneous in culture, lifestyle, and health (Alaghebandan et al., 2010; Banerji & Canadian Paediatric Society First Nations, Inuit and Metis Health Committee, 2012; Byrnes et al., 2015; George et al., 2013).

To build more trusting relationships between trauma nurses and Indigenous young people, this review again offers aid in understanding the common attributes of injury. Trust may be built in numerous ways between a trauma nurse and the client, yet providing nonjudgmental care is likely an important initial step in trust building during the care of an Indigenous young person who typically recognizes as being discriminated against for race and age (Byrnes et al., 2015; Hautala et al., 2015; Ralph & Ryan, 2017; Smylie & Adomako, 2009). Being aware of this review's results, nonjudgmental care can be provided to the injured Indigenous young person and, in turn, build a trust relationship, as the trauma nurse will be more apt to see the context and patient's actions surrounding the injury as a part of a population trend (McDonald, 2002, 2007). For example, an injured Indigenous young person who discloses to using alcohol before being injured should not be viewed as acting

delinquently by the trauma nurse but as one incident of many occurring frequently in this unique group (Berry et al., 2009; Pavkov et al., 2010; Ralph & Ryan, 2017). Realizing Indigenous young people are experiencing injury and risk factors associated with injury as a part of a larger population trend can likely assist trauma nurses in providing nonjudgmental care and form more trusting relationships with these patients (Newman Giger, 2017).

The study limitations that were examined provide guidance for future trauma nursing research and expand nursing knowledge on the topic of injury among Indigenous young people. In doing this summary of studies regarding injury among Indigenous young people, the authors were able to determine not only areas where no research has been conducted on this topic but also what barriers in this field of research are preventing researchers from addressing these gaps (Ivers, Clapham, Senserrick, Lyford, & Stevenson, 2008). As such, gaps noted in the research of injury among Indigenous young people during this review include lack of qualitative methods, longitudinal studies to establish temporal ordering, survey-based data, and characteristics of health care service usage. With only three strictly survey-based studies, and no qualitative, longitudinal, or health care service use profiles among studies included in this review, these gaps were obvious to the authors because of their absence among the review's included studies (Byrnes et al., 2015; Hautala et al., 2015; Pavkov et al., 2010). However, based on the included study limitations, possible reasons for these gaps in knowledge are due to a fragile relationship between Indigenous communities, researchers, and health care facilities (Greenwood & de Leeuw, 2012). Collaborative relationships may appear as including the study of traditional healing methods into a research proposal, employment of cultural advocates, seeking advice from community leaders, participating in cultural training, and improving health care policy surrounding Indigenous peoples (Greenwood & de Leeuw, 2012; Hautala et al., 2015; Ivers et al., 2008; Pavkov et al., 2010). Through a collaborative relationship with Indigenous communities, personal connections for qualitative studies can be made, trusting relationships can be forged for longitudinal study, and further access to existing Indigenous organization data, either administrative or survey, can be gained.

CONCLUSION

Understanding the trauma nurse's role in injury prevention and treatment among Indigenous young people is a challenge due to limited and unclear research in this field (Banerji & Canadian Paediatric Society, First Nations, Inuit and Metis Health Committee, 2012; Ivers et al., 2008). This scoping review was designed to clarify what research is currently available of injury among Indigenous young people for trauma nursing practice and offer direction for

future trauma nursing research. Using the scoping review methodology proposed by Khalil et al. (2016), 15 studies were included and analyzed for themes. The three central findings of the review, incidence rates, mechanisms of injury, and risk factors, can assist trauma nursing practice in the evaluation of patients by directing trauma nurses toward common attributes of injury and assisting in building trusting relationships with these patients clinically. For example, findings suggest that thoroughly evaluating Indigenous young people suffering injury is crucial due to the higher rate of injury severity and mortality these patients experience. In addition, results point trauma nurses toward including assessment differentials for self-harm and assault when an Indigenous young person presents for care, as these mechanisms occur more often in this population. The limitations of studies in this review also guide trauma nursing researchers toward important gaps in this topic of research and the essential step of improving relationships with Indigenous communities before addressing these gaps. Without a strong, collaborative relationship with Indigenous communities, not only will future research data be incomplete or inconclusive but will also not reflect the current conditions, experiences, and work being done with Indigenous young people experiencing injury (Alaghehbandan et al., 2010; Hautala et al., 2015).

Limitations

Although strong efforts were made to collect all available evidence of injury among Indigenous young people of circumpolar developed nations, this article retrieved only a small number of studies for review. Limitations associated with this review, and thought to impact the total number of articles found, include a search strategy that excluded relevant non-English research, searches restricted to a limited number of electronic databases, and requirement of a publication date after 2003. Also, all elicited studies for this review were of quantitative methods. In retrospect, this outcome may have occurred from a limitation in the search strategy, particularly use of the key words "physical injury," which appears like a request for quantitative measurements and not descriptors of participant and community experiences. In addition, with limited resources and time, this study was not able to review all gray literature resources thoroughly, including reaching out to Indigenous researchers, organizations, and communities that may have unpublished findings of injury among Indigenous young people (Margeson & Gray, 2017).

Shortcomings in the analysis of included studies' results may have occurred, as this review did not incorporate the use of a quality assessment to ensure adequate rigor or participation of Indigenous community members to assist with cultural relevance in forming study results.

Thus, research outcomes may have been included in this review that bear little scientific value to the researcher or the Indigenous community (Margeson & Gray, 2017). The limited literature of injury among Indigenous young people resulted in the extraction of pertinent results from studies examining the broader contexts of injury among all Indigenous peoples or young people of all ethnicities, which may have resulted in incomplete or superficial results, although all authors remain confident that the steps and processes undertaken in this review align stringently with the methodology of scoping literature reviews outlined by Khalil et al. (2016).

KEY POINTS

- Current literature consistently indicates that Indigenous young people experience higher rates of hospitalization and mortality related to injury than non-Indigenous peers. These elevated rates of injury are also indicated in the literature to be commonly caused by the means of motor vehicle accidents, self-inflicted cutting, and poisoning.
- Elevated rates of substance use and delinquent behavior place Indigenous young people at a higher risk of sustaining injury by both intentional and unintentional causes. In addition, Indigenous young people living in rural and remote communities experience less risk for injury with limited road access, infrequent use of all-terrain vehicles, and less time spent in the neighborhood setting.
- As trauma nurses play an integral role in the prevention and treatment of intentional and nonintentional injuries among Indigenous young people, results from this review are meant to be used in the acute clinical setting to direct nursing assessments and assist in building trusting relationships.
- Common limitations in the research of injury among Indigenous young people include cross-sectional design, incomplete data collection, and inability to capture contextual features and outcomes of injury. These limitations have created gaps in nurses' understanding of injury among this unique population and should be addressed in future nursing research by creating stronger, more collaborative relationships with Indigenous communities.

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