

# Post-Secondary Stress and Mental Well-Being: A Scoping Review of the Academic Literature

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## ABSTRACT

Post-secondary students have been identified as an at-risk population for chronic stress and poor mental health. We conducted a scoping review of the academic literature surrounding student stress and mental well-being as the first phase of research in the development of Canada's National Standard for the Psychological Health and Safety of Post-Secondary Students. Major thematic findings included student stress, resilience through effective coping and help-seeking, and programs or strategies to improve campus mental health. Recommendations include a call for increased mental health promotion and mental illness prevention activities that are sensitive to diverse cultures, ethnicities, religions, and sexualities.

**Keywords:** stress, mental health, post-secondary, scoping review, literature review

## RÉSUMÉ

Les étudiants du postsecondaire ont été reconnus comme une population à risques de stress chronique et de problèmes de santé mentale. Nous avons entrepris une revue de la littérature portant sur le stress et le bien-être psychologique des étudiants dans le cadre de la première phase de recherche en vue de l'élaboration de la « Norme sur la santé et la sécurité psychologiques pour les étudiants du postsecondaire (Norme EPS) ». Les principales conclusions ont mis en évidence les thématiques suivantes : le stress étudiant ; la résilience grâce à une adaptation efficace et la recherche d'aide ; et les programmes ou stratégies pour améliorer la santé mentale à travers les campus. Les recommandations portent sur la nécessité d'augmenter les activités de promotion de la santé mentale et de prévention de la maladie mentale en tenant compte des diversités culturelles, ethniques, religieuses et sexuelles.

**Mots-clés :** stress, santé mentale, postsecondaire, revue exploratoire, revue de la littérature

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## BACKGROUND

In 2018, Bell Canada, the Rossy Family Foundation, and the Royal Bank of Canada committed funding toward the development of a National Standard for the Psychological Health and Safety of Post-Secondary Students (“the Standard”) in partnership with the Mental Health Commission of Canada and the Canadian Standards Association. The Standard will provide post-secondary institutions with a best-practice framework for the management and improvement of students’ mental health and well-being. This paper summarizes the results of a large scoping review of the academic literature, conducted as the first phase of research in the development of the Standard.

Over the past decade, mental health problems among Canadian post-secondary students have become a main focus of attention (American College Health Association, 2016). Both the 2013 and 2016 iterations of the National College Health Assessment II revealed a high prevalence of mental health challenges among a sample of over 43,000 Canadian post-secondary students (American College Health Association, 2013, 2016). Students face a multitude of stressors within the post-secondary setting, placing them at increased risk for a range of mental health issues. Chronic stress is highly correlated with negative mental health outcomes (Crompton, 2015; Godin, Kittel, Coppieters, & Siegrist, 2005) and has been shown to have a substantial impact on students’ academic performance (American College Health Association, 2016). Poor mental health among students has also been linked to other negative outcomes, including substance misuse, relationship difficulties, absenteeism and drop-out, engagement in risk behaviours, and suicide.

The overall goal of this review was to define the current state of research relative to students’ experiences regarding their psychological health and safety in post-secondary environments. A secondary objective was to identify both emerging and existing strategies with respect to supporting students’ psychological health and safety. Because we sought to understand the range of research activity regarding the evaluation and mitigation of mental health-related challenges among post-secondary students, we chose to conduct a broad and comprehensive scoping review, rather than a more focused and critical systematic review. To our knowledge, a comprehensive, multidisciplinary review of the academic literature pertaining to post-secondary stress and mental well-being has not been completed. Mapping the existing literature is an important first step in the development of a national strategy to improve Canadian post-secondary students’ mental health and well-being.

## METHODS

We conducted a scoping review in May 2018 to map the existing academic literature pertaining to post-secondary stress and mental well-being. The purpose of a scoping review is not to describe the findings of each article in great detail, but rather to examine the extent, range, and nature of research activity in a particular area (Arksey & O’Malley, 2005). This study followed a five-step framework: (1) identify the research question, (2) identify relevant studies, (3) select studies, (4) extract data, and (5) analyze (Arksey & O’Malley, 2005; Levac, Colquhoun, & O’Brien, 2010). These steps are detailed below.

**(1) Identify the research question.** A broad research question is encouraged for scoping reviews in order to facilitate a wide range of coverage (Arksey & O’Malley, 2005), ensuring that a clearly articulated target population, outcome of interest, and scope of inquiry are identified (Levac et al., 2010). Our research

question was, “What is the current state of the academic research relative to students’ experiences regarding their psychological (mental) health and safety in post-secondary environments?”

**(2) Identify relevant studies and study selection.** Six databases covering multiple research disciplines were searched for published articles: CINAHL, Medline, Embase, PsycINFO, Sociological Abstracts, and Education Source. Databases were searched using keyword combinations and subject headings based on recommendations from a reference librarian. An example of the search strategy (e.g., keyword combinations) used for the PsycINFO database can be found in Table 1. Efforts were made to keep the search strategy as similar as possible across databases.

**Table 1**  
**Key Word Search Strategy Used (PsycINFO Database)**

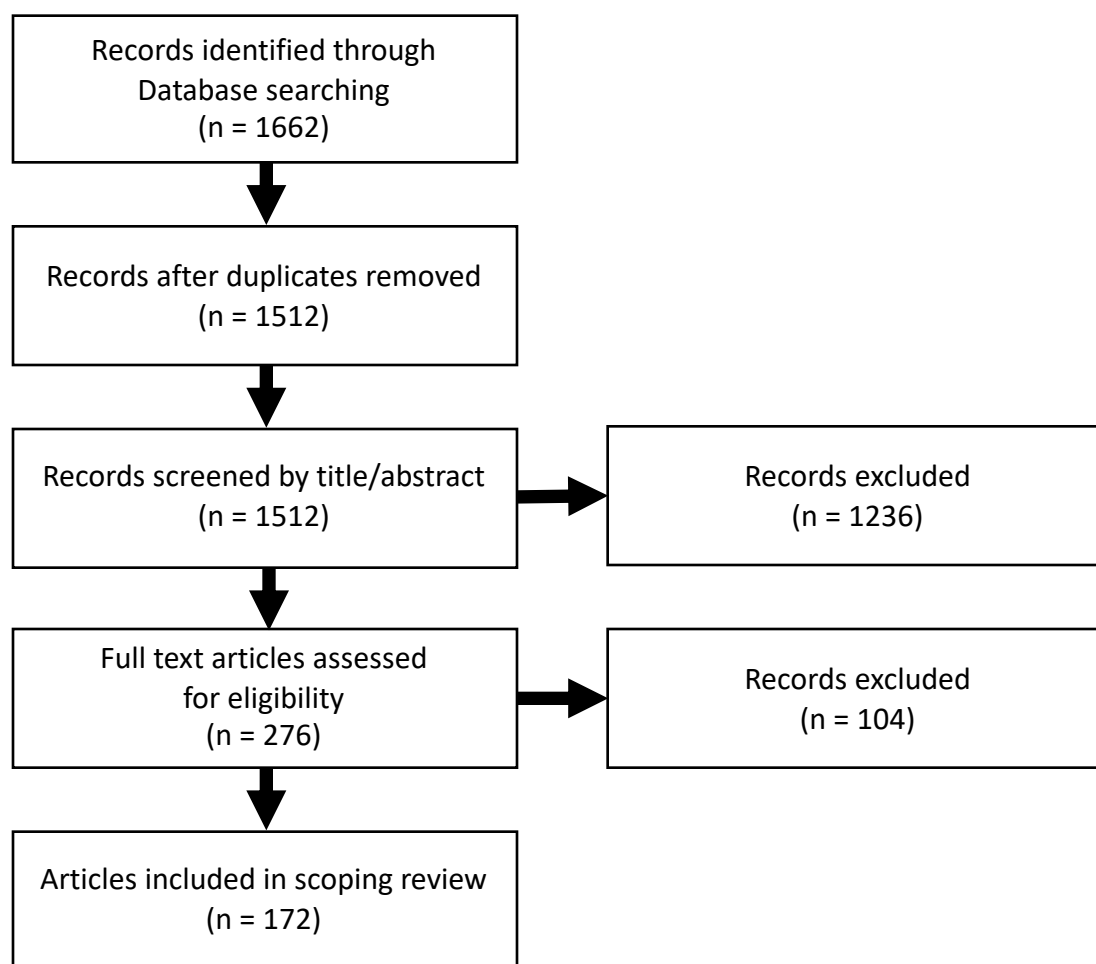
#	Key Search Terms	Results
1	students/ or business students/ or college students/ or dental students/ or graduate students/ or law students/ or medical students/ or postgraduate students/ or transfer students/ or vocational school students/ <sup>1</sup>	114,840
2	mental health	56,767
3	distress	19,527
4	exp stress <sup>2</sup>	99,051
5	exp emotional adjustment	20,752
6	exp resilience (psychological)	11,411
7	OR /2 to 6	195,207
8	mental health programs/ OR mental health program evolution/ OR mental health services/ OR program development/	43,799
9	1 and 7	5,770
10	1 and 8	737
11	9 and 10	114
12	limit 11 to (English language and year = “2000 – current”)	103

*Note.* 1. The term “students” was not “exploded” in its entirety in order to exclude out-of-scope students (i.e., those below the post-secondary level).

2. The explanation indicates the key word was “exploded” to include related concepts (i.e., the “explosion” of stress also includes key words such as “academic stress,” “chronic stress,” “social stress,” “psychological stress,” etc.).

**(3) Data extraction and thematic analysis.** A total of 150 duplicate articles were removed from the initial sample of records. Figure 1 details the process through which articles were screened for inclusion into the review. We conducted an international search, though articles were restricted by English language, and a publication date range between 2000 and 2018 to assess current practices, as we thought that the majority of the literature would be published after 2000. The data extracted from articles included author(s), title, abstract, country of publication, year of publication, sample size, study design, and main themes investigated. Articles were filtered first by title, then abstract by two reviewers. Reviewers evaluated articles separately, and then met to compare results. A third reviewer was available to break ties in the event of disagreement. A final sample of 172 academic articles were included in the review. The main themes explored by each article were thoroughly discussed among reviewers, at which point articles were electronically sorted into corresponding categories using Mendeley reference manager to organize the narrative of this review.

**Figure 1**  
**Flowchart Detailing Screening of Academic Articles for Review**



## RESULTS

Three overarching themes emerged from the data. Articles that reported prevalence estimates for stress, mental health problems, symptoms or diagnoses of mental illnesses, or that discussed the sources of student stress and/or distress were coded as belonging to the “student stress and distress” theme. Articles that reported specifically on student resilience, methods of coping, help-seeking, or scans of mental health services and supports available to students were coded as belonging to the “student resilience” theme. Finally, articles that described the development or evaluation of a program, intervention, or strategies designed to improve post-secondary students’ resilience and/or mental health and well-being were code as belonging to the “programs and interventions” theme.

### Student Stress and Distress

The prevalence of stress and distress among post-secondary students has been widely documented. A survey of the literature revealed reviews, descriptive, and analytic studies, though the majority were cross-sectional ( $n = 100$ , 58%), and few used participant sample sizes larger than 1,000 ( $n = 35$ , 23%, excluding reviews). Additional detail on study designs and sample sizes can be found in Tables 2, 3 and 4. The majority of studies included in this review demonstrated evidence of poor mental health functioning among post-secondary students (Durand-Bush, McNeill, Harding, & Dobransky, 2015; Ruckert, 2015; Storrie, Ahern, & Tuckett, 2010; Topham & Moller, 2011) and high levels of stress (Garcia-Williams, Moffitt, & Kaslow, 2014; Lee, Wuertz, Rogers, & Chen, 2013; Robinson, Jubenville, Renny, & Cairns, 2016; Wyatt & Oswalt, 2013). In several studies, students were shown to have significantly worse emotional health and higher distress levels when compared to the general population (Bernhardsdottir, Vilhjalmsson, & Champion, 2013; Stallman, 2008; Stewart-Brown et al., 2000). While one study conducted in the United States found there were no significant differences in the rates of psychiatric disorders observed between a sample of college students and their non-college attending peers, they reported that nearly half of their sample of students ( $n = 2,188$ ) had experienced a clinical mental illness within the past year (Blanco et al., 2008).

These findings are consistent with the above-average stress levels observed among post-secondary students across Canada through the National College Health Assessment survey, conducted by the American College Health Association (2013; 2016). One longitudinal study explored Canadian post-secondary students’ stress levels over the course of a semester, finding that stress and symptoms of distress peaked in December, falling over the course of the second semester (Barker, Howard, Villemare-Krajden, & Galambos, 2018). Several specific sources of stress were identified in the academic literature and are discussed below.

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**Table 2**  
**Articles in Stress/Distress Thematic Category, Chronological Order**

Author	Year	Country	Study Design	Sample
Stewart-Brown et al.	2000	UK	Analytic (Cross-sectional)	1,208
Hampton and Roy	2002	Canada	Analytic (Qualitative)	18
Oswald and Clark	2003	USA	Analytic (Longitudinal)	137
Monk et al.	2004	UK	Descriptive	210
Offstein et al.	2004	USA	Analytic (Qualitative)	16
Pillay	2005	USA	Analytic (Cross-sectional)	136
Amar and Gennaro	2005	USA	Analytic (Cross-sectional)	863
Dusselier et al.	2005	USA	Descriptive	462
Amar	2006	USA	Analytic (Cross-sectional)	601
Schwartz	2006	USA	Analytic (Longitudinal)	3,400
Hyun et al.	2007	USA	Analytic (Cross-sectional)	3,121
Buote et al.	2007	Canada	Analytic (Mixed Methods)	1,845
Young et al.	2007	USA	Analytic (Cross-sectional)	406
Tremblay et al.	2008	Canada	Analytic (Cross-sectional)	1,174
Nelson et al.	2008	USA	Analytic (Cross-sectional)	3,206
Gollust et al.	2008	USA	Analytic (Cross-sectional)	2,843
Stallman	2008	Australia	Analytic (Cross-sectional)	384
Ruthig et al.	2009	USA	Analytic (Longitudinal)	288
Iturbide et al.	2009	USA	Analytic (Cross-sectional)	148
Próspero and Kim	2009	USA	Analytic (Cross-sectional)	676
Storrie et al.	2010	Australia	Review (Systematic)	—
Tosevski and Milovancevic	2010	Global	Review	—
Lindsay	2010	Canada	Editorial	—
Yoon et al.	2010	USA	Analytic (Cross-sectional)	410
Bjorklund et al.	2010	Finland	Analytic (Cross-sectional)	905
Cairns	2010	Canada	Descriptive	2,943
Topham and Moller	2011	UK	Analytic (Longitudinal)	117
Welle and Graf	2011	USA	Analytic (Cross-sectional)	459
Ruzek et al.	2011	USA	Analytic (Cross-sectional)	601
Rickwood et al.	2011	Australia	Analytic (Cross-sectional)	603
Arria et al.	2011	USA	Analytic (Cross-sectional)	158
Currie et al.	2012	Canada	Analytic (Mixed Methods)	60
Byrd and McKinney	2012	USA	Analytic (Cross-sectional)	2,203
Keyes et al.	2012	USA	Analytic (Cross-sectional)	5,689
Dinh et al.	2013	USA	Analytic (Cross-sectional)	495
O'Keeffe	2013	Australia	Review	—

**Table 2, continued**  
**Articles in Stress/Distress Thematic Category, Chronological Order**

Author	Year	Country	Study Design	Sample
Nakashima et al.	2013	Japan	Analytic (Cross-sectional)	163
Paul et al.	2013	USA	Analytic (Cross-sectional)	2,000
Lee et al.	2013	USA	Analytic (Cross-sectional)	103
Kruisselbrink Flatt	2013	Canada	Editorial	—
Whitton et al.	2013	USA	Analytic (Cross-sectional)	889
Wyatt and Oswalt	2013	USA	Analytic (Cross-sectional)	27,387
Bernhardsdottir and Vilhjalmsón	2013	Iceland	Descriptive	1,986
Ketchen et al.	2014	USA	Analytic (Cross-sectional)	43,210
Jordan et al.	2014	USA	Analytic (Longitudinal)	750
Garcia-Williams et al.	2014	USA	Analytic (Cross-sectional)	301
Gallagher	2015	USA	Analytic (Cross-sectional)	275
Brook and Willoughby	2015	Canada	Analytic (Longitudinal)	942
Lovell et al.	2015	Australia	Analytic (Cross-sectional)	751
Robertson et al.	2015	Canada	Analytic (Qualitative)	23/25*
Walsemann et al.	2015	USA	Analytic (Longitudinal)	4,643
Watson et al.	2015	Australia	Analytic (Cross-sectional)	614
Lederer et al.	2015	USA	Analytic (Cross-sectional)	70,068
Taliaferro and Muehlenkamp	2015	USA	Analytic (Cross-sectional)	16,044
Smith et al.	2015	USA	Analytic (Cross-sectional)	872
Durand-Bush et al.	2015	UK	Descriptive	469/647*
Holmes et al.	2016	Canada	Analytic (Cross-sectional)	1,964
Larson et al.	2016	USA	Analytic (Cross-sectional)	526
McFadden	2016	USA	Review	—
Luca et al.	2016	USA	Analytic (Cross-sectional)	26,457
Valerio et al.	2016	USA	Analytic (Cross-sectional)	14,870
Burke et al.	2016	USA	Analytic (Cross-sectional)	155
Hawley et al.	2016	USA	Analytic (Cross-sectional)	2,049
Adams et al.	2016	USA	Analytic (Cross-sectional)	157
Robinson et al.	2016	Canada	Analytic (Cross-sectional)	400
Ridner et al.	2016	USA	Analytic (Cross-sectional)	568
Holmes and Silvestri	2016	Canada	Analytic (Cross-sectional)	1,964
Villatte et al.	2017	Canada	Analytic (Cross-sectional)	389
Lederer	2017	USA	Editorial	—
Corona et al.	2017	USA	Analytic (Cross-sectional)	198
Vidourek	2017	USA	Analytic (Cross-sectional)	777
Richardson et al.	2017	UK	Analytic (Longitudinal)	454

**Table 2, continued**  
**Articles in Stress/Distress Thematic Category, Chronological Order**

Author	Year	Country	Study Design	Sample
Van Laethem et al.	2017	Netherlands	Analytic (Longitudinal)	44
Seemen et al.	2017	USA	Analytic (Cross-sectional)	2,583
Cramer et al.	2017	USA	Analytic (Cross-sectional)	572
McBeath et al.	2018	Canada	Analytic (Qualitative)	25
Karatekin	2018	USA	Analytic (Cross-sectional)	239
Deer et al.	2018	USA	Analytic (Cross-sectional)	549
Barker et al.	2018	Canada	Analytic (Longitudinal)	198/267*

\* Studies utilized more than one sample. All sample sizes are reported.



**Table 3**  
**Articles in Resilience Thematic Category, Chronological Order**

Author	Year	Country	Study Design	Sample
Davies et al.	2000	USA	Analytic (Qualitative)	49
Ey et al.	2000	USA	Analytic (Cross-sectional)	315
O'Hare	2001	USA	Analytic (Cross-sectional)	505
Lanier et al.	2001	USA	Analytic (Cross-sectional)	772
Givens and Tjia	2002	USA	Analytic (Cross-sectional)	194
Chang	2007	China	Analytic (Cross-sectional)	961
Rosenthal and Wilson	2008	USA	Analytic (Cross-sectional)	1,773
Salzer et al.	2008	USA	Analytic (Cross-sectional)	508
Yorgason et al.	2008	USA	Analytic (Cross-sectional)	266
Worley	2008	USA	Analytic (Qualitative)	8
Eisenberg et al.	2009	USA	Analytic (Cross-sectional)	5,555
Al-Krenawi et al.	2009	USA	Analytic (Cross-sectional)	716
Burris et al.	2009	US	Analytic (Cross-sectional)	353
Mattanah et al.	2011	USA	Review (Meta-analysis)	—
Hartley	2011	USA	Analytic (Cross-sectional)	605
Masuda and Boone	2011	USA	Analytic (Cross-sectional)	466
Crosby and Bossley	2012	USA	Analytic (Cross-sectional)	235
Gaspersz et al.	2012	Netherlands	Analytic (Cross-sectional)	2,266
Woodford et al.	2012	USA	Analytic (Cross-sectional)	114
Locke et al.	2012	USA	Review (Systematic)	—
Bilican	2013	Turkey	Analytic (Cross-sectional)	115
Czyz et al.	2013	USA	Analytic (Qualitative)	165
Rau et al.	2013	Germany	Review (Systematic)	—
McCaslin et al.	2013	USA	Descriptive (Case Series)	—
Mason et al.	2014	USA	Analytic (Cross-sectional)	670
Allen and Holder	2014	Canada	Analytic (Cross-sectional)	570
Stewart et al.	2014	Canada	Analytic (Cross-sectional)	187
Stebbleton et al.	2014	USA	Analytic (Cross-sectional)	58,017
Burlaka et al.	2014	Ukraine	Analytic (Mixed Methods)	42/29
Bonar et al.	2015	USA	Analytic (Cross-sectional)	1,439
Ness et al.	2015	USA	Analytic (Cross-sectional)	214
Pelts and Albright	2015	USA	Analytic (Cross-sectional)	702
Schonfeld et al.	2015	USA	Analytic (Cross-sectional)	173
Rückert	2015	Germany	Review (Commentary)	—
Knowlden et al.	2016	USA	Analytic (Cross-sectional)	195
Barton and Hirsch	2016	USA	Analytic (Cross-sectional)	524

**Table 3, continued**  
**Articles in Resilience Thematic Category, Chronological Order**

Author	Year	Country	Study Design	Sample
Czyzewska and McKenzie	2016	USA	Analytic (Cross-sectional)	7,476
Beatie et al.	2016	Canada	Analytic (Cross-sectional)	486
Lannin et al.	2016	USA	Analytic (Cross-sectional)	370
Sontag-Padilla et al.	2016	USA	Analytic (Cross-sectional)	47,961
Oswalt et al.	2016	USA	Review (Commentary)	—
Currier et al.	2016	USA	Analytic (Cross-sectional)	3,780
Kim and Zane	2016	USA	Analytic (Cross-sectional)	656
Edkins et al.	2017	Canada	Analytic (Cross-sectional)	507
Metzger et al.	2017	USA	Analytic (Cross-sectional)	1,027
Blavos et al.	2017	USA	Review (Systematic)	—
Kaur and Martin	2017	Australia	Analytic (Cross-sectional)	260
Niv and Bennett	2017	USA	Analytic (Qualitative)	71
Williston and Roemer	2017	USA	Analytic (Cross-sectional)	87
Levin et al.	2018	USA	Analytic (Cross-sectional)	200
Rafal et al.	2018	USA	Analytic (Cross-sectional)	1,242

**Table 4**  
**Articles in Programs/Interventions Thematic Category, Chronological Order**

Author	Year	Country	Study Design	Sample
Davidson and Beck	2006	USA	Analytic (Cross-sectional)	373
Veesser and Blakemore	2006	USA	Descriptive (Case Study)	—
Adams et al.	2007	USA	Analytic (Cross-sectional)	22,073
Li et al.	2009	China	Analytic (Cross-sectional)	277
Currie et al.	2010	USA	Analytic (Qualitative)	10
Kalthaler	2010	USA	Descriptive (Case Series)	—
Washburn and Mandrusiak	2010	Canada	Descriptive (Case Study)	—
Davies et al.	2010	USA	Descriptive (Case Series)	—
Chung et al.	2011	USA	Analytic (Longitudinal)	801
Orzech and Salafsky	2011	USA	Analytic (Mixed Methods)	4,513
Conley et al.	2013	USA	Review (Scoping)	—
Stanton et al.	2013	Canada	Descriptive	690
Bell	2013	Canada	Descriptive	77
Day et al.	2013	USA	Experimental (RCT)	66
Bergen-Cico et al.	2013	USA	Quasi-Experimental	119
Heck et al.	2014	Canada	Analytic (Cross-sectional)	45
Dell et al.	2015	Canada	Mixed Methods	419/87
Bodenlos et al.	2015	USA	Analytic (Cross-sectional)	310
Levin et al.	2015	USA	Quasi-Experimental	112
Rawana et al.	2015	Canada	Mixed Methods	12
Beck et al.	2015	USA	Analytic (Longitudinal)	29
Windhorst and Williams	2015	Canada	Analytic (Qualitative)	12
King et al.	2015	USA	Experimental (RCT)	76
Rose et al.	2015	Canada	Descriptive	194
Jaworska et al.	2016	Canada	Analytic (Cross-sectional)	274
DiPlacito-DeRango	2016	Canada	Review (Commentary)	—
Armstrong and Burcin	2016	USA	Descriptive	63
Fernandez et al.	2016	Australia	Review (Systematic)	—
Ekore et al.	2016	Nigeria	Quasi-Experimental	20
Windhorst and Williams	2016	Canada	Review (Commentary)	—
Brewerton and Woolley	2016	USA	Descriptive (Case Series)	—
Montagni et al.	2016	Spain	Descriptive	600
De Somma et al.	2017	Canada	Analytic (Cross-sectional)	274
Cornish et al.	2017	Canada	Descriptive (Case Series)	—
Poole et al.	2017	Canada	Mixed Methods	997/1,444
Muckle and Lasikiewicz	2017	Singapore	Quasi-Experimental	62

**Table 4, continued****Articles in Programs/Interventions Thematic Category, Chronological Order**

Author	Year	Country	Study Design	Sample
Kerrigan et al.	2017	USA	Analytic (Qualitative)	13
Johnson et al.	2017	USA	Analytic (Cross-sectional)	257
Burrows	2017	USA	Analytic (Qualitative)	28
Cunningham et al.	2017	USA	Analytic (Cross-sectional)	909
Delgado et al.	2018	USA	Analytic (Cross-sectional)	48
Bilodeau and Meissner	2018	Canada	Quasi-Experimental	289

**Adjustment to Post-Secondary Lifestyle.** During their adjustment to the post-secondary setting, students experience a variety of changes to their environment in addition to an increase in academic expectations and workload. Stress related to adjustment is associated with parental relationships (Burke, Ruppel, & Dinsmore, 2016), engagement in unhealthy behaviours (Lovell, Nash, Sharman, & Lane, 2015), and changes in students' sense of academic control (Ruthig, Haynes, Stupnisky, & Perry, 2009). While traditionally, emerging adulthood is marked by a lessening of parental influence in favour of peer influence (Arnett, 2000), Burke and colleagues (2016) found that students' daily happiness was positively associated with daily communication and openness with their parents. Similarly, students under greater stress who engaged less with their parents, reported a greater degree of loneliness. In another study, students who reported poor sleep patterns, skipping meals, and a lack of physical activity were more likely to report symptoms of mental illnesses (Lovell et al., 2015). A large, cross-sectional study also found that students with the worst sleep patterns had the poorest self-reported health, while sleep quality decreased as stress or alcohol consumption increased (Valerio, Kim, & Sexton-Radek, 2016). Conversely, healthful behaviours, such as getting enough sleep, engaging in regular physical activity, and eating a balanced diet have been linked to reductions in stress (Welle & Graf, 2011) and improved well-being (Ridner, Newton, Staten, Crawford, & Hall, 2016). Finally, students' sense of mastery over their future was revealed to be an important component of a successful adjustment. Ruthig and colleagues (2009) found that students who perceived greater levels of academic control reported lower stress levels and better overall mental health. While individual characteristics, such as self-efficacy and optimism can be difficult to improve or change, perceived academic control is a factor that may be enhanced through intervention, presenting an opportunity for future consideration in the development of stress management programs for students.

**Academics.** Academic stressors pose a unique and complex challenge with respect to students' mental health due to the potential for bidirectional causality: Academic stress is associated with poor mental health outcomes, but poor mental health has also been associated with poor academic performance and a reduction in student success (Holmes & Silvestri, 2016; Larson, Orr, & Warne, 2016; Luca et al., 2016; McFadden, 2016). Management of academic demands is one of the most commonly cited sources of student stress (Cairns, Massfeller, & Deeth, 2010; Kruisselbrink Flatt, 2013; Robinson et al., 2016). First-year students, in particular, often experience significant changes to both the quantity and difficulty of their academic workload, in addition to higher expectations for preparedness and individual management of priorities. Students have identified a number of academic stressors, including the amount of coursework or research (Monk, 2004; Offstein, Larson, Mcneill, & Mwale, 2004; Stewart-Brown et al., 2000), lack of time to complete assignments (Monk, 2004), difficulty of course content (Monk, 2004), test anxiety (Tosevski & Milovancevic, 2010), fear of failure (Monk, 2004; Villatte, Marcotte, & Potvin, 2017), lack of motivation (Monk, 2004), and an inability to concentrate (Welle & Graf, 2011).

While graduate students are typically thought of as being more "hardy" than undergraduates, several studies captured by this review reported a high prevalence of distress among this population of students (Garcia-Williams et al., 2014; Van Laethem, Beckers, Dijksterhuis, & Geurts, 2017; Wyatt & Oswalt, 2013). In 2013, Wyatt and Oswalt conducted a large cross-sectional study of post-secondary students' self-reported mental health among a sample of over 27,000 undergraduate and graduate students in the United States. While graduate students reported lower rates of mental illness, they reported higher stress levels than their

undergraduate counterparts (Wyatt & Oswalt, 2013). Academic stressors reported by graduate students tend to pertain more to the completion of milestones in graduate programs, including dissertation research, writing, and defence (Offstein et al., 2004; Van Laethem et al., 2017).

**Campus culture.** A successful transition to the post-secondary setting is often discussed in the context of positive academic outcomes, but evidence suggests that social integration into the campus culture and social space is also a key component of students' ability to thrive (Brook & Willoughby, 2015). Campus culture has been consistently linked to students' psychological health and well-being, with negative perceptions or experiences with campus culture predicting less favourable health outcomes.

Unfortunately, many students belonging to ethnic minorities continue to report experiences of racism on campus, particularly Indigenous students (Currie, Wild, Schopflocher, Laing, & Veugelers, 2012; Hampton & Roy, 2002; Lindsay, 2010). This may provide a partial explanation for why students identifying as ethnic minorities consistently report higher stress levels and poorer mental health than their counterparts (Hawley et al., 2016; Locke, Bieschke, Castonguay, & Hayes, 2012). In fact, one study found prejudicial attitudes (including both racism and sexism) contributed to the prediction of depression among undergraduate students in the United States (Dinh, Holmberg, Ho, & Haynes, 2013). Additionally, several studies have suggested that the Eurocentric modes of thought in the North American post-secondary systems contribute to a diminishing sense of belonging on campus for international students (Hyun, Quinn, Madon, & Lustig, 2007; Robertson, Holleran, & Samuels, 2015), Indigenous students (Robertson et al., 2015), and students belonging to ethnic minorities (Corona et al., 2017; Iturbide, Raffaelli, & Carlo, 2009; Pillay, 2005; Ruzek, Nguyen, & Herzog, 2011). A sense of campus community, or belongingness, has been shown to be an important predictor of students' overall well-being in terms of both psychological health and social support among students in the United States (Dinh et al., 2013; Ketchen, Gaddis, Heinze, Beck, & Eisenberg, 2015), Canada (McBeath, Drysdale, & Bohn, 2018), Australia (O'Keeffe, 2013), and Japan (Nakashima, Isobe, & Ura, 2013). In fact, one study found that sense of belongingness was a critical factor in improving student retention in post-secondary institutions across Australia (O'Keeffe, 2013).

Another component of campus culture comprises students' perceptions of safety, which are influenced by experiences of sexual assault (Jordan, Combs, & Smith, 2014; Paul et al., 2013; Yoon, Funk, & Kropf, 2010), stalking (Amar, 2006), physical and emotional abuse (Vidourek, 2017), intimate partner violence (IPV; Amar & Gennaro, 2005; Bjorklund, Hakkanen-Nyholm, Huttunen, & Kunttu, 2010; Próspero & Kim, 2009), and pressure to engage in substance use in social settings (Rickwood, George, Rhian, & Mikhailovich, 2011). Female and male students tend to experience different safety concerns, with females more frequently reporting sexual harassment or assault, IPV, and emotional abuse, and males more frequently reporting physical assault, and substance use with the related safety concerns (American College Health Association, 2016; Rickwood et al., 2011). Safety concerns on campus have been linked to reduced academic performance and poor mental health (Jordan et al., 2014; Próspero, 2009; Rickwood et al., 2011; Tremblay et al., 2008).

**Concern for the future.** For many students, concern for the future is a substantial source of stress. One study found that concern about securing a career post-graduation was one of the most common reasons Canadian post-secondary students sought help from campus counselling centres (Cairns et al., 2010). Another study found that anxiety surrounding concern for the future had a significant impact on students' career-related self-efficacy and job-seeking intentions (Deer, Gohn, & Kanaya, 2018). Many students have

reported feeling a constant pressure to succeed (Villatte et al., 2017), as well as concern about their acceptance into graduate school or a professional program of their choosing (e.g., law, medical school). For graduate students, concerns for the future go beyond securing a job (though this continues to be a substantial source of stress) and into the realm of family planning and achieving a work-life balance (Wyatt & Oswalt, 2013). Graduate students often report struggling with fulfilling multiple roles in their lives (e.g., student, parent, spouse, friend, etc.; Offstein et al., 2004).

**Financial strain.** Students have cited work-related problems and financial concerns as significant sources of stress (Kruisselbrink Flatt, 2013; Richardson, Elliott, Roberts, & Jansen, 2017; Stewart-Brown et al., 2000). Many students are required to balance their studies with part-time work in order to pay for expenses, often acquiring large student loans to offset costs, resulting in stress surrounding looming loan payments following graduation (Richardson et al., 2017; Walsemann, Gee, & Gentile, 2015). Additionally, mounting credit card debt has also been associated with increased stress and negative health outcomes among post-secondary students (Nelson, Lust, Story, & Ehlinger, 2008). While financial difficulty has been linked to increased stress levels and poor mental health outcomes among post-secondary students (Richardson et al., 2017; Watson, Barber, & Dziurawiec, 2015), financial confidence is associated with students' positive emotional well-being (Adams, Meyers, & Beidas, 2016; Hyun, Quinn, Madon, & Lustig, 2006; Lederer, Autry, Day, & Oswalt, 2015; Walsemann et al., 2015).

**Relationships.** Particularly for young post-secondary students, the loss of frequent socialization with childhood friends has been linked to emotional distress, and can sometimes lead to decreased interest in forming new relationships (Oswald & Clark, 2003). Buote and colleagues (2007) refer to this emotional response to the loss of old friends as "friendsickness." In many cases, the weakening of these relationships results in the loss of an outlet where one can comfortably socialize and relieve stress. Losing this source of social support can be challenging, particularly for more introverted students who may be less comfortable attempting to form new friendships in a new environment. In addition to missing old friends, students may also struggle with distance from their parents and family home. In one study, students identified spending less time with parents as having a negative impact on their stress levels (Welle & Graf, 2011). Difficulty navigating life with roommates for the first time has also been identified as a source of stress (Dusselier, Dunn, Wang, Shelley, & Whalen, 2005; Welle & Graf, 2011).

The link between relationships and students' stress extends beyond platonic friendships and into romantic relationships. While one study in the United States found that involvement in a committed relationship had a protective effect on students' well-being (Whitton, Weitbrecht, Kuryluk, & Bruner, 2013), a Canadian study found that students often sought help from campus counselling centres due to relationship concerns (Cairns et al., 2010).

## Measuring Distress

According to findings from the 2016 NCHA survey, the most prevalent diagnosed mental illnesses among Canadian post-secondary students were anxiety (18%) and depression (15%), with about one fifth of students reporting a lifetime diagnosis of depression (American College Health Association, 2016). These findings are consistent with previous research investigating clinical levels of mental distress among Canadian



post-secondary students (Holmes & Silvestri, 2016; Robinson et al., 2016), and are comparable to rates of past 12-month formal anxiety and depression diagnoses among students in the United States (22% and 18%, respectively; American College Health Association, 2017). It is noteworthy that the estimated prevalence of professional diagnoses for mental illnesses were often lower than the prevalence of self-reported symptoms of these disorders. For example, while less than 15% of students reported being diagnosed or treated for depression on the NCHA survey, nearly 45% reported feeling “so depressed it was difficult to function” within the past 12 months (American College Health Association, 2016). While it is difficult to draw definitive conclusions, we may consider that this apparent disparity between mental illnesses and their official diagnoses may be explained by the following: (a) students are not seeking professional help for their mental health problems; (b) the self-report instruments used are not sensitive or specific enough, or are otherwise invalid; (c) students are overestimating their symptoms and are not truly experiencing a clinical level of distress; or (d) students are experiencing substantial barriers to reaching out for help for mental health related challenges.

Suicidal thoughts and behaviours (e.g., self-injury) constitute the most severe forms of distress. In Canada, prevalence estimates are available for past 12-month self-injury (8.7%), serious consideration of suicide (13%), and suicide attempts (2.1%) among post-secondary students, though there is currently no national compilation of completed suicides among this population (American College Health Association, 2016). These estimates for self-injury are slightly higher than those reported in the United States literature, which report a prevalence ranging from 3% to 7% (Gollust, Eisenberg, & Golberstein, 2008; Taliaferro & Muehlenkamp, 2015), with males and females reporting different triggers.

Male students more often attributed academic competition, financial pressure, and workload to suicidal thoughts, whereas female students identified family pressure, heartbreak, and mental health challenges as the main contributors (Seeman, Reilly, & Fogler, 2017). In the same study, experiences of isolation, marginalization, and substance abuse predicted suicidal thoughts equally across sexes (Seeman et al., 2017). Estimates of suicidal thoughts among post-secondary students range widely in the literature. Across three samples of post-secondary students in the United States, self-reported lifetime prevalence of suicidal thoughts ranged from 5.8% to 36% (Gollust et al., 2008; Keyes et al., 2012; Seeman et al., 2017). Subpopulations considered to be at increased risk for suicidal thoughts and behaviours include members of the LGBTQ community, female students, and non-Caucasian students (Cramer, La Guardia, Bryson, & Morgan, 2017; Seeman et al., 2017; Smith et al., 2015; Taliaferro & Muehlenkamp, 2015). Perhaps even more concerning is the lack of help-seeking behaviours observed among post-secondary students experiencing suicidal thoughts. In a study of health-risk behaviours, surveying over 1,200 first-year undergraduate students in the United States, nearly half (44%) of individuals who experienced suicidal thoughts since the start of college indicated that they had not pursued treatment (Arria et al., 2011).

The question of whether or not the prevalence or degree of distress has worsened among students over the past few decades is frequently debated. For example, Gallagher’s annual National Survey of College Counseling Centers in the United States appeared to show an increase in the prevalence of students seeking help for mental health problems between 2002 and 2014 (Gallagher, 2015). In the most recent edition of the survey, nearly 94% of campus counselling centre directors indicated that they felt there had been an increase in students arriving at counselling centres with serious psychological problems over the past few years (Gallagher, 2015). Additionally, the majority of respondents reported administrative challenges such as



the growing demand for services without an appropriate increase in resources (70%), balancing the varying demands for counsellor's services (70%), distributing the centre's workload fairly among staff (33%), and developing strategies for keeping the wait list down (30%), indicating a consistently heavy workload for college counselling centres (Gallagher, 2015). In contrast, a study conducted in the United States followed 3,400 campus counselling centre clients over a 10-year period and found that students' distress levels had not increased (Schwartz, 2006). However, an increase in the use of medication over time and a greater level of acceptance of medication use among students was observed. Though this study was bound to a single post-secondary campus, these findings reflect those observed at the national level among post-secondary students in the United States (Gallagher 2015). While it appears that prevalence estimates are increasing, it is difficult to determine whether more students are truly experiencing symptoms of distress than before, or whether improvements in the destigmatization of mental illnesses have led to increases in the number of students seeking help, creating an artificial increase in prevalence.

### Student Resilience

Whether or not stress devolves into distress (or mental illness) depends largely on a student's resilience, or their ability to withstand daily stressors and negotiate their environment. The literature revealed elements of student resilience spanning individual characteristics (e.g., Flynn & Chow, 2017), impact of family dynamics (e.g., Karatekin, 2018; Mattanah, Lopez, & Govern, 2011), methods of coping (e.g., Byrd & McKinney, 2012), and help-seeking attitudes and behaviours (e.g., Rosenthal & Wilson, 2008).

**Individual characteristics.** At the individual level, resilience is determined by three main factors: genetic vulnerability (e.g., family history of a mental illness), psychological vulnerability (e.g., self-esteem, social support, coping skills), and sociodemographic vulnerability (e.g., socioeconomic status; Zuckerman, 1999). It is important to note that an individual's ability to develop resilience may also be influenced by larger, structural, or systemic factors that are outside of the individual's control, including access to appropriate supports and resources. A resilient individual may be able to effectively manage stress without experiencing a negative health outcome (i.e., mental illness), while a more vulnerable individual may not. Personal characteristics such as sense of self-efficacy, tenacity, hardiness, and optimism all contribute to a student's belief in their own ability to manage and work through stressful periods, and have been linked to better academic outcomes (Burris, Brechting, Salsman, & Carlson, 2009; Flynn & Chow, 2017; Hartley, 2011; Knowlden, Hackman, & Sharma, 2016).

Family dynamics have also been linked to students' resilience. A meta-analysis explored the relationship between parental attachment and students' adjustment to post-secondary life across 156 published studies, finding that attachment to one's parents was significantly related to better adjustment, both in terms of cultivating social relationships with others as well as individual growth (e.g., greater self-worth and sense of academic ability; Mattanah et al., 2011). Conversely, negative family dynamics have been linked to poorer adjustment and negative psychological well-being. Two studies found that adverse childhood experiences were predictive of declining mental health among students (Karatekin, 2018; Young, Harford, Kinder, & Savell, 2007), while a lack of warmth and encouragement of autonomy from parents was associated with symptoms of depression in first-year undergraduate students in Canada (Villatte et al., 2017). In fact, permissive parenting (characterized by over-responsiveness to a child's needs, enabling, and overindulgence)

was found to hinder students' ability to be independent, as well as leading to academic entitlement (Barton & Hirsch, 2016). Academic entitlement, or the belief that one is owed more in the academic setting than is deserved, has been associated with symptoms of depression and negative well-being (Barton & Hirsch, 2016).

**Coping.** The ability to cope is a major component of overall resilience. The use of healthy coping mechanisms can help students negotiate stressors encountered in the post-secondary setting. Coping mechanisms are the resources used to attempt to manage feelings of stress, and can be employed in both adaptive (positive) and maladaptive (negative) ways (Taylor & Stanton, 2007). One study found that students' abilities to use effective coping mechanisms had the largest influence on mental disorders and produced the greatest change in mental health outcomes (Byrd & McKinney, 2012).

Positive coping mechanisms are generally healthful behaviours, marked by "taking direct action or confronting emotional responses to a stressor" or problem (Taylor & Stanton, 2007, p. 378). These include seeking social support from friends or family, looking for constructive solutions to the issue (e.g., increasing the time spent studying), or seeking help from a mental health professional. While academic integration is a key component of students' successful adjustment to post-secondary life, social integration can be just as important, contributing to students' "interpersonal" resilience (Hartley, 2011). One study found that students who felt close to their peers were at decreased risk for symptoms of distress (Mason, Zaharakis, & Benotsch, 2014). Negative methods of coping are less constructive and are less likely to culminate in a resolution to the problem, often "marked by avoidance, such as withdrawal or denial" (Taylor & Stanton, 2007, p. 378). Methods of avoidance, such as binge drinking alcohol (Czyzewska & McKenzie, 2016; Edkins, Edgerton, & Roberts, 2017; Metzger et al., 2017; O'Hare, 2001) and the use of substances, including cannabis (Allen & Holder, 2014; Blavos et al., 2017), have often been cited as negative coping mechanisms used by students to temporarily "forget" about the daily stresses that come along with post-secondary life (Lanier, Nicholson, & Duncan, 2001).

**Help-seeking.** A 2008 study of first-year students in the United States showed that over three quarters of those who reported clinically significant levels of distress had not received counselling (Rosenthal & Wilson, 2008). In another study, 63% of post-secondary students surveyed at a mid-sized Canadian university reported that they had not sought help, despite experiencing a need for mental health care (Stewart et al., 2014). In a study of Canadian students' help-seeking preferences, factors included the cost of treatment, the healthcare provider's training and experience, information about where the treatment would take place, and the time of day during which appointments were scheduled (Stewart et al., 2014). Students have also identified a number of barriers to seeking help, including the associated stigma (Beatie, Stewart, & Walker, 2016; Eisenberg, Downs, Golberstein, & Zivin, 2009; Lannin, Vogel, Brenner, Abraham, & Heath, 2016; Levin, Krafft, & Levin, 2018; Salzer, Wick, & Rogers, 2008); concerns about confidentiality (Davies et al., 2000; Givens & Tjia, 2002); lack of time (Bilican, 2013; Czyz, Horwitz, Eisenberg, Kramer, & King, 2013; Davies et al., 2000; Stebleton, Soria, & Huesman, 2014; Yorgason, Linville, & Zitzman, 2008); not believing the problem warranted professional help (Arria et al., 2011; Bilican, 2013; Czyz et al., 2013; Davies et al., 2000; Salzer et al., 2008); uncertainty that professional help will be beneficial (Davies et al., 2000); as well as indicating a preference for relying on other sources of support, including family and friends (Bilican, 2013; Burlaka, Churakova, Aavik, Staller, & Delva, 2014; Cunningham et al., 2017), or managing the problem themselves (Bilican, 2013; Burlaka et al., 2014; Czyz et al., 2013; Davies et al., 2000; Levin et al., 2018).

Several studies have found a relationship between the severity of distress and the likelihood of seeking professional help (Arria et al., 2011; Beatie et al., 2016; Garcia-Williams et al., 2014; Rosenthal & Wilson, 2008; Sontag-Padilla et al., 2016; Yorgason et al., 2008). In fact, previous experience with, or exposure to, a mental illness has been linked to greater intentions to seek help (Beatie et al., 2016; Salzer et al., 2008). A greater awareness of the mental health services available to students on campus and a higher level of mental health literacy have each been linked to greater intentions to seek help (Levin et al., 2018; Stebleton et al., 2014). While awareness of available services does not necessarily lead to help-seeking behaviours, a lack of such knowledge has been shown to prevent help-seeking (Beatie et al., 2016).

Several predictors of students' help-seeking attitudes and behaviours have been reported in the literature. Across ethnicities, ages, and levels of study, female students have shown more positive attitudes toward help-seeking than males, as well as more positive help-seeking behaviours (Chang, 2007; Crosby & Bossley, 2012; Masuda & Boone, 2011; Yorgason et al., 2008). Conversely, male students have expressed a strong reluctance to seek help for mental health-related challenges, and report intense stigmatization associated with men's emotional health (Davies et al., 2000; Eisenberg et al., 2009; Rafal, Gatto, & DeBate, 2018). Several studies have indicated that older students have a greater likelihood of becoming a help-seeking relative to their younger classmates (Al-Krenawi, Graham, Al-Bedah, Kadri, & Schwail, 2009; Bilican, 2013; Cankaya & Duman, 2010; Sontag-Padilla et al., 2016; Yorgason et al., 2008). Significant differences have also been observed between undergraduate and graduate students, with graduate students reporting higher mental health literacy, and more positive attitudes towards help-seeking (Rafal et al., 2018; Sontag-Padilla et al., 2016).

Differences in help-seeking behaviours have also been observed by area of study, with one article finding that students studying in the sciences, technology, engineering, and mathematics (STEM) fields presented with lower overall mental health literacy than their peers (Rafal et al., 2018). This is consistent with other studies, which have shown that students in prestigious streams of study often worry about confidentiality and anonymity as well as the effect help-seeking for mental health-related challenges may have on their future careers (Givens & Tjia, 2002). Finally, there are a number of subpopulations within the post-secondary student population that face unique help-seeking challenges, including Indigenous students (Hampton & Roy, 2002; Rawana, Sieukaran, Nguyen, & Pitawanakwat, 2015), medical students (Ey, Henning, & Shaw, 2000; Gaspersz, Frings-Dresen, & Sluiter, 2012; Givens & Tjia, 2002; Kaur & Martin, 2017; Rau, Plener, Kliemann, Fegert, & Allroggen, 2013; Worley, 2008), LGBTQ students (Oswalt, Evans, & Drott, 2016; Woodford, Howell, Silverschanz, & Yu, 2012), and current or past military service members (Bonar, Bohnert, Walters, Ganoczy, & Valenstein, 2015; Currier, McDermott, & Sims, 2016; McCaslin, Leach, Herbst, & Armstrong, 2013; Ness, Middleton, & Hildebrandt, 2015; Niv & Bennett, 2017; Pelts & Albright, 2015; Schonfeld et al., 2015; Williston & Roemer, 2017). Lower mental health literacy (Rafal et al., 2018) and increased perceived stigma (Al-Krenawi et al., 2009; Chang, 2007; Eisenberg et al., 2009; Kim & Zane, 2016; Masuda & Boone, 2011; Sontag-Padilla et al., 2016) have also been observed among students belonging to ethnic minorities.

### **Programs and Interventions**

A number of programs and interventions have been developed to improve students' mental health. Most Canadian post-secondary institutions have a range of supports in place for students covering both mental health promotion and mental illness prevention; however, counselling services are generally limited,

follow-up procedures are uncommon, and complete diagnostic assessments using standardized tools are rare (Heck et al., 2014; Jaworska, De Somma, Fonseca, Heck, & MacQueen, 2016). Conley, Durlak, and Dickson (2013) reviewed 83 prevention programs for post-secondary students and found that the most common interventions were cognitive behavioural techniques (34%) psychoeducational programs (21%), relaxation strategies (16%), meditation techniques (10%), and mindfulness training (8%). Skills-oriented interventions with supervised practice were the most effective, with mindfulness interventions and cognitive behavioural interventions producing the greatest change in mental health outcomes. It is important to note that the quality of the research and the interventions varied from study to study. However, this research emphasizes the importance of preventive interventions for post-secondary populations, with the caveat that interventions should be embedded in systematic evaluation strategies. Generally, the programs and interventions designed for post-secondary institutions fall into two categories: structural frameworks and approaches or discrete interventions.

**Structural frameworks and approaches.** In (2016), Jaworska, De Somma, Heck and MacQueen surveyed 286 publicly funded post-secondary institutions included on the Universities Canada and Colleges and Institutes Canada websites regarding their mental health policies (96% responded). Across institutions, comprehensive mental health policies were scarce, particularly those that included mental health research and formal evaluation. One year earlier, DiPlacito-DeRango (2016) had noted that policies in Canadian post-secondary institutions were underdeveloped, identifying this as one of the major barriers to improving student mental health. In addition, DiPlacito-DeRango (2016) identified the stigma surrounding mental health and limited opportunities for mental health-related professional development and training to be a weakness of current institutional infrastructures. In response to these gaps, De Somma and colleagues (2017) recommended the development of a national framework outlining best practice policies for institutions to adopt. DiPlacito-DeRango (2016) recommended assigning responsibility for the development of student mental health policy to a specific individual, as well as improving training and awareness activities for students, faculty, and staff, with the ultimate goal of weaving attention to student mental health into the fabric of post-secondary institutions at every level (in the classroom, institutionally, and nationally).

One existing structural framework is the American College Health Association's "Healthy Campus 2020," an evidence-based framework containing tools and resources to address the broad health needs of post-secondary students (Armstrong & Burcin, 2016). The tool identifies five characteristics of a healthy campus that promote physical and mental health, recognizing that health is determined by factors at multiple levels, including public policy, community, institutional, interpersonal, and intrapersonal factors. Chung and colleagues' (2011) chronic collaborative care model is another example. This model of care requires coordination between physical and mental health providers on campus to systematically and proactively screen all students approaching services for depressive symptoms, a practice recommended to promote help-seeking among students (Davidson & Beck, 2006). Another example is the Stepped Care model, implemented with success in Atlantic Canada (Cornish et al., 2017). This approach, ultimately aiming to integrate mental health interventions into the post-secondary environment, contains nine steps along a continuum of intensity, from walk-in consultations and watchful waiting (the least intensive) to case management and referral to an acute or tertiary care facility (the most intensive). Stepped care, with its emphasis on rapid access, flexible session length, and reduced emphasis on pre-treatment assessment, involves a major change in the way providers, patients, and trainees think about mental health counselling and services.



Another example is found at Simon Fraser University, where researchers have adapted a framework originally developed for the workplace (*Guarding Minds @ Work*) to assess the stressors and supports available to university students (Stanton et al., 2013). Using this framework, nearly 700 students were surveyed, inquiring about areas in perceived need of improvement. The most prominent area in need of better support was student work-life balance, reflected in issues of workload management and stress. Another important theme was the extent to which students felt part of a supportive campus community. Further research is needed to explore whether workplace policies and structures that support work-life balance could be adapted to post-secondary settings.

Finally, at a broad structural level, many Canadian post-secondary institutions have incorporated a fall reading week into their term calendars in order to improve academic performance and enhance students' mental health. Poole and colleagues (2017) examined the effects of the fall reading week on student well-being, finding that while the majority reported a positive experience, many reported increased perceived stress following the break, with a portion considering the fall break to be a negative experience. After the break, students' perceived stressors were more focused on academic demands: having to meet deadlines (69%), having projects due (69%), and having a hard week ahead (67%). This suggests that institutions may want to implement additional interventions to increase the benefits of the fall break, such as reducing excessive evaluation density immediately after the break.

**Discrete interventions.** Although the academic literature calls for comprehensive mental health strategies, the majority of the studies reported examined discrete interventions. While these can become part of a comprehensive strategy, little guidance is provided on how to incorporate best-practice approaches into system level or structural change and systematically monitor their effects (Fernandez et al., 2016). These discrete interventions range widely, including animal therapy (Bell, 2013; Delgado, Toukonen, & Wheeler, 2018; Dell et al., 2015; Muckle & Lasikiewicz, 2017), counselling and skills development (Bilodeau & Meissner, 2018), mindfulness (Bodenlos, Wells, Noonan, & Mayrsohn, 2015; Kerrigan et al., 2017), online programs, (Currie, McGrath, & Day, 2010; Day, McGrath, & Wojtowicz, 2013; Levin, Pistorello, Hayes, Seeley, & Levin, 2015), social media campaigns (Johnson, Yilmaz, & Najarian, 2017), peer health education (Ekore, Ajuwon, Abdulmalik, Omigbodun, & Bella-Awusah, 2016; Li et al., 2009; Rawana et al., 2015), physical activity programs (Adams, Moore, & Dye, 2007; Beck, Seeman, Verticchio, & Rice, 2015), changes to the physical campus environment (Windhorst & Williams, 2015, 2016), sleep education (Orzech & Salafsky, 2011), and suicide prevention (Kalchthaler, 2010; King et al., 2015; Veaser & Blakemore, 2006; Washburn & Mandrusiak, 2010). Several interventions have also been developed to target specific subgroups within the post-secondary student population, including online students (Armstrong & Burcin, 2016) and male students (Davies, Shen-Miller, & Isacco, 2010). In addition to one-off programs such as these, there are multi-faceted programs which aim to tackle multiple components of student resilience, including combating isolation, bolstering well-being, and creating a stronger sense of belonging on campus by offering a range of activities that appeal to a wide variety of students (Brewerton & Woolley, 2016; Rose, Godfrey, & Rose, 2015).

Though each of these interventions is developed in an effort to improve students' well-being and resilience, many lack effectiveness data and formal evaluation. Furthermore, conflicting results are often found in the literature regarding the effectiveness of many of these intervention methods. For example, Bergen-Cicio, Possemato, and Cheon (2013) note that the standard time commitment required for benefits to be observed as

a result of mindfulness practice is substantial (eight weeks of 2.5 hour sessions), a commitment well beyond what many students can manage. An additional study found that mindfulness meditation was not necessarily a positive experience for students with a history of trauma, addiction, mental illness, or self-harm (Burrows, 2017). Similarly, social media-based initiatives can be beneficial due to their wide reach, yet there is a lack of research about the effects of exposure to health-related messages via social media (Johnson et al., 2017).

Finally, though e-mental health solutions are becoming increasingly popular, students' willingness to explore these options remains unclear. One study found that, despite the vast majority (93%) of students in their sample ( $n = 687$ ) reporting everyday use of the Internet for various reasons, only about half reported using the Internet to search for mental health-related information in their lifetime (Montagni et al., 2016). However, over three quarters of those who had sought mental health information on the Internet indicated that they did not trust the information they found, which may speak to students' attitudes towards the use of e-mental health solutions. In the same study, when students were asked whether they had frequented other e-mental health spaces, including discussion forums or online therapy support, the majority (88%) indicated that they had not (Montagni et al., 2016). Another study explored students' attitudes towards the use of e-mental health services to evaluate whether the gap in service use among student populations might be mitigated by e-solutions. Results showed that given no wait times for standard counselling, students would *not* use an e-mental health option, but their willingness to use an e-solution increased as wait times for standard counselling increased (Cunningham et al., 2017).

## CONCLUSION

This scoping review of the academic literature surrounding the mental health of post-secondary students revealed three overarching themes: (1) student stress and distress, (2) student resilience through effective coping and help-seeking behaviours, and (3) programs and interventions designed to improve post-secondary students' mental health. Students reported experiencing high levels of stress resulting in negative effects on their ability to succeed academically. Identified areas of stress went beyond the usual expected areas (e.g., academics), with students also identifying socio-environmental stressors within the campus setting, interpersonal stressors, and concern for the future following graduation. Anxiety and depression continue to be the most prevalent mental illnesses diagnosed among the post-secondary student population, accompanied by concerning prevalence estimates for self-reported suicidal ideation and self-injury.

Students' resilience was conceptualized as comprising individual characteristics (i.e., self-efficacy, optimism), the ability to cope, and help-seeking behaviours. It is important to note that an individual's ability to develop resilience may also be influenced by larger, structural or systemic factors that are outside of the individual's control, including access to appropriate supports and resources. Despite the substantial prevalence of poor mental health among post-secondary students, few reported the use of positive coping mechanisms, such as seeking formal help from a mental health professional, or informal support from family and friends. In fact, the literature revealed that successful integration into the campus social environment was a key predictor of students' well-being. Students identified a number of barriers to seeking help for mental health problems, expressing concerns about stigmatization and a lack of mental health literacy (i.e., not recognizing symptoms, or feeling as though the problem was not "serious enough" to warrant help-seeking). Students

also reported a strong preference for managing mental health problems on their own, only reaching out for professional help when and if the symptoms became serious.

Though many post-secondary institutions across Canada have mental health supports in place for students, there remain gaps in service delivery. Few institutions have developed comprehensive mental health strategies, with many reporting the use of discrete interventions. Furthermore, the majority of these discrete interventions have not been formally evaluated. Moving forward, the development of Canada's National Standard for the Psychological Health and Safety of Post-Secondary Students will provide institutions with the tools to develop comprehensive mental health strategies that are designed to meet their campus's unique needs.

This article has provided an extensive overview of the existing literature surrounding post-secondary students' mental health and well-being. To our knowledge, this is the only comprehensive, multi-disciplinary, and international scoping review of the literature in this area, providing a breadth of information for institutions seeking an overview of students' experiences with stress and distress as well as existing responses to the campus mental health crisis. Despite its strengths, there are some limitations to this research. Scoping reviews are designed to provide a broad overview of the state of research on a particular topic. As such, we have not conducted a critical appraisal of the quality of every article included in this review. The articles included in our review were restricted by the selection of English language documents, and are therefore largely from North America, the United Kingdom, and Australia, despite our attempts to conduct an international review of the literature. Additionally, because this review focused on the published academic literature, publication bias in the results is possible, and grey literature has been excluded.

Given the breadth of published data collected for the purposes of this review, the decision to exclude grey literature was made as a result of scope constraints. However, this exclusion has resulted in some gaps in the topics covered here. For example, though our search only produced a handful of articles that addressed the potential for e-mental health solutions among post-secondary student populations, digital options for health promotion and treatment are becoming increasingly popular. Unfortunately, as the use of e-mental health solutions remains fairly novel, few have had formal evaluations completed, and information on the efficacy and uptake of these services is therefore not frequently available in the published academic literature. The same can be said for many novel and potentially effective discrete interventions currently offered in post-secondary settings that were not captured in this review. Additionally, a review of the grey literature may provide a sense of the challenges and obstacles faced by some discrete interventions; this knowledge is arguably just as important as understanding why other interventions were successful. A review of the grey (unpublished) literature related to post-secondary mental health would be a valuable addition to the body of research currently surrounding post-secondary mental health and well-being and is highly recommended as an avenue for future research.

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