

Nonsuicidal Self-Injury in a Non-Western Country and among Ethnic/Racial Minority University  
Students in Canada

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### **Abstract**

Nonsuicidal self-injury (NSSI) refers to deliberate self-inflicted damage to one's own body tissue by methods such as cutting, scratching, and self-hitting that lead to immediate tissue damage without conscious suicidal intent and for reasons not socially sanctioned (Nock, 2010). Although NSSI is gaining attention as a universal clinical condition (American Psychiatric Association, 2013), the field of NSSI is dominated by research findings from White Western samples. As a result, individuals from non-Western cultures and ethnic/racial minorities in the West have remained understudied. The intent of this dissertation was to provide a more culturally nuanced understanding of NSSI focusing on a sample of ethnic/racial minority university students in Canada as well as on a sample of university students in Iran.

Manuscript 1 served as a literature review as it critically reviewed the empirical research on NSSI in non-Western countries and among ethnic/racial minority individuals who live in the West in order to better understand the patterns of NSSI among individuals who do not fall within the dominant White majority.

Manuscript 2 examined the prevalence, characteristics, and risk factors of NSSI as well as its relations to suicide attempt in a sample of university students in Tehran, Iran. The findings revealed a lifetime NSSI prevalence of 12.3% ( $n = 68$ ) and no gender differences. The results of a logistic regression analysis indicated higher levels of emotional awareness as a NSSI risk factor for females; however, no relationship was found between emotion dysregulation and a history of lifetime NSSI for male students. Finally, results of a separate logistic regression indicated lifetime NSSI engagement as a strong risk factor for suicide attempt above and beyond depressive symptoms and suicidal ideation across gender. These findings provided important new information about how NSSI manifests among university students in Tehran, Iran. The

results are also suggestive of the fact that the relation between NSSI and emotion dysregulation, documented in the West, might vary across cultures.

Manuscript 3 investigated the function of NSSI among a sample of university students in Iran who self-injured using the Inventory of Statements About Self-Injury (ISAS). Results of an exploratory factor analysis using the Bayesian estimation method revealed a three-factor model of NSSI functions including intrapersonal, social identification, and communication factors. These findings suggest different patterns of function of self-injury for university students in Iran, which are reflective of the sociocultural context of the study sample.

Shifting the focus, Manuscript 4 examined NSSI prevalence and gender differences across different racial/ethnic groups in a large university sample in Canada. Help-seeking, mental health service use, and cultural responses to NSSI were investigated among an ethnically/racially diverse sample of university students who report self-injury. Results revealed that Asian, Southeast Asian, White, and multiracial backgrounds were most at risk of NSSI. Additionally, qualitative content analysis yielded three categories of cultural responses to the students' NSSI: responses embedded in stigma towards NSSI and psychological issues, responses rooted in emotional reactions, and constructive responses. Implications for cultural differences in help seeking and attitudes towards NSSI were discussed.

Overall, the results of this dissertation contributed to narrowing the gap in the NSSI research literature regarding underrepresented non-White samples and revealed new patterns regarding NSSI function and risk factors. An intersectionality among sociocultural factors and NSSI was also identified and discussed.

## Résumé

L'automutilation est caractérisée par des blessures auto-infligées par des moyens tels que les coupures, les griffures et les cognements, provoquant des dommages immédiats sur ses propres tissus corporels, sans intention suicidaire consciente, ni pour des raisons acceptées socialement (Nock, 2010). Bien que le caractère universel de l'automutilation en tant que trouble clinique reçoive de plus en plus d'attention (American Psychiatric Association, 2013), les travaux de recherche qui dominent dans ce domaine sont réalisés sur des groupes de personnes occidentales caucasiennes. Par conséquent, les personnes de cultures non-occidentales et les minorités ethniques vivant dans le monde occidental, sont des populations moins bien étudiées. L'objet de cette thèse était d'apporter des nuances culturelles à la compréhension du phénomène d'automutilation, en se concentrant sur un échantillon d'étudiants universitaires au Canada, issus de minorités ethniques, ainsi qu'un échantillon d'étudiants universitaires en Iran.

Le premier article sert de recension de la littérature. En effet, il est une revue critique de la recherche empirique sur les automutilations dans les pays non-occidentaux et chez les personnes issues de minorités ethniques vivant dans le monde occidental, et il permet de mieux comprendre les mécanismes associés à l'automutilation chez les personnes qui ne font pas partie de la majorité dominante caucasienne.

Le deuxième article s'intéresse à la prévalence, aux caractéristiques et aux facteurs de risque des automutilations ainsi qu'à leurs liens avec les tentatives de suicide, dans un échantillon d'étudiants universitaires de Téhéran, en Iran. Les résultats ont montré une prévalence des automutilations au cours de la vie de 12.3% ( $n=68$ ) et aucune différence liée au genre. Les résultats de la régression logistique ont montré que, chez les femmes, mieux reconnaître ses émotions était un facteur de risque pour les automutilations ; aucun lien n'a été



identifié entre les troubles de la régulation émotionnelle et l'automutilation chez les hommes. Enfin, les résultats d'une deuxième régression logistique ont montré que pour les deux genres confondus, la pratique de l'automutilation était un facteur de risque important de tentative de suicide et plus important que les symptômes dépressifs et les idées suicidaires. Ces résultats ont fourni de nouveaux éléments importants à propos de la manifestation des automutilations chez les étudiants de Téhéran. Les résultats sont également révélateurs du fait que le lien entre les automutilations et les troubles de la régulation des émotions rapporté dans le monde occidental puisse varier en fonction des cultures.

Le troisième article évalue le rôle des automutilations dans un échantillon d'étudiants universitaires qui s'automutilent en Iran, à l'aide de l'inventaire d'énoncés sur l'automutilation (*Inventory of Statements About Self-Injury* ou *ISAS*, en anglais). Les résultats d'une analyse factorielle à caractère exploratoire utilisant une approche d'estimation bayésienne ont abouti à une modélisation du rôle des automutilations s'appuyant sur trois facteurs incluant les phénomènes d'identification sociale, d'identification intrapersonnelle et des facteurs de communication. Ces résultats suggèrent différents mécanismes associés au rôle des automutilations chez les étudiants universitaires en Iran, qui reflètent le contexte socioculturel de l'échantillon étudié.

Examinant un nouvel axe, le quatrième article, s'intéresse à la prévalence des automutilations et des différences de genre dans un grand groupe d'étudiants d'universités canadiennes provenant de différents groupes ethniques. La recherche d'accès aux soins, l'utilisation des services de santé mentale, et les réponses culturelles aux automutilations ont été examinées chez des personnes venant de divers groupes ethniques rapportant des automutilations. Les résultats ont montré que les asiatiques, les sud-asiatiques, les caucasiens et

les personnes multi-ethniques étaient les plus à risque d'automutilation. De plus, l'analyse qualitative des données ont indiqué trois catégories de réponses culturelles aux automutilations : des réponses ancrées dans la stigmatisation des automutilations et des problèmes psychologiques, des réponses enracinées dans les réactions émotionnelles, et des réponses constructives. Les implications des différences culturelles dans la recherche d'accès aux soins et les attitudes faces aux automutilations sont discutées.

En résumé, les résultats de cette thèse ont permis de pallier à la sous-représentation des échantillons non-caucasiens dans la littérature scientifique sur les automutilations et révélé de nouveaux schémas sur le rôle des automutilations et les facteurs de risque associés. Enfin, le phénomène d'intersectionnalité identifié concernant les facteurs socio-culturels et les automutilations est discuté.

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### **Contribution of Authors**

This dissertation contains five chapters and four manuscripts and is in accordance with the guidelines by the Faculty of Graduate and Postdoctoral Studies. I am the first author of all the manuscripts included in this dissertation and responsible for the conception, data collection, data analysis, as well as writing the manuscripts in full. All the manuscripts are co-authored by my primary supervisor, Dr. Nancy Heath who has provided guidance throughout all stages of the dissertation from conception and design to selection of instruments, collection, analysis and interpretation of data. She also provided editorial feedback throughout the work.

My co-supervisor, Dr. Jack De Stefano is also a co-author in the first and fourth manuscripts. He contributed into conception and design and provided editorial feedback. Dr. Leili Panaghi supported the data collection among the university students in Tehran and is a co-author on the second and third manuscripts. Guillaume Elgbeili provided statistical consult regarding data analysis of the third manuscript and is a co-author on the third manuscript. Dr. Liane Pereira provided feedback on qualitative data analysis on the fourth manuscript and also provided editorial comments and is a co-author on the third and fourth manuscripts.

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## INTRODUCTION

Eighteen years ago, Jeffery Arnett introduced a new developmental phase, emerging adulthood, as a distinct period of life-course between adolescence and adulthood that is, from eighteen to late twenties, characterized mainly by frequent change and independent exploration (Arnett, 2000). For many individuals, across the globe, emerging adulthood is a prolonged period of privilege to explore a wide range of opportunities in education, career, love life, and social and political perspectives; rehearsing and forming an identity without being preoccupied with adult roles and responsibilities (Arnett, 2000). However, the transition from adolescence to adulthood can be quite challenging for certain individuals. Indeed, late adolescence and emerging adulthood is the peak onset for many psychological disorders including depression, bipolar disorder, and substance use disorders (Berry, 2004; MacLeod & Brownlie, 2014). In Canada, emerging adults have the highest rates of anxiety symptoms and suicide is the second leading cause of death among this group (MacLeod & Brownlie, 2014). Results of a longitudinal study in Canada identified an increasing trajectory of depression from late adolescence to emerging adulthood characterizing this developmental phase as a high-risk period for some individuals (Edgerton, Shaw, & Roberts, 2018). Difficulty managing this critical developmental phase can, consequently, result in serious repercussions in adulthood (Schulenberg & Zarrett, 2006).

Within the recent years, nonsuicidal self-injury (NSSI) has become an concerning public health issue among emerging adults with up to 17% of university students in Canada endorsing lifetime NSSI engagement (Heath, Toste, Nedechewa, & Charlebois, 2008; Hamza & Willoughby, 2016; Kokaliari, Roy & Koutra, 2017; MacLeod & Brownlie, 2014). Nonsuicidal self-injury refers to deliberate self-inflicted damage to one's own body tissue that leads to immediate tissue destruction without conscious suicidal intent and for reasons not socially

sanctioned (Nock & Favazza, 2009). NSSI is one of the strongest predictors of suicide attempt as NSSI engagement increases the acquired capacity for suicide (May & Victor, 2018; Willoughby, Heffer, & Hamza, 2015). Historically, NSSI had been largely considered a symptom of borderline personality disorder (BPD), until research suggested a substantial incidence of self-injury without suicidal intent within community populations, notably high school and college students, that did not meet the criteria of BPD (Ross & Heath, 2002; Muehlenkamp, 2005). Currently, NSSI is clearly described in Section III of the DSM-5 as a separate clinical condition requiring further research (American Psychiatric Association, 2013). While North American researchers have widely used the term *nonsuicidal self-injury*, European researchers have adopted the term *deliberate self-harm* (DSH). The ICD-10 Classification of Mental Health and Behavioural Disorders discusses deliberate self-harm, which includes different methods of intentional self-harm such as self-poisoning and self-harm by sharp objects, as one of the external causes of morbidity and mortality. DSH is also mentioned in the context of depression and borderline personality disorder (World Health Organization, 1992). Therefore, DSH includes a broader range of self-harming behaviours such as self-poisoning which might not necessarily lead to immediate tissue damage and might include suicidal intent.

Over the last decades, the prevalence, characteristics, risk factors, and functions of NSSI among emerging adults have been extensively studied in countries where a majority of the population is of European descent such as the United States, Canada, European, and Australia (e.g., Glenn et al., 2018; Heath et al., 2008; Taliaferro & Muehlenkamp, 2015; Whitlock et al., 2013). In other words, the research literature on NSSI has been dominated by Western studies and samples from the majority culture. The dominance of White majority data in NSSI research literature has resulted in an underrepresentation of individuals from non-Western cultures and

ethnic minority groups in NSSI research literature putting the field at risk of the false generalization that results derived from White middle-class samples on prevalence, characteristics, and etiology of NSSI are universal (Gone & Kirmayer, 2010; Kirmayer, 2005). Therefore, there is an increasing need for inclusion of culturally novel samples in the current discourses regarding NSSI. Narrowing this gap in the literature is a focus of this dissertation. Therefore, the goal is that of increasing our knowledge about NSSI among emerging adults in Iran, a non-Western country, as well as ethnic minorities in Canada.

Although culturally constructed and influenced by the structural changes in industrialized societies, the concept of the new developmental phase of emerging adulthood has been also increasingly emerging in developing countries due to rapid globalization (Arnett, 2005). However, poverty, unemployment, and an uncertain future constitute the sociopolitical contexts of emerging adulthood in many of these countries. Iran is a developing country with a population of almost 80 million which has undergone rapid demographic, societal, and economic changes within the last decades (Roudi, Azadi, & Mesgaran, 2017). Up to 25% of the population in Iran are in their emerging adulthood phase, consisting of the largest age group, with 4.3 million of those individuals enrolled at universities (Roudi et al., 2017). Results of the national mental health survey in Iran indicate that emerging adults have the highest rate of any psychiatric disorder, compared to other age group (Sharifi et al., 2015). Indeed, 27% of females and 22% of males met the criteria of at least one psychiatric disorder within the past 12-month, with 12-month prevalence of 15.6% for any anxiety disorder and 15.6% for any mood disorder (Sharifi et al., 2015). These results reveal substantially higher rates of psychological disorder in Iran with high prevalence of anxiety and depressive disorders, compared to many other countries, with a possible increase in prevalence of depression between early 2000s and 2011 (Sharifi et al.,



2015). The high rates of depression and anxiety in Iran calls for attention, further research, and urgent response by policy makers and program planners.

Despite the high prevalence of psychological issues among emerging adults in Iran, to date, there is very limited knowledge regarding prevalence, characteristics, and etiology of NSSI among this population. Indeed, research suggests very different patterns of suicidal behaviours in Iran in terms of aetiology, gender differences, and other demographic factors (e.g., Panaghi et al., 2007; Sheikholeslami, Kani, & Ziaee, 2008). For instance, compared to the West, there seems to be substantially lower rates of psychiatric disorders involving cases of suicide attempt or completion, high rates of being physically or verbally assaulted shortly prior to suicidal acts, high prevalence of self-immolation as a suicide method among females, and higher rates of suicide among married woman compared to those who are single, recently separated, divorced, or widowed (Panaghi, Ahmadabadi, Peiravi, & Abolmasoomi, 2010; Panaghi et al., 2007; Sheikholeslami, Kani, & Ziaee, 2008). Considering the close relationship between suicidal behaviours and NSSI, investigating self-injury in Iran will provide valuable knowledge about NSSI for practitioners and policy makers in Iran and help to better conceptualize this phenomenon among the population. In addition, studying this phenomenon among Iranian youth may reveal new patterns regarding how NSSI expresses itself in different cultures and, as the result, contributes to a more contextualized understanding of NSSI based on a culturally novel sample.

As previously noted, this dissertation has a second focus which is on the study of ethnic/racial minority emerging adults who engage in NSSI. In fact, ethnic minority emerging adults might be particularly vulnerable during this transitional stage (Huynh & Fuligni, 2012). Compared to the majority, ethnic/racial minorities need to deal with the extra task of

constructing a bi-cultural identity while dealing with minority-related stressors such as experiencing discrimination in college years, notably in predominately White institutions (Brittian et al., 2015; Huynh & Fuligni, 2012; Neville, Heppner, Ji, & Thye, 2004; Stewart, 2015; Smith, Allen, & Danley, 2007). Indeed, recent research indicates that deliberate self-harm (DSH) is more prevalent among some ethnic minority groups compared to majority populations. In England, the differences in rates and characteristics of DSH and suicide among ethnic groups have been widely observed (Haigh, Kapur, & Cooper, 2014). For instance, in their systematic review, Bhui, McKenzie, and Rasul (2007) found higher rates of DSH among South Asian women compared to their White counterparts. Despite the high rates of self-harm, South Asian women were found to have the lowest rate of mental health service usage across ethnic groups (Haigh, Kapur, & Cooper, 2014). A more recent systematic review in England, also revealed clear ethnic differences with Black females more likely to self-harm (Al-Sharifi, Krynicki, & Upthegrove, 2015). They also found different patterns regarding contributing factors and DSH methods used cross ethnicities (Al-Sharifi et al., 2015). In summary, there appears to be sufficient research documenting the high prevalence of self-harming behaviours among some ethnic minority groups in Europe.

Although there has been some attention in Europe to the unmet needs of ethnic minority groups with high rates of self-harm, our knowledge about NSSI among ethnic minority emerging adults in North America is quite limited. In addition, not much is known regarding the service use of ethnic minority youth who self-injure, in spite of the fact that, in general, racialized immigrants and ethnic minorities in North America underutilize mental health services (Alegría et al., 2008; Lasser, Himmelstein, & Woolhandler, 2006). Results of a systematic review of studies conducted in Canada identified cultural stigma of mental illness as a barrier to service

utilization and emphasized the significance of cultural understanding of mental illness (Chaze, Thomson, George, & Guruge, 2015). Responding to the underrepresentation of ethnic minority emerging adults in the NSSI research literature, the second focus of this dissertation was to identify ethnic minority emerging adults who were at higher risk of NSSI and their mental health service use.

The overarching aim of the studies presented in this dissertation was to respond to the growing need in the NSSI research literature for culturally contextualized understandings of NSSI among a non-Western sample as well as a sample of ethnic minorities in Canada. This overarching goal was obtained through four separate manuscripts:

- Manuscript 1, *Nonsuicidal Self-injury across Cultures and Ethnic and Racial Minorities: A Review*, published in the *International Journal of Psychology*, is a systematic literature review of NSSI prevalence, characteristics, and functions among non-Western countries and ethnic/racial minorities. Manuscript 1 provides the literature review of this dissertation.
- Manuscript 2, *Nonsuicidal Self-injury in a Sample of University Students in Tehran, Iran: Prevalence, Characteristics and Risk Factors*, published in the *International Journal of Culture and Mental Health*, aimed to, first, investigate the prevalence, characteristics, and predictors of NSSI in a sample of emerging adults in Iran, and, second, examine the association between NSSI and suicide attempts (SA) and the interaction between NSSI/SA and gender. As previously stated, suicide studies in Iran have revealed different patterns of self-harming behaviours than in the West (e.g., Panaghi, Ahmadabadi, Peiravi, & Abolmasoomi, 2010; Sheikholeslami, Kani, & Ziaee, 2008). Considering the close relationship between suicide and NSSI, studying

nonsuicidal self-injury in Iran may reveal different patterns and deepen our understanding of NSSI in a non-Western culture.

- Manuscript 3, *Function of Nonsuicidal Self-Injury among Iranian University Students: A Factor Structure Analysis of the Inventory of Statements About Self-Injury (ISAS)*, currently submitted for publication, aimed to investigate the aetiology of NSSI among emerging adults in Iran by looking into function of NSSI among a sample of Iranian university students who self-injured. The sample of Manuscript 3 is a subset of the previous study focusing only on students who reported lifetime NSSI engagement.
- Manuscript 4, *Nonsuicidal Self-Injury, Mental Health Service Use, and Cultural Responses among Ethnically/Racially Diverse University Students*, currently under review for publication, aimed to examine the prevalence of NSSI among ethnic/racial minority individuals in a large sample of university students in Montreal and to investigate the effect of ethnicity/race on predicting NSSI incidence. It also examined service use and felt need to help-seek among the ethnic minorities. A complementary qualitative component was included to study the subjective experience of the students regarding cultural responses to their NSSI.

As a whole, the current dissertation responded to the increasing need to include ethnically/culturally underrepresented populations in the NSSI research literature and contributes to the literature by providing more culturally nuanced understanding of NSSI among individuals who did not fall into the dominant White cultures.

Chapter 1 includes Manuscript 1 and provides a systematic review of research literature relevant to the remaining studies. Chapter 2 and 3 present the second and third

manuscripts. It bears noting that the data for manuscript 2 and manuscript 3 is drawn from the same sample of university students with different focus. The fourth manuscript is presented in Chapter 4 and, finally, Chapter 5 includes some conclusions based on the four papers. Direction for future research and clinical implications are also discussed in Chapter 5. There will be brief transition notes bridging the papers. There will be some unavoidable repetitiveness in the literature reviews of the different manuscripts, although there have been efforts to keep this to a minimum.

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**CHAPTER 1****Manuscript 1: Systematic Literature Review****Nonsuicidal Self-Injury Across Cultures and Ethnic and Racial Minorities: A Review**

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### **Abstract**

The field of nonsuicidal self-injury (NSSI) is dominated by research conducted with Caucasian<sup>1</sup>-majority samples in Western countries such as United States, Canada, Australia, and European countries. The present paper critically reviewed the empirical research on NSSI in non-Western countries and among ethnic/racial minority individuals who live in the West to give voice to and understand the patterns of NSSI among individuals who do not fall within the dominant Caucasian<sup>1</sup> majority. The study found both similarities and differences between Western and non-Western data in terms of characteristics and functions of NSSI. Differences in gender patterns in regards to prevalence of NSSI and methods used as well as presence of a more relational functionality of NSSI rather than emotion regulation functionality were two points of divergence in the findings of these studies. In addition, the findings seem to indicate that the role of ethnicity/race is mediated by important factors such as SES and gender. Existing gaps in the literature and suggestions for further research are discussed.

**Keywords:** nonsuicidal self-injury (NSSI), self-harming behaviours, non-Western cultures, ethnic/racial minorities

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<sup>1</sup> Please see Appendix I.

### **Nonsuicidal Self-Injury Across Cultures and Ethnic and Racial Minorities: A Review**

Nonsuicidal self-injury (NSSI) refers to deliberate self-inflicted damage to one's own body that leads to bleeding, bruising, or pain without conscious suicidal intent and for reasons not socially sanctioned. Methods of NSSI include but are not limited to cutting, scratching, burning, head banging, and self-hitting (Nock, 2010). NSSI is clearly described in section III of the DSM-5 and is a condition that needs further research (American Psychiatric Association, 2013), in part because there is a strong and complex relationship between NSSI and suicidal behaviours (Whitlock et al., 2013). However, the differences between the two are substantial enough to consider NSSI a separate construct (Butler & Malone, 2013). As a result there has been a burgeoning literature on NSSI, particularly since 2000.

Suicide and self-harming behaviours have been observed and described in almost all cultures (Williams & Williams, 2001). Various aspects of suicidal behaviours, including suicide rates, gender differences, choice of methods, and the meaning of suicide, are highly influenced by cultural contexts across all nations (Colucci, 2006; Colucci, Lester, Hjelmeland, & Park, 2013). These differences are not limited to cultural differences across nations; in addition, within any country there are bound to be intercultural variations among all groups that make up that collective (Brown, Donato, Laske, & Duncan, 2012). Considering the close relationship between culture and self-harming behaviours (Colucci, 2006, Colucci et al., 2013), culture itself may have a much greater impact on NSSI than was previously assumed. Indeed, according to the most recent edition of the DSM, culture is seen as an important parameter of both the definition and meaning of NSSI (American Psychiatric Association, 2013).

Despite the link between culture and self-harming behaviours, the research literature on NSSI has been monopolized by publications from Western countries, such as the United States,

Canada, Europe, and Australia, that studied mostly Caucasian<sup>1</sup> samples (Chesin, Moster, & Jeglic, 2013; Gratz et al., 2012). Clearly, there is an underrepresentation of non-Western cultures and ethnic/racial minority groups in the NSSI literature. The unintended effect of this trend is the suggestion that NSSI shows itself in identical ways across countries, ethnicities, and cultures. Thus, before we accept the conclusion that these findings represent universal realities, it is important to examine our possible Western, ethnocentric biases and/or assumptions (Gone & Kirmayer, 2010; Kirmayer, 2005). In this way we can begin to include the role of culture and related concepts of ethnicity and race in our understanding of nonsuicidal self-injury.

Thus, the purpose of this research was to review studies of NSSI that were conducted in non-Western countries. We also reviewed papers that have studied ethnic/racial minority groups living in Western countries. These two broad categories have been underrepresented in the NSSI research literature and therefore form the basis of our review. It should be noted that we recognize that there are a variety of subcultures within Western and non-Western cultures, and we acknowledge that these categories are quite broad. We also acknowledge that race and ethnicity are separate constructs (see Betancourt & Lopez, 1993); however, we chose to cluster the studies that focus on ethnic or racial minorities into one category. This was done because this type of NSSI research was found to be very limited; and in addition, there was no clear-cut distinction between race and ethnicity in the studies that were reviewed. It is important to clarify that our operational definition of ethnic/racial minorities included individuals who were considered minorities in terms of either visible characteristics such as skin color and facial features and/or those who identified with a “common nationality, language, or culture” other than mainstream European-descent cultures (Betancourt & Lopez, 1993, p. 631).

## **Review**

The method used in the current review was a qualitative systematic review because of the diversity in the included studies. Databases accessed were ERIC, PsycINFO, and Google Scholar. Search terms consisted of a self-injury term combined with a search term to tap cross-cultural/racial minority/ethnic minority. Specifically, the following self-injury search terms were employed: “nonsuicidal self-injury,” or “self-harm,” or “self-injury,” or “deliberate self-harm,” or “DSH,” or “NSSI”; in conjunction with either “non-Western countries,” or “developing countries,” or “cross-cultural,” or “ethnic minorities,” or “racial minorities.” Subsequently, the reference lists of all relevant articles were searched to ensure the comprehensiveness of the search. All online search procedures were conducted between June and September 2014.

Only studies published in English in indexed journals and conducted since 2000 were considered, as this was the approximate time period when an NSSI definition consistent with the current paper first became a focus of study (Nock, 2010). Furthermore, we refined our search by including only participants in these studies that came from the community, that is, studies of incarcerated participants with an intellectual disability and/or studies conducted in clinical settings were excluded. Moreover, studies limited to participants under the age of 11 were excluded. Finally, to focus our review narrowly on NSSI as defined in the research literature (see Nock, 2010), studies that did not distinguish between NSSI and suicide attempt or included methods not resulting in direct body tissue damage (such as self-poisoning) were not considered (see Figure 1). We start with an overview of the results from Western research so that the reader may have a basis for comparing the two broad categories of studies.



### **NSSI in the Western World**

Within the context of Europe, North America, and Australia, the lifetime prevalence of NSSI has fluctuated across studies and countries, ranging from 13.9% to 35.6% among adolescents, 11.67% to 17% among university students, and 5.9% to 23% among adults (e.g., Andover, 2014; Heath et al., 2008; Klonsky, 2011; Ross & Heath, 2002; Whitlock, Eckenrode, & Silverman, 2006; Whitlock et al., 2011; Zetterqvist, Lundh, Dahlström, & Svedin, 2013). In the West, female adolescents have been shown to have higher prevalence rates (e.g., Brunner et al., 2013; Zetterqvist et al., 2013). Studies have also shown that female adolescents have a tendency to engage in more cutting and scratching behaviours whereas males use burning, self-hitting/punching, and head-banging behaviours (e.g., Brunner et al., 2013; Sornberger et al., 2012). Although gender differences have tended to disappear somewhat in regards to prevalence among university students, gender patterns have continued to exist in preferred methods (e.g., Whitlock et al., 2006, 2011). Finally, the age of NSSI onset for the majority of individuals in Western countries has ranged between 13 and 15 years old (Muehlenkamp et al., 2009).

The bulk of the NSSI literature has focused on understanding the purpose of and motives for self-injury. In a Western context, a four-factor model has been used to explain the psychological function of NSSI (Bentley, Nock, & Barlow, 2014). Basically, this model posits that NSSI is used in one of four ways: a) to regulate a negative emotional/cognitive state such as reducing sadness or a distressing thought, b) to avoid or manage an unpleasant social/interpersonal situation, c) to induce a positive inner state, or d) to elicit attention or support from others (Bentley et al., 2014; Nock, 2010).

There is no clear aetiology for NSSI but it is associated with a number of risk factors such as depression (e.g., Ross & Heath, 2002), anxiety and dissociative symptoms (e.g., Gratz et

al., 2002), impulsivity and borderline personality traits (e.g., Glenn & Klonsky, 2011), subjective loneliness (e.g., Glenn & Klonsky, 2013), childhood maltreatment and neglect (e.g., Gratz et al., 2002; Yates, Carlson, et al., 2008), and high levels of perceived parental criticism (e.g., Yates, Tracy, et al., 2008).

### **Prevalence and Characteristics of NSSI in Non-Western Countries**

Because research has revealed differing NSSI characteristics and prevalence rates across the lifespan, studies of adolescents, university students, and adults will be reviewed separately. Table 1 summarizes the findings of those studies using non-Western samples.

**Adolescents.** Twelve studies on the prevalence and characteristics of NSSI among adolescents in non-Western countries were found that met this paper's inclusion criteria. College students were also included in two of the studies.

As shown in Table 1, NSSI prevalence rates varied from a 9.3% lifetime prevalence of self-cutting in Japan (Matsumoto & Imamura, 2008) to a 32.7% twelve-month NSSI prevalence rate in Hong Kong (Shek & Yu, 2012). With regards to gender differences, findings were extremely mixed, with three studies reporting no gender differences in the prevalence rates of NSSI in China and Turkey (Liang et al., 2014; Wan et al., 2011; Zoroglu et al., 2003) as well as two studies finding no consistent gender differences in the prevalence of self-cutting across school grades in Japan (Izutsu et al., 2006; Matsumoto & Imamura, 2008). However, three studies conducted in Hong Kong suggested that NSSI was more prevalent among females (Cheung et al., 2013; Shek & Yu, 2012; You et al., 2011). Finally, Tang et al. (2011) found that male high school and college students in China were more likely to engage in both minor and moderate/severe NSSI and, similarly, male junior high school students in Japan were found to be

significantly more likely to engage in self-hitting behaviours than female students (Izutsu et al., 2006).

Investigations of methods revealed that self-hitting/head banging followed by scratching and pinching, preventing wounds from healing, cutting, self-biting, and burning were the most frequent methods used among adolescents in non-Western countries (Lam et al., 2009; Shek & Yu, 2012; Wan et al., 2011; You et al., 2011; Zoroglu et al., 2003). Surprisingly, almost half of the studies found no gender differences in the most frequent methods used. For instance, Zoroglu et al. (2003) found that in Turkey self-hitting and head banging followed by cutting were the most frequent methods used for both males and females. Only a few studies reported significant gender differences in the most common NSSI method used (e.g., Wan et al., 2011; You et al., 2011). For example, in Hong Kong, You et al. (2011) found that cutting was the most prevalent NSSI method used by teenage girls, whereas punching and banging were the most prevalent method among teenage boys. Consistent with Western studies, some studies showed that close to half of adolescents who self-injured used multiple methods (e.g., You et al., 2011). Concerning age of onset, high school students reported that they started self-injuring in early-middle adolescence with a decline in activity in early adulthood (e.g., Wan et al., 2011).

**University students.** In the four studies of university students in India, Turkey, Indonesia, and Japan, prevalence rates varied from 10% to 38% across the studies (Kharsati & Bhola, 2014; Toprak, Cetin, Guven, Can, & Demircan, 2011; Tresno, Ito, & Mearns, 2012, 2013). Three of the four studies documented that there were no gender differences in the prevalence of NSSI among college students (Kharsati & Bhola, 2014; Tresno et al., 2012, 2013). In the fourth study, Toprak et al. (2011) indicated that self-harm behaviours among Turkish students were significantly more prevalent for males. Scratching, cutting, self-hitting, self-

punching, and biting were reported as the most common NSSI methods used among the college students across the studies. None of the studies found any gender differences in methods used (Kharsati & Bhola, 2014; Tresno et al., 2012, 2013).

Results for age of onset ranged from 12.43 years in Japan (Tresno et al., 2013) to 15.9 in India (Kharsati & Bhola, 2014). Consistent with Western data, half of the NSSI sample reported engaging in multiple methods of self-injury (Tresno et al., 2012, 2013). Moreover, Tresno et al. (2013) found that 70% of the participants who engaged in NSSI did so for multiple episodes.

**Adults.** In the single study on NSSI using a community sample of 628 women randomly selected in Turkey, the results outlined a lifetime prevalence of 2.2% with the most frequent methods being head banging and self-hitting followed by cutting (Akyuz, Sar, Kugu, & Doğan, 2005).

In comparison with Western data, three general patterns were consistent between both categories, namely that prevalence rates of NSSI varied widely across studies and countries; the common age of onset ranged from 12 to 16 years old; and the most preferred methods were self-hitting, cutting, scratching, and head banging. However, there seemed to be one essential difference, namely there was no consistent gendered pattern of NSSI in non-Western studies.

### **Risk Factors and Functions of NSSI in Non-Western Countries**

Table 2 summarizes the risk factors and correlates of NSSI in non-Western studies. There was great consistency in the results, suggesting a close association between a history of childhood abuse/neglect and NSSI (Akyuz et al., 2005; Tsai et al., 2011; Tresno et al., 2012, 2013; Zoroglu et al., 2003) as well as a strong correlation between dissociation and NSSI across studies (Akyuz et al., 2005; Sho et al., 2009; Zoroglu et al., 2003). However, studies investigating depressive symptoms as risk factors of NSSI were not as consistent. For example,

Tresno et al. (2013) found that after controlling for emotion regulation expectancy and childhood abuse, depression was no longer a predictor of NSSI. Additionally, studies taking into account family SES found inconsistent results. For example, low SES was associated with NSSI in a sample of high school and college students in China (Wan et al., 2011), but in a Hong Kong study no relationship between family economic status and NSSI was found (Shek & Yu, 2012). Furthermore, studies focusing on the relationship between NSSI and suicide attempt (SA) consistently found a strong association between the two even when variables such as demographics, depressive symptoms, and suicide ideation were controlled (Cheung et al., 2013; Liang et al., 2014; Tang et al., 2011; Toprak et al., 2011; Tresno et al., 2012).

Additionally, there was inconsistency in the results of the studies examining the emotion regulation function of NSSI in non-Western countries. For instance, a longitudinal study conducted in a large sample of adolescents in Hong Kong revealed that NSSI did not serve to regulate earlier negative emotions and did not lead to increased relational problems. Instead, NSSI served to regulate interpersonal issues and over time self-injurers experienced increased negative emotions (You et al., 2012). Therefore, the role of the emotion regulation function of NSSI in non-Western studies is unclear. For example, Tresno et al. (2013) found that negative mood regulation expectancies (NMRA) moderated the relationships between childhood maltreatment and NSSI in Japan, whereas Tresno et al. (2012) did not find any significant difference in levels of NMRA between college students in Indonesia with and without a history of NSSI.

Finally, in a study that tested the four-factor functional model of NSSI, Kharsati and Bhola (2014) found that university students in India who engaged in only minor forms of NSSI were significantly more likely to use NSSI to regulate social environments through avoidance,

while individuals who engaged in moderate/severe NSSI were significantly more likely to use NSSI to regulate their emotions. Results of their study suggested that severity levels of NSSI may have different functions and, therefore, may have diagnostic value.

### **Prevalence and Characteristics of NSSI Among Ethnic/Racial Minorities in Western Countries**

**Adolescents.** Results of prevalence rates among ethnic/racial minority adolescents conducted in Western countries have been inconsistent. Some studies found that NSSI was less prevalent among non-Caucasian<sup>1</sup> adolescents (e.g., Lloyd-Richardson et al., 2007; Muehlenkamp & Gutierrez, 2007). For example, Lloyd-Richardson et al.'s (2007) study of 633 community adolescents found that African American students were less likely to report NSSI when compared to their Caucasian<sup>1</sup> counterparts whereas other studies found either no differences between the two (Guan, Fox, & Prinstein, 2012; Hankin, 2011; Hilt et al., 2008) or a prevalence for certain ethnic/racial groups over Caucasians<sup>1</sup> (Gratz et al., 2012; Yates, Tracy, & Luthar, 2008). For instance, Gratz et al.'s (2012) study in a relatively poor area of the southern United States suggested that rates of self-injurious thoughts and behaviours differ as a function of race, with African American students being significantly more likely to engage in self-injurious behaviours (i.e., burning and cutting) than Caucasians<sup>1</sup>. More surprisingly, there was an interaction between gender and race, with African American boys reporting higher rates of self-injurious behaviours than Caucasian<sup>1</sup> boys. Yates, Tracy, et al. (2008) conducted a study to examine NSSI among upper-middle-class youths and also found that students who identified as African American or "other" (mostly Native American) reported higher rates of NSSI in comparison with Caucasian<sup>1</sup>, Hispanic, and Asian participants and participants who self-identified as "multicultural." Therefore, these two studies suggested that prevalence of NSSI may

differ as a function of race, SES, and gender. In a Native American sample Cwik et al. (2011) found high rates among this distinct group with females being more likely to engage in NSSI, with cutting as a preferred method.

**University students.** A considerable number of studies have found some significant differences in the prevalence rates of NSSI among university students of different ethnicities/races (Chesin et al., 2013; Gratz, 2006; Kuentzel, Arble, Boutros, Chugani, & Barnett, 2012; Whitlock et al., 2011, 2013). However, these studies showed inconsistency in terms of which ethnic/racial background was more likely to be at risk of NSSI. For instance, Chesin et al. (2013) found that, in a sample from an ethnically/racially diverse university in the United States whose students received need-based financial aid, Asian and Caucasian<sup>1</sup> students reported higher rates of engaging in more than four episodes of NSSI than Hispanics and African Americans. Somewhat similar to Chesin et al.'s (2013) results, Gratz (2006) found significant differences across different ethnic/racial groups, with 50% of participants from "other" racial groups, as well as 25% of Caucasian<sup>1</sup>, 12% of Asian, 9% of Hispanic, and 5% of African American students, reporting a history of frequent NSSI. Both studies suggested high to moderate rates of NSSI among Caucasian<sup>1</sup> and Asian/Asian American students. In contrast, some other studies indicated that Asian/Asian American students were the only ethnic/racial group reporting significantly lower incidence of NSSI than Caucasian<sup>1</sup> students (Whitlock et al., 2006; Whitlock, Muehlenkamp, & Eckenrode, 2008; Whitlock et al., 2011). In an ethnically/racially diverse college sample, Kuentzel et al. (2012) found a large difference in the prevalence of NSSI by ethnicity, with Native American and multicultural students having significantly higher rates of NSSI (29.2% and 20.8%, respectively), followed by Caucasians<sup>1</sup> (17%) and Hispanics (17%).

Therefore, the results suggested that Native American<sup>2</sup> and multicultural university students might be at an increased risk of NSSI. Kuentzel et al.'s (2012) results also indicated that the lowest rates were found among Middle Eastern and African American participants. Croyle (2007) also found high and statistically similar NSSI rates in Caucasian<sup>1</sup> (33%) and Hispanic (27%) students.

Overall, the findings were inconsistent, with a highly variable pattern for ethnicity and racial group. In spite of these patterns, the general sense is that: a) incidence rates of NSSI are inconsistent among Asian/Asian American and Hispanic students, b) NSSI rates seem to be lower among African American university students, c) the one study of NSSI among Middle Eastern students reported lower rates of NSSI, and d) Native Americans<sup>2</sup>, multicultural participants, and students who identify as being of “other” ethnic backgrounds (while clearly an understudied university group) may be at increased risk of NSSI.

**Among adults.** In a study of the prevalence of NSSI among adults, Klonsky (2011) found no significant difference between Caucasian<sup>1</sup> and non-Caucasian<sup>1</sup> participants in NSSI prevalence rate, method used, and age of onset. However, the vast majority of these participants (86.1%) were Caucasian<sup>1</sup> and this makes the conclusions somewhat limited. Results of a study conducted by Andover (2014) indicated that participants who reported a history of NSSI were significantly more likely to be Caucasian<sup>1</sup>. However, this result was not found for participants who met the criteria for a potential NSSI disorder.

### **Risk Factors and Functions of NSSI Among Ethnic/Racial Minorities**

Few studies have investigated risk factors and functions of NSSI or factors related to the experience of minorities among ethnically/racially diverse groups. Results from Chesin et al.'s.

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<sup>2</sup> Please see Appendix I.



(2013) sample of ethnically diverse university students in the United States suggested that only anxiety and borderline personality disorder significantly predicted engaging in more than four episodes of NSSI and perceived racism was not a significant factor in the analysis. In fact ethnic/racial identity might be a protective factor for some groups. For example, Croyle (2007) found that in a study of Hispanic college students, a strong Mexican ethnic identity was negatively correlated with NSSI but for men only. This suggests that gendered social roles that emphasize social responsibilities, strength, and personal control may be at play here. Similarly, the role of religious affiliation in predicting NSSI revealed that atheists/agnostics/nonbelievers reported higher rates of NSSI, while Baptists and Muslims experienced the lowest rates of NSSI (Kuentzel et al., 2012). Students with very strong religious beliefs were the least likely to engage in NSSI, suggesting that religious practices such as prayer, meditation, or consultation with a spiritual counsellor might have a positive impact on emotion regulation.<sup>3</sup> However, even after controlling for gender, age, religious affiliation, and strength, Kuetzel et al. (2012) found that ethnic status remained a significant predictor of NSSI.

Overall, based on the few reviewed studies, data on the relationship among cultural factors, minority experiences, and risk and protective factors for NSSI show a very mixed picture. These data are emerging and will hopefully provide important information on factors such as perceived discrimination, immigration, acculturation stress, and bicultural identity, which impact the mental health and psychological wellness of ethnic minority individuals (e.g., Brown et al., 2012). Additionally, little is known about how ethnic/racial minority individuals who engage in self-injury make sense of their behaviors and experiences and to what extent their ethnic minority status impacts their understanding of the behavior.

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<sup>3</sup> Please see Appendix I.

### **Divergence, Convergence, and Implications**

This study was motivated by the obvious fact that NSSI is well-documented in the West, and that Caucasian<sup>1</sup> individuals have been the focus of considerable study. Given that race, ethnicity, culture, and other important markers of social location intersect with mental health and psychosocial functioning, understanding the patterns of NSSI among individuals from non-Western countries or those who do not fall within the dominant White majority is needed if we want to further our understanding of this important phenomenon.

Research on NSSI among non-Western countries has mainly been conducted in a few non-Western countries/regions, notably China, Japan, Hong Kong, Taiwan, Indonesia, India, and Turkey. Our review found that there was a salient difference in gender patterns among individuals from these countries. For example, three Hong Kong studies found significantly higher rates of NSSI among female adolescents. One of these studies found a significant pattern of methods used for females. The fact that NSSI, notably cutting and scratching, was found to be more prevalent among females in both the West and Hong Kong might be understood by considering Hong Kong's colonial history and the longer standing practices of certain forms of individualism, modernism, and consumerism in that country (see Lee, 2003). No consistent gender patterns were seen in China, Japan, India, and Turkey but higher rates of NSSI were sometimes found among male adolescents and college students. The DSM-5 proposed a female-to-male ratio of between 3:1 and 4:1 (American Psychiatric Association, 2013), however the existing research from non-Western community samples suggests that the gender differences are much more attenuated. Finally, there seems to be an additional point of divergence in that the function of NSSI in non-Western societies does not appear to map onto those reported for Western studies (Tresno et al. 2012; You et al. 2012).

While gender emerged as an obvious difference in the results between the West and non-West, there were many areas of similarities. In general, prevalence rates of NSSI; age of onset; and a preference for self-hitting, cutting, scratching, head banging, burning, and biting were comparable. The expected high correlation between NSSI and suicidal behaviours was also observed. We also saw very similar risk factors for NSSI, including childhood maltreatment, depression, alcohol abuse, and substance use. However, childhood maltreatment, depression, and substance use are universally associated with a wide range of psychological and health outcomes and therefore we should not be surprised by the similarities between Western and non-Western samples. This suggests that cultural factors related to NSSI may be difficult to identify unless unique specific cultural features are studied. For example, in their study of Hong Kong adolescents, Shek and Yu (2012) argued that when the more Western values of individualism and self-determination clash with the values of a collectivistic culture such as Hong Kong, the ensuing stresses might lead young people to engage in risky behaviours including NSSI and SA.

Among ethnic/racial minorities (living in the West), educational attainment seems to be an important consideration in that NSSI was found to be more prevalent among African American high school students from both low and high SES families but less prevalent among university students. In fact, African American university students consistently showed lower rates of NSSI across studies. This suggests that educational achievement (i.e., higher education) in the current world of uneven and unequal economic opportunities (Bumpers, 2008; Ryabov, 2013) represents an important social and economic advantage that may help buffer some of the inherent effects of racism.

Although the body of research focusing on ethnic/racial minorities is insufficient, there may be important interactions between ethnicity/race, gender, and/or SES in predicting NSSI.

For example, male African American high school students and Asian/Asian American university students from lower SES strata might be particularly vulnerable to NSSI (Gratz et al., 2012; Chesin et al., 2013) compared to their counterparts from other ethnic/racial backgrounds. Furthermore, the interaction of gender and ethnicity/race on patterns of NSSI has also been observed when considering the protective effects of strong ethnic identity on predicting NSSI in a university student population (Croyle, 2007).

Reviewing the NSSI research among ethnic/racial minorities also revealed how broad sociocultural factors can impact NSSI. For example, the very high prevalence of NSSI among Native Americans<sup>2</sup> in both adolescents and university students might be linked to the systematic oppression, genocide<sup>4</sup>, and subjugation of aboriginal<sup>5</sup> people by White people and their institutions. Indeed, historical traumatic responses and unresolved grief related to a history of genocide and forced acculturation have been associated with high levels of psychic numbing, depression, and suicide among aboriginal<sup>5</sup> individuals (Brave Heart, 1999). High rates of NSSI among Native Americans<sup>2</sup> and aboriginals<sup>5</sup> may also be related to the historical use of culturally based self-mutilation rituals, such as during mourning or religious ceremonies (Favazza, 1996), which may make self-injurious behaviours an acceptable way of dealing with distress.

### **Gaps and Further Directions**

NSSI among adolescents and high school students is increasingly being studied globally, notably in China, Hong Kong, and Japan, and we are also starting to see some work being done with college populations in other non-Western countries. This will help us have a better understanding of how widespread NSSI actually is but more importantly of how it expresses itself within a particular culture. While we are far from a clear set of guidelines for assessment

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<sup>4</sup> Please see Appendix I.

<sup>5</sup> Please see Appendix I.

and treatment, thinking about how culture, ethnicity, race, gender, and other important contextual factors impact NSSI will improve education and mental health service delivery for individuals belonging to nondominant groups.

Accepting a Western construction of NSSI means that researchers sometimes inadvertently ignore the norms and values of populations that are substantially different from the dominant Western culture. It is important to situate NSSI within the contexts of race, ethnicity, and culture if we are to make better sense of what is occurring at a deeper level. For example, in speaking of NSSI in the context of Turkish society, Toprak et al. (2011) argued that self-harm is traditionally acceptable among males, particularly in low-income areas—a detail that helped these researchers explain the high rates of NSSI among the males in the study's sample. For decades, the West has provided the dominant discourse for mental health, psychology, and psychiatry (Gone & Kirmayer, 2010; Kirmayer, 2005), and as such the Western version of NSSI will continue to be seen as the prototype unless we are better able to contextualize NSSI.

Overall, a more comprehensive knowledge of NSSI among non-Western countries and minority groups deserves a more prominent place in the research literature. Also, more research is needed to investigate the applicability of the theoretical models proposed by Western researchers to understand NSSI in non-Western cultures since it appears that in non-Western cultures NSSI may be used to regulate how the individual behaves in regard to others—a decidedly more relational view of NSSI. It follows then that research is required to investigate the culture-specific risks and protective factors of NSSI in both non-Western cultures and among ethnic/racial minorities. Finally to understand the phenomenology of NSSI regarding its cultural backgrounds, rigorous culture-sensitive qualitative studies are needed in both non-Western countries and among ethnic/racial minorities in Western countries to shed light on the influential

factors and functions of NSSI in different sociocultural backgrounds; factors cannot be identified by deductive quantitative approaches.

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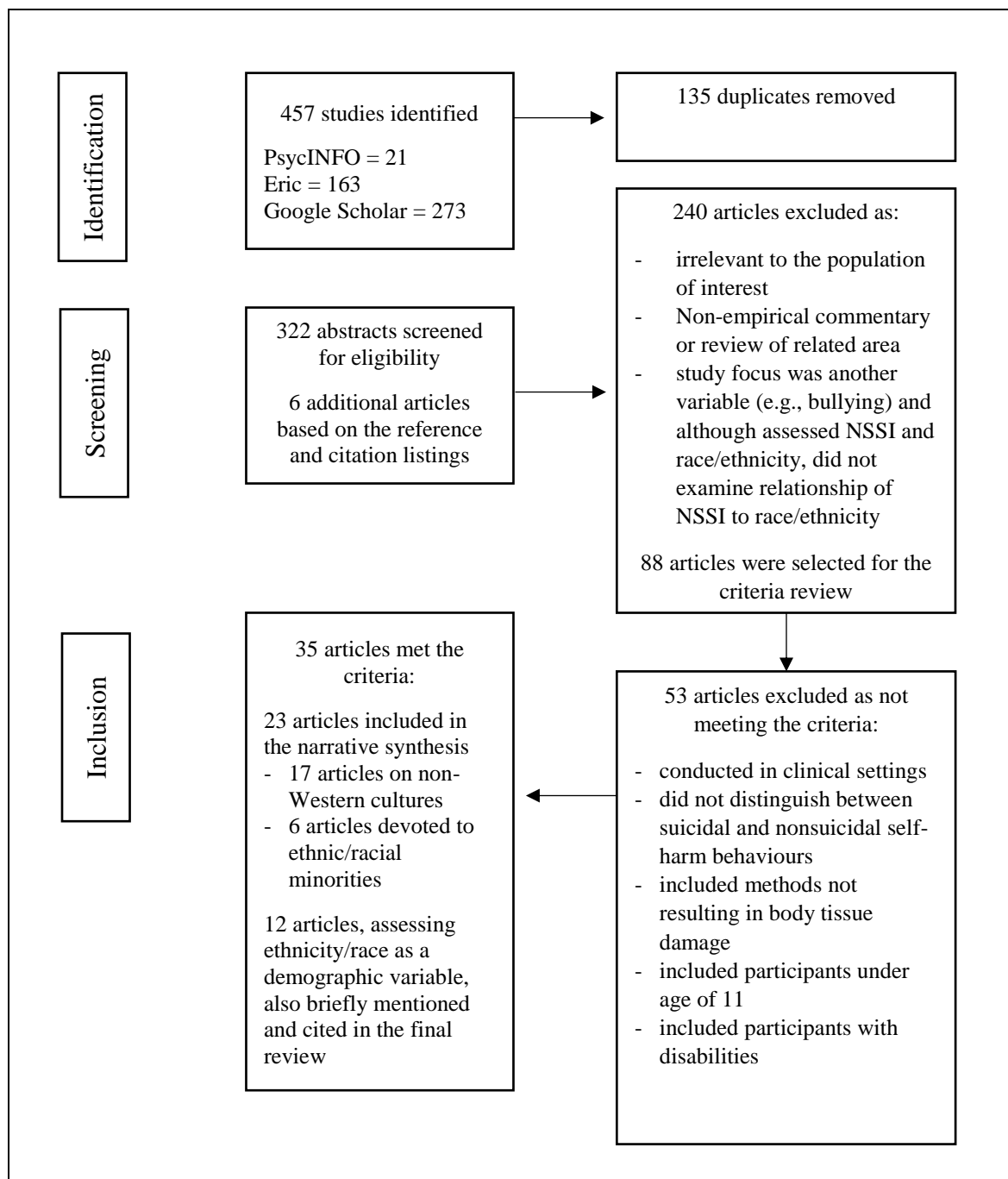


Figure 1. Flow chart of review methodology

Table 1. Study Characteristics and Prevalence Rates of NSSI in Non-Western Countries

Sample	Citation	Country	N	Assessment	Assessed suicide intent	Period	Prevalence %	Sig gender difference
Middle/high school students	Cheung et al. (2013)	Hong Kong	2,317	Yes/no + checklist	Yes	12-month	14%	Yes
	Izutsu et al. (2006)	Japan	477	Yes/no (Cutting, Self-hitting)	No	Lifetime	Cutting 8.5% Hitting 20%	Cutting no, Hitting yes
	Lam et al. (2009)	China	1,618	Checklist	No	6-month	16%	Unknown
	Liang et al. (2014)	China	2,131	Yes/no + checklist	Yes	Lifetime	23.2%	No
	Matsumoto & Imamura (2008)	Japan	1,726	Yes/no (Cutting)	No	Lifetime	9.9%	Varying based on grade
	Shek & Yu (2012)	Hong Kong	3,328	DSHS	Yes	12-month	32.7%	Yes
	Sho et al. (2009)	Japan	1,938	Yes/no (Cutting)	No	Lifetime	Varying based on grade	Varying based on grade
	Tsai et al. (2011)	Taiwan	742	Yes/no	No	Lifetime	11.3%	Yes
	You et al. (2011)	Hong Kong	6,374	Checklist	No	2-year	15%	Yes
High school & college students	Zoroglu et al. (2003)	Turkey	862	Yes/no + checklist	Yes	Lifetime	21.4%	No
	Tang et al. (2011)	China	2,013	FASM	Yes	12-month	15.5%	Yes
University students	Wan et al. (2011)	China	17,622	Yes/no + checklist	Yes	12-month	17%	No
	Kharsati & Bhola (2014)	India	470	FASM	Yes	12-month	31.2%	No
	Toprak et al. (2011)	Turkey	636	Yes/no + cutting, burning	No	Lifetime	15.4%	Yes
	Tresno et al. (2012)	Indonesia	314	DSHI	Yes	Lifetime	38%	No
	Tresno et al. (2013)	Japan	313	DSHI	Yes	Lifetime	10%	No
Adults	Akyuz et al. (2005)	Turkey	628	Yes/no + checklist	Yes	Lifetime	2.2%	N.A.

Table 1.

*The Studied Correlates and Risk Factors of NSSI in Non-Western Countries*

<b>Correlates / Risk factors</b>	<b># of studies</b>	<b>Findings</b>	<b>Country</b>
Abuse/neglect history	5	History of physical, emotional, and/or sexual childhood abuse and neglect has been frequently identified as a risk factor	Turkey, Indonesia, Taiwan, Japan
Anxiety	1	Anxiety is closely related to NSSI	China
Depressive symptoms	5	- Elevated depressive symptoms identified as a risk factor  - Depression was no longer a predictor of NSSI after controlling for emotion regulation expectancy	Turkey, Japan, China Japan
Dissociation	3	Strong relationship between disassociation and NSSI	Turkey, Japan
Tobacco use	3	Close correlation between tobacco use and NSSI	Japan, China
Alcohol use	5	Close correlation between alcohol use and NSSI	Japan, Turkey, China, Taiwan
Substance use	3	Substance use associated with NSSI	India, Japan, Turkey
Negative body image	1	Negative perceptions of body image associated with NSSI	China
Behavioural impulsivity	1	Association between NSSI and impulsivity and higher impulsivity distinguished the NSSI+SA group from the NSSI group	China
Cognitive/behavioural competency	1	Higher levels of cognitive and behavioural competency associated with NSSI	Hong Kong
Internet addiction	1	Internet addiction associated with NSSI	China
Overlap with suicide attempt	5	Strong correlation between NSSI and suicide attempt	China, Hong Kong, Indonesia, Turkey
Low SES	2	Results on association between NSSI and low SES are inconsistent across the studies	China, Hong Kong
Education of father	1	Education of father (senior middle school) was an important correlate of repeated NSSI	China
Remarried parents	1	Having remarried parents was associated with NSSI	Hong Kong
Only child	2	No significant relationship between “only child” and NSSI	China



**Appendix I: Corrections on Manuscript 1**

1. White or European-descent
2. Indigenous
3. The link between religious affiliation/beliefs and NSSI engagement could be also the result of other factors such as social support and/or religiously prohibited practices as protective factors. Further studies can elucidate these interpretations.
4. Attempts at cultural genocide
5. Indigenous

### **Bridging to Manuscript 2**

As discussed in the previous manuscript, there has been emerging research on NSSI among non-Western countries. Results of these emergent non-Western studies point out different patterns in NSSI gender differences and functionality. Therefore, there seems to be a growing need for investigating this phenomenon across different countries to include a culturally-informed understanding of NSSI within the current discourses in research and clinical settings.

Despite the growing prevalence of psychiatric disorders in emerging adults within the last decades (Sharifi et al., 2015) and specific self-harming behaviours observed in Iran (e.g., Panaghi et al., 2007; Sheikholeslami, Kani, & Ziaee, 2008), there is very little knowledge about nonsuicidal behaviours among this population. According to the author's knowledge, there has been only one study investigating the prevalence of NSSI among community populations in Iran (Poorasl, Fakhari, Vahidi, Rostami, & Talebi, 2007). A 4.9% twelve-month prevalence of NSSI was found in a sample of 1352 male high school students ( $M_{age} = 16.3$ ,  $SD = .87$ ) with a preferred method of cutting followed by burning, hitting, and scratching (Poorasl et al., 2007). The 4.9% 12-month prevalence rate of NSSI, reported in the sample of Iranian adolescents (Poorasl et al., 2007), falls in the lower range of NSSI prevalence rates among male adolescents in the Western studies. Interestingly, the reports of most preferred method used being cutting among the Iranian male adolescents appears to be different than the Western data suggesting that the most preferred methods used among male adolescents in the West are usually self-hitting, burning, and head-banging (Brunner et al., 2013; Sornberger et al., 2012).

There have been several studies investigating risk factors of NSSI and self-harming behaviours among military populations and imprisoned individuals in Iran (e.g., Semnani, et al., 2006; Khanipour, Borjali, Golzari, Falsafinejad, & Hakim Shushtari, 2013). For instance, a study

investigating the relationship between self-injury and depression among outpatients in a military clinic found that 5% of the 301 outpatients in the military service had a history of self-injury (Farsi, Jabari Moroie, & Saghiri, 2010). Research on NSSI among community populations in Iran is very limited. There is no knowledge on the incidence and characteristics of NSSI among young females and university students. In addition, the relationship between NSSI and risk factors established by research conducted in the West is not corroborated by Iranian studies. For example, Khanipour et al.'s (2013) found a strong link between depression-related emotions and NSSI in a clinical sample of adolescents; however, results of an investigation conducted among male outpatients serving in the mandatory military service in Tehran suggested no relationship between NSSI and depressive symptoms (Farsi et al., 2010). Finally, Farsi et al. (2010) found that, among the male outpatients serving in the mandatory military service in Tehran, NSSI was higher among married participants than their single counterparts which is consistent with the suicide literature in Iran in that married women might be at a higher risk of attempting suicide (e.g., Sheikholeslami et al. 2008).

In summary, reviewing the research on NSSI in community and clinical and/or military samples in Iran suggests that, first, there might be unique patterns of NSSI in Iran. Second, there is insufficient knowledge on NSSI in Iran among community populations, especially among females and university students. Therefore, Manuscript 2 aims to examine the prevalence of NSSI among a sample of university students in Iran investigating NSSI characteristics and risk factors, and its relation to suicide attempt. To the best of my knowledge, this is the first study, examining prevalence, characteristics, and risk factors of NSSI among university students in Iran.

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**CHAPTER 2****Manuscript 2: Non-Suicidal Self-Injury in a Sample of University Students in Tehran, Iran:  
Prevalence, Characteristics, and Risk Factors**

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### **Abstract**

Despite increased empirical and clinical attention to non-suicidal self-injury (NSSI) in Western countries, far less is known about NSSI in non-Western cultures. This study is the first to investigate the prevalence, characteristics and risk factors of NSSI in a sample of university students in Tehran, Iran. All participants ( $n = 554$ , mean age = 22.65, 57.2% female) were asked to self-report on NSSI over their lifetime. The Difficulties in Emotion Regulation Scale, Depression Anxiety Stress Scales, and Suicidal Behaviors Questionnaire-Revised were employed. A lifetime NSSI prevalence of 12.3% ( $n = 68$ ) was found with no gender differences. Using logistic regression, lack of emotional awareness remained negatively significant for females after controlling for anxiety, depression and suicidality; however, after controlling for the psychological symptoms, no relations were found between emotion dysregulation and a history of lifetime NSSI for male students. In a separate logistic regression, lifetime NSSI predicted suicide attempt above and beyond depressive symptoms and suicidal ideation across gender. Our results on the relations between emotion dysregulation and lifetime NSSI contradict the ample research in the West, emphasizing emotion dysregulation as a risk factor of NSSI and suggest that this relation might vary across cultures. The results are situated within the sociocultural context and compared and contrasted with Western data.

**Keywords:** non-suicidal self-injury, emotion dysregulation, suicide attempt, non-Western countries, university students, Iran

## **Introduction**

Non-suicidal self-injury (NSSI) is defined as the deliberate and immediate destruction of one's own body tissue without conscious suicidal intent and for reasons not socially accepted (Nixon & Heath, 2009). Methods of NSSI include, but are not limited to, cutting, scratching, burning, head banging and self-hitting (Nixon & Heath, 2009). Non-suicidal self-injury is a serious public health problem that can result in adverse physical consequences and is associated with shame, social isolation and poor academic achievement (Bentley, Nock, & Barlow, 2014). Although NSSI and suicidal behaviors are considered different constructs (Butler & Malone, 2013), NSSI is strongly linked to suicide attempts (SA) and self-inflicted death among young individuals (Klonsky, May, & Glenn, 2013). Currently, NSSI is clearly described in Section III of the Diagnostic and Statistical Manual of Mental Disorders – 5th Edition (DSM-5, American Psychiatric Association, 2013) as a separate clinical condition requiring further research.

Non-suicidal self-injury is common among university students, with an approximate lifetime prevalence rate of 10.5% ranging from 3.8 to 17.3%, mostly obtained from Western samples (Swannell, Martin, Page, Hasking, & St John, 2014). Although results on gender differences of NSSI prevalence rates among university students are inconsistent, most of the studies report gender differences in preferred NSSI method; for instance, females are more likely to engage in scratching, cutting and wound interference, and males are more likely to engage in punching, head banging and burning (Andover, Primack, Gibb, & Pepper, 2010; Bresin & Schoenleber, 2015; Whitlock, Eckenrode, & Silverman, 2006, 2011). The reported average age of NSSI onset for the majority of individuals appears to be 14 to 16 years old, with a decrease in reported NSSI from early to middle adulthood (Moran et al., 2012; Plener, Schumacher, Munz, & Groschwitz, 2015).

Individuals who engage in NSSI tend to experience high levels of hyperarousal to distress and tend to have difficulties in regulating their inner states (Nock, 2010); therefore, NSSI episodes usually follow negative emotional/cognitive states and may work to regulate the intolerable emotional/cognitive state (Nock, 2010). In addition, research indicates that negative states such as depressive symptoms, loneliness, anxiety, dissociation symptoms and suicidal ideations are strongly associated with NSSI (Glenn & Klonsky, 2011; Gratz, Conrad, & Roemer, 2002; Plener et al., 2015; Wilcox et al., 2012).

There is ample research emphasizing the role of emotion dysregulation as one of the most important risk factors of NSSI, even after controlling for psychopathology and other risk factors of NSSI (Adrian, Zeman, Erdley, Lisa, & Sim, 2011; Gratz & Roemer, 2008). In fact, it is documented that emotion regulation is the most important function of NSSI (Andover & Morris, 2014; Klonsky, 2007). Gratz and Roemer (2004) have introduced a multidimensional notion of emotion regulation that considers the functionality of emotions and emphasizes modulating the urgency and duration of emotions instead of controlling or eliminating them. According to Gratz and Roemer (2004), there are six main domains in regulating emotions: (1) awareness of emotions, (2) clarity of emotions, (3) acceptance of emotional experience, (4) the ability in engaging in goal directed behaviors, (5) the ability to inhibit impulsive behaviors and, finally, (6) accessing strategies to effectively regulate emotions. Research supports the strong association between the multidimensional conceptualization of emotion dysregulation and NSSI, notably the difficulty in accessing effective strategies (Andover & Morris, 2014).

Emerging non-Western data on NSSI suggests that cultural factors may have a great impact on the meanings, risk factors and the gender differences in NSSI (Gholamrezaei, De Stefano, & Heath, 2015). Specifically, when compared with Western data, results of studies conducted in non-



Western countries do not consistently support the emotion regulation functionality of NSSI, and a more interpersonal functionality of NSSI in collectivistic societies can be hypothesized (Gholamrezaei et al., 2015). For instance, in a longitudinal study among Chinese adolescents, You, Leung and Fu (2012) found that: (1) intense and unstable interpersonal relationship patterns predicted NSSI over time and (2) engaging in NSSI led to elevated negative emotions over time, but not vice versa. Additionally, cultures might encourage specific types of self-injury that have certain religious and/or cultural purposes or motivations, while prohibiting and stigmatizing similar forms of self-injury conducted outside of religious/cultural contexts (Favazza, 1996). For example, despite the clear prohibition of suicidal and self-injury by Islam, a minority of Shiite Muslims, most of whom live in Iran and several other Middle Eastern countries, mourned the martyrdom of the last descendant of Mohammed by engaging in specific self-injurious rituals (Baasher, 2001). The influence of cultural factors in self-injurious behaviors is so profound that self-injurious behaviors for culturally sanctioned purposes (e.g., religious rituals) are explicitly excluded from the definition of NSSI in the research literature as well as DSM-5 criteria of potential NSSI disorder (American Psychiatric Association, 2013). Considering the interaction of sociocultural factors and self-harming behaviors, more research of non-Western samples is crucial to contextualize our understanding of NSSI.

Iran is a Middle Eastern country with a specific sociopolitical situation and a young population. Research suggests particular patterns of suicidal behaviors among young individuals, notably young women, in Iran. For instance, studies have documented that Western women usually avoid using suicide methods that can lead to facial disfigurement such as shooting themselves in the head (Stack & Wasserman, 2009). Meanwhile, the typical method of suicide by women in western Iran is self-burning, which leads to death or serious and permanent injuries and disfigurement

(Panaghi et al., 2007). Furthermore, research suggests that unlike in the West, the majority of people who attempt or commit suicide in Iran do not have a history of psychiatric disorder or alcohol use, but they are more likely to have been assaulted physically or verbally (Panaghi, Ahmadi, Peiravi, & Zahra Abolmasoomi, 2010; Sheikholeslami, Kani, & Ziaee, 2008). Moreover, it seems that married women attempt suicide more than women who are single, recently separated, divorced or widowed (Sheikholeslami et al., 2008). This finding is inconsistent with studies conducted in the West, which suggest that marriage is a protective factor for women (Corcoran & Nagar, 2010) or that there is no difference in suicide risk between divorced and married women (Kposowa, 2000).

In summary, there seems to be different pathways for various aspects of suicidal behaviors in Iran, which are most likely influenced by the sociocultural factors at play. Considering the close relationship between suicidal behaviors and NSSI, studying non-suicidal self-injury in Iran might reveal different patterns in how NSSI manifests in the context of a non-Western culture. The goal of this study is three-fold. The first objective of this study is to investigate the prevalence and characteristics of NSSI among a sample of university students in Tehran. The second objective is to investigate whether emotion dysregulation will remain an important risk factor for NSSI after controlling for associated psychological symptoms of anxiety, depression, suicidality and stress. Gender differences have remained unclear in NSSI prevalence and risk factors in non-Western countries (Gholamrezaei et al., 2015); therefore, separate analyses were conducted for male and female students. Finally, the third objective is to investigate the relationship between NSSI and SA after controlling for depressive symptoms and suicide ideations.

## **Methods**

### **Participants and Procedures**

The participants in this study were 556 students (57.2% female; mean age = 22.65,  $SD = 3.45$ ) selected using a convenience sampling method. Following the approval from related boards and ethical committees, the sample was recruited from a large public university in Tehran with approximately 17,500 undergraduate and graduate students. The sample was recruited in mostly undergraduate classrooms from different faculties. Table 1 summarizes some demographic characteristics of the sample. Various classes across different faculties were visited to request participation in the study. Undergraduate classes had a capacity of 35 to 60 students. The project was introduced as a study on ‘stress and coping among SBU students’ and the procedure of the study was also explained. Students were informed that participation was voluntary and they could withdraw from the survey without any penalty or prejudice. Study packages containing a series of anonymous self-report questionnaires were given to students who agreed to participate in the study. In addition to the questionnaires, a contact information sheet indicating available on-campus and community mental health resources were provided to all the students. Approximately 70% of contacted students participated in the study.

## Measures

**Difficulties in Emotion Regulation Scale (DERS).** The DERS (Gratz & Roemer, 2004) is a self-report questionnaire that consists of 36 items rated on a five-point Likert scale ranging from 1 to 5, where 1 is ‘almost never’ and 5 is ‘almost always’. The DERS assesses difficulties in different aspects of emotion regulation and consists of six main difficulties: (1) lack of emotional awareness (aware), (2) lack of emotional clarity (clarity), (3) non-acceptance of emotional responses (nonaccept), (4) limited access to emotion regulation strategies (strategies), (5) impulse control difficulties (impulse) and (6) difficulties engaging in goal-directed behavior (goals). The DERS has high internal consistency (Cronbach’s  $\alpha = 0.93$ ), good test-retest reliability ( $= .88, p <$

.01) and adequate construct and predictive validity (Gratz & Roemer, 2004). The internal consistency of the Farsi version of the DERS ranges from .66 to .88, and a one-week test-retest reliability coefficient ranges from .79 to .91 across subscales (Khanzadeh, Saeediyani, Hosseinchari, & Edrissi, 2012). The Farsi version of DERS was used in the present study. In the present study, internal consistency measured by Cronbach's alpha was .91.

**Non-Suicidal Self-Injury Scale.** This questionnaire was mostly adopted from the NSSI follow-up section of the How I Deal with Stress measure (HIDS; Ross & Heath, 2007). Some items from the Inventory of Statements About Self-Injury (ISAS) Section I (Klonsky & Glenn, 2009) were added as well. The following sections were adopted from the HIDS: (1) NSSI methods, including self-cutting, self-burning, scratching, head banging and self-hitting. Self-biting and punching a wall were also added to the list; (2) a section assessing the emotions felt after an episode of NSSI was included. Participants were able to select multiple emotions on the list; (3) items in the HIDS questionnaire assessing other NSSI characteristics, including age of onset, three-month NSSI prevalent and frequency of the behaviour, were included as well. The following items were adopted from the ISAS: (1) an item assessing presence of pain while self-injuring, (2) an item regarding the desire to stop NSSI and, finally, (3) an item assessing if engagement in NSSI was in the presence of others or alone.

The questionnaire was translated into Farsi and back translated. There was little difference between the original version of the questionnaire and the back-translated English version. The instrument started with an introduction providing a definition of NSSI (i.e., some young individuals self-injure to deal with personal or social/interpersonal distress and life problems. Self-injury is defined as behaviors that lead to body tissue damage without wanting to die. Behaviors such as cutting or head-banging that result in bleeding, bruising, or any mark without any suicidal intent.

Please read the following question and if your response is in the affirmative continue filling out this section, if your answer is no, please skip to the next section), followed by a screening question, 'Have you ever self-injured even once in your life?'

**Depression Anxiety Stress Scales (DASS-21).** The short version of the DASS consists of 21 items rated on a four-point Likert scale and assesses negative affectivity over the previous week. The DASS-21 is composed of three subscales measuring depression, anxiety and stress (Lovibond & Lovibond, 1995). Evidence suggests strong construct validity and good internal consistency, ranging from .89 to .90 across subscales, for the DASS-21 among non-clinical samples (Henry & Crawford, 2005). The Farsi version of the DASS 21 is one of the most widely used measures among both clinical and non-clinical Iranian samples and has shown excellent psychometric properties, including strong internal consistency (anxiety,  $\alpha = .88$ ; depression,  $\alpha = .92$ ; and stress,  $\alpha = .82$ ), high four-week test-retest reliability ( $r = .72$ ) and strong construct validity (Bayani, 2010). In the current study, internal consistency measured by Cronbach's alpha was .93.

**The Suicidal Behaviors Questionnaire-Revised (SBQ-R).** Developed by Osman et al. (2001), this instrument consists of four items assessing lifetime SA, 12-month SA, threats of suicidal behaviors and the likelihood of future SA. There are different scaling systems for each item. Research suggested good internal consistency ( $\alpha = .83$ ) in an undergraduate sample (Gutierrez, Osman, Barrios, & Kopper, 2001), and strong construct validity in both clinical and community samples (Osman et al., 2001). The SBQ-R has been translated into Farsi and validated in an outpatient sample (Safa, Boroujerdi, Talischi, & Masjedi, 2014); however, the psychometric properties of the validated Farsi version of the SBQ-R are not published. In the current study, the computed Cronbach's alpha was .85.

### **Statistical Analyses**

To address the first research objective, descriptive analyses were used to determine NSSI prevalence and characteristics. T-tests and chi-squares were also conducted to examine gender differences in prevalence and characteristics of NSSI.

We examined the NSSI profile of participants who indicated once in their lifetime NSSI engagement ( $n = 9$ ) before conducting the analyses to exclude participants who engaged in a minor NSSI incident once in their lives. According to their profile, there were indicators of underreporting for five of these participants (e.g., they were not sure if they had stopped the behavior or they indicated severe one-time self injury such as cutting the face). The other four participants were removed from the analyses for the second and third objectives.

To investigate whether emotion dysregulation remains an important risk factor for NSSI after controlling for the psychological symptoms, hierarchical binary logistic regressions were conducted for male and female participants separately with likelihood of lifetime NSSI incidence as the dependent variable. To determine which variables can be entered in the logistic regression, associations of the predictors with NSSI status (i.e., having a history of NSSI or not) were examined (see Table 2). As shown in Table 2, stress, depressive symptoms and three DERS subscales (non-acceptance, clarity and aware), were not correlated with NSSI status for male students and were therefore not entered in the logistic regression model for male participants. The DERS subscales of goals and clarity were not significantly correlated with NSSI status for female students, and were therefore removed from the model for female participants. Although stress was significantly correlated with NSSI for female students, it was removed due to its high correlations with other DASS subscales of depression ( $r_{pb} = .76, p < .001$ ) and anxiety ( $r_{pb} = .75, p < .001$ ).

To investigate the third objective, a second hierarchical binary logistic regression was conducted with SA prevalence as the dependent variable across gender. Depressive symptoms and

suicide ideation were entered in the model as block 1, and a history of NSSI were entered as block 2. Some initial analyses were examined to investigate the association of SA to NSSI, last-year suicidal ideation and depressive symptoms separately for both genders (see Table 3).

## Results

### Prevalence and characteristics of NSSI

Table 4 demonstrates the prevalence rates of NSSI for the overall sample ( $n = 554$ ) and separately for male and female students. In the screening questionnaire, a total of 68 (12.3%) students reported that they hurt themselves on purpose without suicidal intent over their lifetime. There were 28 participants (5.1%) who indicated that they had engaged in NSSI within the last three months. Of those reporting a lifetime NSSI engagement, 65% ( $n = 44$ ) indicated engaging in multiple methods of NSSI. The frequency of self-injury assessed in the follow-up section of the questionnaire were as follows: 9 students (1.6%) had self-injured once, 23 students (4.2%) 2–4 times, 13 students (2.3%) 5–10 times, 8 students (1.4%) 11–50 times, 10 students (1.8%) 51–100 times and 5 students did not answer the question. The mean age of onset was 13.7 ( $SD = 5.15$ ,  $M = 15$ ) years, with the majority of participants (68.9%) reporting their first incidence of NSSI before the age of 17 years. Of those endorsing any form of NSSI, 54% indicated they had self-injured where they were not alone; however, it was not assessed in the presence of whom the self-injury was carried out. Of the 34% of students who reported any form of NSSI, they also indicated they did not feel pain when they self-injured, 12% indicated they did not have the desire to stop NSSI and 32% indicated that no one knew about their NSSI.

The most frequently reported methods used for male students were punching against a wall and cutting, followed by self-hitting. There was no significant difference between punching a wall and cutting for male students [ $X^2(1) = 3.49$ ,  $p = .062$ ], but a trend towards a significant difference

was found between frequencies of punching a wall and self-hitting [ $X^2(1) = 3.75, p = .053$ ]. The most frequently reported methods for female students were punching against a wall and self-hitting, followed by cutting, with a significant difference between the reported frequencies of punching a wall and cutting [ $X^2(1) = 4.88, p < .05$ ]. Frequencies of NSSI methods used are showed in Table 4 separately for male and female students. The endorsed emotions felt after a NSSI episode were feeling calm (57.6%), sad (45.5%), angry (39.4%), frustrated (39.4%) and anxious (39.4%) for male students. For female students, the emotions reported after an NSSI episode were feeling sad (57%), frustrated (49%), nervous (46%), guilty (46%) and calm (40%). The least reported emotions were energetic (5%) and happy (7%) for both genders.

Chi-square analyses indicated that no gender differences were found regarding NSSI methods used, the presence of pain, desire to stop NSSI, and self-injuring in the presence of others. Furthermore, no gender differences were found in the lifetime and three-month prevalence rates of NSSI [ $X^2(1) = 1.166, p = .28$  and  $X^2(1) = 1.403, p = .236$ , respectively]. In addition, t-test analyses indicated no gender differences in terms of NSSI frequency and age of onset [ $t(61) = .77, p = .44$  and  $t(59) = -.817, p = .417$ , respectively].

### **Risk factors for NSSI**

Hierarchical binary logistic regressions were conducted for male and female participants separately. The psychological symptoms were entered simultaneously in the first block, and the significantly correlated DERS subscales with NSSI were entered simultaneously in the second block.

Goodness-of-fit was examined using Hosmer-Lemeshow chi-square test, indicating an adequate goodness-of-fit for the full model for both male and female participants [ $X^2(8) = 11.3, p = .18$  and  $X^2(8) = .338, p = .91$ , respectively]. Results of the omnibus test showed that the full model



was significant for both male and female participants ( $X^2(5) = 19.01, p < .005$  and  $X^2(7) = 34.49, p < .001$ , respectively) indicating that the risk factors, as a set, reliably predict NSSI group membership. Altogether, the predictors accounted for 14% (Nagelkerke  $R^2$ ) of variability in NSSI group membership for males and 21.9% (Nagelkerke  $R^2$ ) of variability in NSSI group membership for females. As can be seen from Table 5, for male students, anxiety and suicide were significant predictors of NSSI in the first model. After entering the DERS subscales, only suicide ideation remained significant. No DERS subscale significantly predicted NSSI after controlling for anxiety and suicide ideation. For female students, suicide ideation was the only significant predictor in the first model. In the full model, after entering the DERS subscales, suicide ideation remained significant. Aware was the only DERS subscale that significantly and negatively predicted NSSI after controlling for anxiety, depression and suicide ideation among female students, meaning that being more aware of one's own emotional experience significantly predicted a history of NSSI after controlling for the other variables.

### **The relation between NSSI and SA**

A total of 23 participants (4.2%; 12 female, 11 male) reported SA in their lifetime. The gender difference in SA incidence was not statistically significant [ $X^2(1) = .266, p = .6$ ].

Hierarchical binary logistic regressions were employed separately across genders. Depressive symptoms and suicidal ideation were entered simultaneously in the first model. In the second model, NSSI incidence was entered.

Goodness-of-fit was examined using Hosmer-Lemeshow chi-square test, indicating an adequate goodness-of-fit for the full model for both male and female participants [ $X^2(7) = 4.09, p = .77$  and  $X^2(8) = 10.29, p = .245$ , respectively]. Results of the omnibus test showed that the full model was significant for both male and female students [ $X^2(3) = 23.19, p < .001$  and  $X^2(3) =$

23.66,  $p < .001$ , respectively) suggesting that the risk factors, as a set, reliably predict SA group membership. Altogether, suicide ideation, NSSI, and depressive symptoms accounted for 30% (Nagelkerke  $R^2$ ) of variability in SA group membership for males and 26% (Nagelkerke  $R^2$ ) of variability in SA group membership for females. As can be seen from Table 6, NSSI remained a significant predictor of SA after controlling for depressive symptoms and suicidal ideation for both male and female students.

### Discussion

Investigating NSSI across different cultures contextualizes the field of study and suggests which factors may be influenced by culture and which factors may be more universal (Canino, Lewis-Fernandez, & Bravo, 1997). The results of the current study suggest a 12.3% lifetime prevalence rate of NSSI among the university sample in Tehran, which reveals that NSSI is a widespread behavior among this population in Iran. This rate falls towards the lower end of Western estimates, which range between approximately 12 and 21%; however, a screening question was used in this study to assess the prevalence of NSSI and research suggests that using checklists of NSSI methods identifies a higher rate of NSSI (Muehlenkamp, Claes, Havertape, & Plener, 2012). Consistent with the Western data (Plener et al., 2015), the majority of the students in our sample with a NSSI history started self-injuring during their adolescence; however, the average age of onset reported in our sample (i.e., 13.7) appeared to be around two years younger than the average age of onset reported in Western university samples (e.g., Heath, Toste, Nedecheva, & Charlebois, 2008; Whitlock et al., 2006, 2011). Younger age of NSSI onset is associated with severity of the condition in studies conducted in the West (Klonsky & Olino, 2008); however, the earlier age of onset in our sample might be more related to cultural factors. Longitudinal studies are needed to confirm and explain the result.

Although cutting is reported as the most common method in Western samples, notably by females (Heath et al., 2008; Whitlock et al., 2011), interestingly, in our sample, the most frequently reported methods for male students were punching a wall and cutting and the most frequently reported methods for female students were punching a wall and self-hitting. Punching a wall and self-hitting are NSSI methods that are more utilized by male students in Western data and are more consistent with stereotypes of masculine social roles and aggressive behaviors. Unlike samples in Western countries where cutting and scratching are more prevalent among females and punching, burning, and self-hitting are more prevalent among male students (Andover et al., 2010; Whitlock et al., 2006, 2011), there were no gender differences in terms of the NSSI methods used in our sample. The lack of gender difference in the current study challenges the Western notion of typical self-cutters being female (also see Chandler, Myers, & Platt, 2011) and is more consistent with most university studies in non-Western countries, where no gender differences were found in either prevalence rates of NSSI or methods used (Gholamrezaei et al., 2015).

Unlike results of studies conducted in the West (Plener et al., 2015), our findings showed no link between depression and lifetime NSSI prevalence across gender in the final models. This result can be interpreted as being consistent with the studies suggesting that the relationship between a history of psychiatric disorders and suicide might be weaker in Iran compared to the Western data (Panaghi et al., 2010). Toprak, Cetin, Guven, Can and Demircan (2011) suggest that, compared to the West, economic stressors and relationship conflicts are common risk factors for suicide in a Turkish context. Furthermore, Kleinman (1977) has noted that culture forms the expression and symptoms of psychological issues such as depression. Thus, the lack of association between depressive symptoms and lifetime NSSI in our sample could be because our employed measure did

not tap into culture-specific symptoms of depression. In short, longitudinal studies with culture-specific instruments are needed to confirm and interpret the results.

Research indicates that deficits in regulating emotions are one of the most salient factors strongly linked to engaging in NSSI (Andover & Morris, 2014). In Western studies that used the DERS, limited access to emotion regulation strategies is the dimension that is uniquely linked to engagement in NSSI (Andover & Morris, 2014). The results of our study indicated simple correlations between goals, strategies and impulse subscales and lifetime NSSI among male students. Interestingly, all the correlated DERS subscales are reflective of the behavioral aspect of emotion dysregulation. In other words, goals, impulse and strategies subscales indicate difficulties controlling undesired behaviors and accessing desired behaviors when emotions are present rather than having difficulties experiencing and modulating inner emotional states (e.g., the aware and non-acceptance subscales) (Gratz & Roemer, 2004). However, after controlling for anxiety and suicide ideation, none of the correlated DERS subscales remained significant for male students. This finding is contrary to the studies conducted in the West indicating a strong link between emotion dysregulation and NSSI. For instance, Gratz and Chapman (2007) found emotion dysregulation to be a strong risk factor of frequent NSSI among male undergraduate students. Interestingly, lifetime NSSI was associated with anxiety and suicide ideation for male students, which suggests some levels of undesirable emotional and cognitive states; however, lifetime engagement in NSSI was not linked to the male participants' difficulties in regulating those undesirable emotional/cognitive states. This result is consistent with the non-Western studies, which portray an unclear association between NSSI and emotion dysregulation (Gholamrezaei et al., 2015).

For female students, besides suicide ideation, the aware subscale remained the only significant predictor. The aware subscale indicates a 'lack of emotional awareness which consists of items reflecting the tendency to attend to and acknowledge emotions' (Gratz & Roemer, 2004, p. 47) and these items are reverse coded, meaning that higher scores indicate less emotional awareness. According to the results, being more aware of one's own emotional experience significantly predicted a history of NSSI after controlling for psychological symptoms among the female students. To interpret this result, we may need to take a step back and look at the whole picture regarding the profile of self-injury behaviors among the female students. First, punching a wall and self-hitting were the most frequently reported methods for the female students. Punching and hitting can resemble outwardly focused aggressive behaviors. Second, results indicate that more than half of the female students reported self-injuring in the presence of others rather than when alone. Third, neither depressive symptoms assessed by the DASS (such as hopelessness, low mood, low self-worth and emptiness) nor anxiety symptoms (such as worry and restlessness) were predictors of NSSI, not even before entering the DERS subscales in the model. In short, the portrayed profile of females' NSSI in this study seems quite different from the typical descriptions of females' NSSI in the West (e.g., Bresin & Schoenleber, 2015; Plener et al., 2015). Moreover, as noted earlier, some studies investigating suicidal behaviors in Iranian samples also revealed that compared with Western data, people who attempt suicide in Iran are less likely to have a history of psychological disorders and more likely to have been recently assaulted physically or verbally (Panaghi et al., 2010; Sheikholeslami et al., 2008). Furthermore, it can be hypothesized that NSSI in Iran might also be linked to social and interpersonal factors rather than depression and anxiety. Further research could be useful to investigate whether helplessness, frustration or anger are present and whether they are regulated by self-injury in this context. In that case, higher levels of

attending to the emotional experience of helplessness, frustration or anger might make students prone to self-injury behaviors such as punching a wall and self-hitting. Additionally, the sociocultural contexts of the sample such as gender role conflicts experienced by women (i.e., traditional versus modern gender roles) and the restrictions placed on women in Iran at both societal and family levels need to be taken into account (Tohidi, 1994).

The current study found a strong relationship between NSSI and SA. For both male and female students, having a history of NSSI predicted lifetime SA after controlling for depressive symptoms and suicidal ideations. In other words, NSSI maintained a relationship to SA even beyond suicide ideation and depression-related symptoms. This result is consistent with the research literature suggesting NSSI as a strong predictor of SA as it increases both the capacity and desire for suicide and decreases inhibition toward attempting suicide (Butler & Malone, 2013; Whitlock et al., 2013).

### **Strengths and limitations**

The present study must be interpreted in light of several limitations. First, a rather small sample size may have weakened the study's power. Second, no causal relationship can be inferred due to the cross-sectional nature of the study design. Third, the scale assessing NSSI was not yet validated in Iran making it vulnerable to potential bias. Fourth, retrospective self-report questionnaires were used in this study, which raises the possibility of response bias and also hinders context-sensitive interpretations of the results. Structured interviews as well as qualitative studies are needed to obtain more accurate data and facilitate understanding of NSSI within the sociocultural contexts of the population of interest. Fifth, in the current study a precise definition of NSSI that stipulates deliberate immediate tissue damage was employed; therefore, the current prevalence results are representative of this type of NSSI, not of self-harm or self-injury that does

not leave any indication of tissue damage (i.e., bleeding, bruising, marks). Finally, there might be some restrictions in the generalizability of the findings, as a convenience sampling method was used to recruit the participants. Overall, longitudinal studies with larger and more representative samples are needed to confirm the results of the present study.

On the positive side, our findings have the potential to suggest further pathways in researching NSSI among university students in Iran. Developmental trajectories of NSSI for male and female students can be investigated using longitudinal studies to clarify the role of emotion dysregulation and identification of culture-specific risk factors for NSSI. Another area of research could be an investigation of the level of practitioners' awareness about and comfort and training regarding working with students who engage in NSSI. Our findings suggest that self-injury behaviors are quite common among both male and female students in Iran. Considering the negative physical and psychological consequences of engaging in NSSI as well as the close relationship between NSSI and suicide attempt, it is very crucial to promote knowledge and awareness about NSSI among practitioners in Iran. Because of limited research on NSSI in Iran, practitioners might not take these behaviors seriously enough and interpret them as a form of attention seeking or manipulative behavior that needs to be ignored. In contrast, some practitioners might confuse self-injuring behaviors with an act of suicide and overreact to it, for example, by hospitalizing the individual or breaching the confidentiality, which can be shaming and stigmatizing. Further research could enhance the understanding of NSSI as a public health concern in the Iranian context and generate discussion and awareness among practitioners. Considering the young age of NSSI onset reported in the current study, early identification and intervention can be crucial.

## **Conclusion**

This study found both commonalities and different patterns of NSSI and its risk factors compared to Western data. A lack of a gender difference in prevalence and methods used and a presence of outward-focused aggressive types of NSSI among female students were some points of divergence from the findings of studies conducted in Western countries. Moreover, inconsistent with Western data, emotion dysregulation was not a risk factor of lifetime NSSI across gender in our sample after controlling for psychological symptoms of anxiety, depression and suicide ideation. Consistent with Western data, NSSI is a strong predictor of SA even after controlling for depressive symptoms and suicidal ideation.

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Table 1

*Demographic Characteristics of Study Population (n = 554)*

Characteristic		Percent (n)
Gender		
	Female	57.2 (317)
	Male	42.8 (237)
Age Range		
	Under 23	61.1 (339)
	23-25	21.8 (121)
	26-30	10.8 (60)
	Older than 30	4.8 (26)
	Missing	1.5 (8)
Level of education		
	Two-year certificate	2 (11)
	Bachelor's	82.9 (460)
	Master's	8.8 (49)
	PhD	6.1 (33)
	Missing	.2 (1)
Major		
	Fine Arts	3.1 (17)
	Engineering	3.4 (19)
	Foreign Language/Literature	13.3 (74)
	Humanities	38.5 (213)
	Psychology/Education	9.4 (51)
	Paramedical	.5 (3)
	Management/Accounting	19.8 (110)
	Science	9.7 (54)
	Physical Science	.9 (5)
	Finance	.5 (3)
	Law	.2 (1)
	Missing	.7 (4)



Table 2

*Correlations between DASS and DERS subscales and Lifetime NSSI*

Predictor	Males	Females
Stress	.078	.167 <sup>B</sup>
Anxiety	.171 <sup>**</sup>	.225 <sup>B</sup>
Depressive symptoms	.109	.191 <sup>B</sup>
Suicide ideation	.247 <sup>B</sup>	.319 <sup>B</sup>
DERS subscales		
NONACCEPTANCE	.07	.114 <sup>*</sup>
GOALS	.144 <sup>*</sup>	.07
IMPULSE	.217 <sup>B</sup>	.157 <sup>**</sup>
AWARE	.04	-.128 <sup>*</sup>
STRATEGIES	.133 <sup>*</sup>	.218 <sup>B</sup>
CLARITY	.114	.002

*Note.* Point-biserial correlations with a Bonferroni correction of  $p=.005$ .

<sup>\*</sup>  $p < .05$ ; <sup>\*\*</sup>  $p < .01$ .

<sup>B</sup>  $p < .005$ .

Table 3

*Correlations between NSSI, Suicidal Ideation, Depressive Symptoms, and Lifetime SA*

	Males	Females
Predictor		
Suicide ideation	.358**	.236**
NSSI	.27**	.317**
Depressive symptoms	.18**	.151**

*Note.* Point-biserial correlations are presented for depressive symptoms, suicidal ideation, and SA, and phi coefficient is presented for NSSI and SA. \*\* correlations are significant at  $p < .01$ .

Table 4

*Rates of NSSI Incidence and Methods Used by Gender*

	<i>n</i>	Rates				NSSI Methods Used													
		Lifetime		Three-month		Cut		Punch against the wall		Self-hit		Scratch		Head-bang		Self-bite		Burn	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%of	<i>n</i>	%of	<i>n</i>	%of	<i>n</i>	%of	<i>n</i>	%of	<i>n</i>	%of	<i>n</i>	%of
Overall	554	68	12.3	28	5.1	29	42.6	40	58.8	32	47	20	29.4	25	37	14	20.6	10	14.7
Males	237	33	13.9	15	6.3	15	45	23	70	15	45	7	21	13	39	7	21.2	6	18
Females	317	35	11	13	4.1	14	40	17	49	17	49	13	37	12	34	7	20	4	11

Table 5

*Hierarchical Logistic Regression Predicting Lifetime NSSI*

Predictors	Block 1						Block 2					
	Males			Females			Males			Females		
	<i>B</i>	<i>SE</i>	Wald	<i>B</i>	<i>SE</i>	Wald	<i>B</i>	<i>SE</i>	Wald	<i>B</i>	<i>SE</i>	Wald
Anxiety	.095	.047	4.03*	.095	.06	2.93	.056	.05	1.09	.09	.06	2.01
Depressive symptoms				.003	.05	.002				.01	.06	.02
Suicide ideation	.49	.16	9.31**	.615	.16	14.4**	.45	.17	7.07**	.59	.17	12.03**
NONACCEPTANCE										-.03	.045	.5
IMPULSE							.085	.05	2.6	.01	.05	.03
AWARE										-.11	.05	4.15*
STRATEGIES							-.02	.04	.147	.03	.05	.32
GOALS							.02	.06	.14			

*Note.* \* $p < .05$ , \*\* $p < .01$ .

Table 6

*Hierarchical Logistic Regression Predicting Lifetime SA*

Predictors	Block 1						Block 2					
	Males			Females			Males			Females		
	<i>B</i>	<i>SE</i>	Wald	<i>B</i>	<i>SE</i>	Wald	<i>B</i>	<i>SE</i>	Wald	<i>B</i>	<i>SE</i>	Wald
Depressive symptoms	.05	.07	.45	.07	.06	1.65	.06	.07	.59	.06	.05	1.3
Suicide ideation	.83	.24	12.1**	.64	.23	7.9**	.68	.25	7.4**	.475	.24	3.8
NSSI							1.67	.71	5.5*	2.12	.66	10.24**

*Note.* \* $p < .05$ , \*\* $p < .01$ .

### **Bridging to Manuscript 3**

Manuscript 2 revealed that in Iran NSSI appeared to be quite common among both female and male university students with specific patterns regarding gender difference, preferred methods used, and risk factors in emerging adults. To date, there have been very few studies investigating the aetiology of NSSI among university students in Iran. NSSI is a serious public health problem leading to adverse consequences, shame, social isolation, and poor academic achievement (Bentley et al., 2014). In addition, results of Manuscript 2 indicated a strong relationship between NSSI and suicide attempts in Iranian emerging adults. The lack of knowledge about the nature of this phenomenon among community populations in Iran may lead to misconceptions and inappropriate interventions by practitioners, service providers, and policy makers in Iran. Therefore, considering the clinical importance of NSSI, Manuscript 3 aimed to assess functions of NSSI among the Iranian sample of university students who self-injured. As noted before, this study sample is a subset of the previous sample of university students focusing on the participants who reported a lifetime NSSI engagement.

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### CHAPTER 3

#### **Manuscript 3: Function of Nonsuicidal Self-Injury among Iranian University Students: A Factor Structure Analysis of the Inventory of Statements About Self-Injury (ISAS)**

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### Abstract

This study aimed to investigate the function of nonsuicidal self-injury (NSSI) among a sample of university students in Iran using the Inventory of Statements About Self-Injury (ISAS). The ISAS was administered to 63 students (52.4% female;  $M_{age} = 22.15$ ,  $SD = 2.75$ ) with a history of lifetime NSSI who were enrolled in a large public university in Tehran, Iran. An exploratory factor analysis using the Bayesian estimation method was conducted on the 13 functions within the ISAS. The results revealed a three-factor model of NSSI functions including intrapersonal, social identification, and communication factors. Intrapersonal factor included within-self functions concerning regulating inner experiences. Social identification factor represents ISAS functions indicating an establishment of a sense of self/identity in relation to others. Finally, communication factor consisted of functions of NSSI to influence or communicate to someone else. Intrapersonal and social identification factors were associated with greater NSSI method severity and higher symptoms of anxiety. Our findings support existing evidence that indicates that ISAS is a useful instrument in investigating the factor structure of NSSI functions, and revealed additional patterns beyond the reinforcement theory of NSSI. The results are also situated within the sociocultural contexts of the study sample.

**Keywords:** nonsuicidal self-injury (NSSI), function, Inventory of statements about self-injury (ISAS), Bayesian estimation method, university students, Iran

## Introduction

Nonsuicidal self-injury (NSSI) refers to deliberate damage to one's own body tissue without conscious suicidal intent and for reasons that are not socially sanctioned (Nock & Favazza, 2009), and has been identified as a potential disorder requiring further research (American Psychiatric Association, 2013). Methods of NSSI are categorized into clinically minor forms (i.e., self-hitting, biting, inserting object under nail or skin, picking at a wound, and picking areas to draw blood) and moderate/severe forms (i.e., cutting, burning, scratching, self-tattooing, erasing) (Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007). The most common methods of NSSI are cutting, carving skin, scratching, burning, self-hitting, head-banging, and biting (Swannell et al., 2014), and it is common among community populations, particularly adolescents and young adults (Barrocas et al., 2012; Muehlenkamp, 2005). Indeed, one meta-analysis suggests that 8% to 26% of adolescents and 4.5% to 22% of young adults engage in self-injuring behaviours at least once in their lifetime (Swannell et al., 2014). NSSI is documented to be more prevalent among female adolescents and young adults than their male counterparts (Bresin & Schoenleber, 2015). Additionally, research suggests a gender difference regarding preferred methods of NSSI with higher prevalence of cutting and scratching among females (Bresin & Schoenleber, 2015). However, the gender difference in the NSSI prevalence and methods used has not been found in studies focusing on non-Western samples (Gholamrezaei, De Stefano, & Heath, 2015).

Though the prevalence of NSSI is alarming and there seems to be factors such as gender and ethnicity impacting its use (Gholamrezaei et al., 2015; Kokaliari et al., 2017), the functions of NSSI are still relatively new. In his review, Klonsky (2007) articulates several functions of NSSI engagement including affect regulation, anti-dissociation, anti-suicide, interpersonal boundaries,

interpersonal influence, self-punishment, and sensation seeking. Such research on the functional analysis of NSSI has been guiding the understanding of NSSI for many years (Bentley, Nock, & Barlow, 2014; Klonsky et al., 2015). One of the most accepted theoretical models of NSSI in Western studies is the four-factor functional model (FFM) (Nock & Prinstein, 2004). In this model, functions of NSSI vary along two dimensions of reinforcements: intrapersonal versus interpersonal and negative versus positive (Nock & Prinstein, 2004). Negative intrapersonal reinforcement results from regulating a negative emotional/cognitive state, such as reducing negative feelings (e.g., tension, sadness, and anger) or reducing distressing thoughts including suicidal thoughts (Bentley et al., 2014; Nock, 2009). Negative interpersonal reinforcement is achieved by escaping from social situations or removing interpersonal demands. Through positive intrapersonal reinforcement, NSSI also induces a desirable or relaxed inner state, stimulation, or a sense of satisfaction caused by having punished oneself. Finally, NSSI, through positive interpersonal reinforcement, serves to elicit support and help (Bentley et al., 2014; Nock, 2009). Although the functional analysis of NSSI cannot explain the etiology of NSSI, it has led to significant advances regarding research, assessment, and treatment of NSSI (Bentley et al., 2014).

Research examining the functional analysis of NSSI has primarily used two different instruments; the Functional Assessment of Self-Mutilation (*FASM*; Lloyd et al., 1997) and the Inventory of Statements About Self-injury (*ISAS*; Klonsky & Glenn, 2009). Some studies conducting factor analysis using *FASM* data confirm the FFM (e.g., Lloyd-Richardson et al., 2007; Nock & Prinstein, 2004), while other studies did not support the full FFM or found different functionality. For instance, Dahlström, Zetterqvist, Lundh, and Svedin (2015) differentiated between intrapersonal and interpersonal functions but did not support the

positive/negative dimension in the intrapersonal functions of NSSI. Instead, their model suggested a four-function model of intrapersonal function, social influence, peer identification (i.e., positive interpersonal), and avoiding demands (i.e., negative interpersonal). Similarly, in a clinical sample of adolescents and young adults in Germany, Kaess et al. (2013) did not find a positive/negative dimension of intrapersonal function but found a three-factor model including interpersonal influence, intrapersonal function, and peer identification (Kaess et al., 2013). You et al. (2013) in Hong Kong, also found a three-factor model including affect regulation, social influence, and social avoidance; with negative and positive intrapersonal functions collapsing into one factor of affect regulation. In fact, the FASM has been challenged regarding detecting the automatic negative factor as there are only two items tapping into this function (Klonsky et al., 2015).

Other researchers have used the Inventory of Statements About Self-Injury (ISAS) to determine the functionality of NSSI. Developed by Klonsky and Glenn (2009), the ISAS assesses 13 different functions of NSSI in two dimensions of intrapersonal and interpersonal functions. The intrapersonal dimension included affect regulation, anti-dissociation, anti-suicide, marking distress, and self-punishment functions; the interpersonal dimension included autonomy, interpersonal boundaries, interpersonal influence, peer bonding, revenge, self-care, sensation-seeking, and toughness (Klonsky & Glenn, 2009). Kortge, Maede, and Tennant (2013) used a heterogeneous sample of participants who engaged in NSSI to test the factorial model of ISAS. Their results supported the two-factor model, but they found that the self-care function fell into intrapersonal dimension rather than interpersonal. They also found a low internal consistency coefficient for the intrapersonal domain (Kortge, Maede, & Tennant, 2013). The two-factor structure of ISAS was also confirmed through factor analysis in a large sample of

Turkish high school students (Bildik et al., 2013). They also found a stronger correlation among psychopathology and automatic or intrapersonal functions of NSSI compared to social functions (Bildik et al., 2013). Though the two-factor model has been validated in some populations, there are still nuances and differences that need to be further explicated, particularly in non-Western populations.

To clarify the inconsistencies in the functions of NSSI demonstrated by FASM and ISAS, Klonsky et al. (2015) examined the factor structure of NSSI functions in a large clinical sample using both the ISAS and FASM. They concluded that a two-factor framework of intrapersonal and interpersonal domains has clinically significant implications for each set of functions, and that it should inform the conceptualization, assessment, and treatment of self-injury (Klonsky et al., 2015). Specifically, research among Western samples has revealed that people who self-injure for intrapersonal reasons, for example to regulate emotion or self-punish, might need more intensive care (Klonsky et al., 2015) as intrapersonal function is associated with childhood trauma (e.g., Kaess et al., 2013), hopelessness, depressive symptoms, and posttraumatic stress symptoms (Nock & Prinstein, 2005). Thus, establishing the functionality of NSSI appears to suggest different clinical presentations, and, therefore, interventions.

Although studies have demonstrated commonalities among the functional models from various Western samples (Klonsky, 2007; Nock & Prinstein, 2005), studies in non-Western countries suggest important divergence (Gholamrezaei et al., 2015). For instance, You et al. (2013) argue that cultural values such as collectivism can explain the high need to be part of a group contributes to a need to self-injure as a sense of belonging. They found that using NSSI “to feel more a part of a group” was the most endorsed item while “to punish oneself” had low endorsement. You, Leung, and Fu (2012) also found that interpersonal issues predicted NSSI

engagement and engaging in NSSI predicted negative emotions but not vice versa. This finding suggests that in the collectivistic societies, the interpersonal functionality of NSSI might have a greater importance (Gholamrezaei et al., 2015).

The emergence of different patterns in functionality of NSSI in non-Western samples warrants further investigation in different cultural contexts. We aimed to assess functions of NSSI among a sample of university students with a history of lifetime NSSI in Tehran, Iran. To date, there have been very few studies on the functions of NSSI in Iran despite a rather high prevalence among its youth (Gholamrezaei, Heath, & Panaghi, 2017). In a qualitative study using a clinical sample of adolescents in Iran, Khanipour et al. (2013) found that Iranian adolescents identified emotion regulation as one of their motivations to self-injure, but they noted that family and interpersonal conflicts triggered their first NSSI engagement. Therefore, the purpose of the present study was to provide a culturally nuanced knowledge of functionality of NSSI by investigate the function of NSSI among a culturally novel sample. However, based on the existing research in the West and the limited research in non-Western contexts, we hypothesized that a two-factor model of intrapersonal and interpersonal functions also would best represent functions of NSSI among our Iranian sample. Our second objective was to examine the relationship between the NSSI functions with severity of NSSI behavior as well as psychological symptoms of suicidality, depressive symptoms, and anxiety. Because of the inconsistency regarding the importance of interpersonal functions of NSSI in collectivistic cultures (e.g., Bildik et al., 2013; You et al., 2012), we did not pose a specific hypothesis with regard to this objective. To the best of our knowledge, this is the first study, investigating functions of NSSI among university students in Iran.

## Method

### Participants and Procedure

The sample of the present study consisted of 63 students (52.4% female;  $M_{age} = 22.15$ ,  $SD = 2.75$ ) with a history of lifetime NSSI who were enrolled in a large public university in Tehran in the winter and spring of 2013. This sample was derived from a larger sample of 554 university students (57.2% female) (see Gholamrezaei et al., 2017). Potential participants for the larger sample were approached in classrooms across departments and faculties. Participation was voluntary and study packages were anonymized to protect the confidentiality of the students (see Gholamrezaei et al., 2017). This study's sample consists of only the students who endorsed the screening question of "have you ever self-injured (e.g., cutting, head banging) without any suicidal intent, which led to bleeding, bruising, or any mark". The screening question was preceded by a definition of NSSI (i.e., Self-injury is defined as behaviors that lead to body tissue damage without wanting to die. Behaviors such as cutting or head-banging that result in bleeding, bruising, or any mark without any suicidal intent). All materials and procedures were approved by the ethics board of the university, and an information sheet indicating available on-campus and community mental health resources was provided to all the contacted students.

### Measures

**Non-Suicidal Self-Injury Scale.** This scale was developed in Farsi to measure prevalence and characteristics of NSSI and was a close adaptation of the How I Deal with Stress measure (HIDS; Ross & Heath, 2007) and Section I of the Inventory of Statements About Self-Injury (ISAS) (Klonsky & Glenn, 2009). Questions regarding methods of NSSI, emotions felt after NSSI engagement, age of onset, and NSSI frequency, were adapted from the HIDS. Some other characteristics including presence of pain, desire to stop NSSI, and NSSI engagement in

presence of others were adapted from ISAS, Section I. After adaptation, the questionnaire was translated to Farsi and back translated to English followed by a clinical review to ensure the linguistic and face validity. Students who reported only engaging in one or multiple methods of self-hitting, punching, biting, and/or banging fell into the low severe NSSI method subgroup and students who indicated engagement in cutting, scratching, and/or burning categorized into moderate/severe NSSI method subgroup. This definition of NSSI severity was postulated first by Lloyd-Richardson et al. (1997) based on potential tissue damage and has been used in the NSSI research literature (e.g., Kaess et al., 2013; Lloyd-Richardson et al., 2007; Swanson, Owens, & Hinshaw, 2014).

**Inventory of Statements About Self-Injury (ISAS-Section II; Klonsky & Glenn, 2009).** The second section of ISAS consists of 39 items rated on a three-point Likert scale (ranging from 0 to 2), assessing 13 functions of NSSI which fall into two categories of intrapersonal and interpersonal functions. The intrapersonal function category consists of affect regulation, anti-dissociation, anti-suicide, marking distress, and self-punishment; the interpersonal function category consists of autonomy, interpersonal boundaries, interpersonal influence, peer bonding, revenge, self-care, sensation seeking, and toughness.

Previous studies support structural and construct validity of the ISAS functions (e.g., Bildik et al., 2013). Klonsky and Glenn (2009) found internal consistencies of .88 and .80 for the interpersonal and intrapersonal subscales, respectively. One-year test-retest reliability correlations of .60 for the intrapersonal subscale and .82 for the interpersonal subscale were found in a sample of young adults (Glenn & Klonsky, 2011). For this study, the instrument was translated and back-translated to Farsi and was examined by three clinical psychologists and an expert in Farsi language to evaluate its validity. Two items from the interpersonal subscale (item



2: “creating a boundary between myself and others” and item 33: “pushing my limits in a manner akin to skydiving or other extreme activities”) and one item from the intrapersonal subscale (item 32: “putting a stop to suicidal thoughts”) were asked to be removed from the questionnaire for approval by the ethics and research departmental committees of the university. The reasons given for removing these items were 1) the item was not culturally appropriate and 2) there was potential harm related to the item.

**The Suicidal Behaviors Questionnaire-Revised (SBQ-R; Osman et al., 1999).** This instrument consists of four items with different response scales. The first item assesses lifetime suicide ideation/plan/attempts (“have you ever thought about or attempted to kill yourself?”) and is followed by a 6-choice categorical response of “Never” to “I have attempted to kill myself and hoped to really die”. The second item evaluates the frequency of 12-month suicidal ideation (“how often have you thought about killing yourself in the past year?”) and is followed by a 5-point Likert scale from 1 (never) to 5 (very often). The third item evaluates the threat of suicide attempt (“have you ever told someone that you were going to commit suicide, or that you might do it?”) followed by a 5-choice categorical response of “No” to “Yes, more than once, and really wanted to do it”. Finally, the fourth item assesses likelihood of future suicidal behaviours (“how likely is it that you will attempt suicide someday?”) and is followed by a 7-point Likert scale from 0 (never) to 6 (very likely). Osman et al. (1999) suggest that this scoring system provides a robust measurement of a general suicide risk. The SBQ-R has demonstrated good internal consistency ( $\alpha = .83$ ) (Gutierrez, Osman, Barrios, & Kopper, 2001), as well as strong construct validity in both clinical and community samples (Osman et al., 2001). It has also been translated into Farsi and validated in an outpatient sample in Iran (Safa, Boroujerdi, Talischi, & Masjedi,

2014), but its psychometric properties are not yet published. In the current study, the computed Cronbach's alpha was .85.

**Depression Anxiety Stress Scales (DASS-21; Lovibond & Lovibond, 1995).** This instrument consists of 21 items rated on a four-point Likert scale, and is composed of depressive symptoms, anxiety and stress subscales. It aims to evaluate negative affectivity over the previous week and has revealed strong construct validity and good internal consistency among non-clinical samples, ranging from .89 to .90 across subscales (Henry & Crawford, 2005). The Farsi version of the DASS-21 is widely used and has shown strong internal consistency (anxiety,  $\alpha = .88$ ; depression,  $\alpha = .92$ ; and stress,  $\alpha = .82$ ), and high four-week test-retest reliability ( $r = .72$ ) (see Bayani, 2010). In the present study, internal consistency was strong (Cronbach's  $\alpha = .93$ ).

### **Data Analysis**

An Exploratory Factor Analysis (EFA) was conducted on the 13-function levels of ISAS using Mplus 8 (Muthén & Muthén, 1998-2017). No restrictions were imposed on the parameters of the model, given the limited prior research. We conducted the EFA with the Bayesian estimation method and GEOMIN rotation, recommended when Bayesian estimation is used, with a minimal factor loading of .40 to determine which variables fell under each factor. Bayesian factor analysis does not rely on a multivariate normal distribution and large-sample theory; and it performs better with small sample sizes (Farran & Mindrila, 2016; Heerwegh, 2014; Muthén & Asparouhov, 2012; Schmitt 2011). Moreover, compared to Maximum Likelihood, the Bayesian analysis also allows the estimation of models that are more complex (Farran & Mindrila, 2016; Schmitt 2011). In the present study, models with one to four factors were investigated, and the optimal model was selected based on a) interpretability, b) the size of eigenvalues, c) scree plot, and d) the lowest number of factors resulting in a non-significant Posterior Predictive p value

(PPP) using chi-square. In Mplus, a PPP value close to .5 suggests an excellent model fit; however, there is no established PPP value for whether a fit is acceptable.

Post hoc analyses, including t-tests and Pearson correlations, were conducted to examine the relationship between the mean scores of the emergent factors and NSSI severity, other NSSI characteristics, suicidality, depression, and anxiety symptoms. Mean scores of the emergent factors were computed by Mplus using 20 imputations from the Bayesian posterior distribution (Muthén & Muthén, 2017). As previously noted, according to Lloyd-Richardson et al. (1997), we categorized students who reported only engaging in one or multiple methods of self-hitting, punching, biting, and/or banging as the minor NSSI method subgroup and students who indicated any engagement in cutting, scratching, and/or burning were categorized into moderate/severe NSSI method. The descriptive properties of the demographic and clinical variables, post-hoc analyses, as well as internal consistencies (using coefficient alpha) were conducted using SPSS.

## **Results**

### **Primary Analysis**

The mean age of onset of NSSI engagement was 13.7 ( $SD= 5.15$ ) with mode of 15. Regarding NSSI methods used, 57% of the participants ( $n= 36$ ) indicated engaging in severe methods of NSSI and 43% ( $n= 27$ ) indicated engaging in only minor forms of NSSI. Almost 70% of the participants indicated engaging in multiple methods of NSSI, endorsing punching against a wall the most, followed by self-hitting and cutting. Regarding other characteristics, 34.9% of the participants ( $n= 22$ ) denied feeling pain when self-injuring and 57.1% ( $n= 36$ ) reported self-injuring in presence of others (see Gholamrezaei et al., 2017).

The mean total score for ISAS, Section II, was 6.68 ( $SD = 4.25$ ) which was substantially lower compared to the mean reported by Klonsky and Glen (2009) (ISAS total mean = 14.3,  $SD = 13.3$ ). The mean score of Intrapersonal functions was .68 ( $SD = .37$ ) and the mean of interpersonal functions was .42 ( $SD = .34$ ) with no gender difference. Both means were lower compared to those reported in the Klonsky and Glen's (2009) study ( $M = 1.7$ ,  $SD = 1.4$  and  $M = 0.7$ ,  $SD = 1.0$ ; respectively). The most frequently endorsed items were "calming myself" followed by "reducing anxiety, frustration, anger, or other overwhelming emotions", "punishing myself", and "signifying the emotional distress I'm experiencing". The least frequently endorsed items were "fitting in with others" followed by "bonding with peers", "entertaining myself or others by doing something extreme", and "making sure I am still alive when I don't feel real". Consistent with Klonsky and Glen (2009), the most endorsed functions were affect regulation ( $M = .96$ ,  $SD = .54$ ) and self-punishment ( $M = .74$ ,  $SD = .6$ ) and the least endorsed function was peer bonding ( $M = .21$ ,  $SD = .34$ ). Cronbach alpha coefficients were .63 and .85 for intrapersonal and interpersonal subscales, respectively. Table 1 provides information about correlations among the 13 functions of NSSI.

### **Exploratory Factor Analysis**

A two-factor model resulted in a significant Posterior Predictive p value ( $p < .0001$ ) indicating a poor fit. Thus, the optimal solution included a three-factor model with a nonsignificant Posterior Predictive p value ( $p = .2$ ; 95% CI: -20.71 to 57.12) and eigenvalues of 5.3, 1.83, and 1.14; with all remaining eigenvalues less than 1.00. Figure 1 illustrates the scree plot supporting a three-factor model. All the ISAS functions, except Affect Regulation, significantly loaded onto the three factors with a factor loading above .4 (see Table 2). The first factor was named intrapersonal and included within-self functions concerning regulating inner

experiences. The second function was referred to as social identification, which included NSSI functions about situating oneself within social/interpersonal and peer contexts such as interpersonal boundaries, autonomy, and peer bonding. The third factor was named communication and consisted of functions of NSSI to influence or communicate to someone else. The GEOMIN factor correlation between intrapersonal and social identification factors was .59 ( $p < .05$ ), between intrapersonal and communication factors was .17, and between social identification and communication factors was .29. Internal consistencies calculated by Cronbach alpha were .74 for intrapersonal factor, .83 for social identification factor, and .82 for communication factor. There was no gender difference across the emergent factor mean scores.

### **Post Hoc Analyses**

Post hoc t-test analyses revealed that students engaging in moderate/severe forms of NSSI had significantly higher scores in intrapersonal and social identification factors compared to participants who engaged in minor forms of NSSI [ $t(57) = 2.12, p < .05$  and  $t(57) = 2.4, p < .05$ ; respectively]. Such difference was not observed for the communication factor. We also examined the relations between feeling calm, happy, guilty, and shame after NSSI engagement and factor mean scores. Students who reported feeling calm after NSSI engagement had higher scores in intrapersonal factor [ $t(59) = 2.04, p < .05$ ]; students reported feeling happy after NSSI engagement had higher scores in communication factor [ $t(57) = 2.03, p < .05$ ]. No difference was found regarding feelings of guilt and shame or across factors was found in terms of other characteristics of NSSI including feeling pain and self-injuring when alone.

There was no significant difference between students reporting a past suicide attempt and students with no suicide attempt history regarding mean scores of the three emergent factors. As shown in Table 3, intrapersonal and social identification factors exhibited a significant

correlation with anxiety. Depressive symptoms correlated significantly with all the factors; whereas, no significant correlation was found between the emergent factors and suicide risk. A negative and significant correlation was found between social identification and NSSI onset.

### **Discussion**

We aimed to examine the underlying factor structure of NSSI functions among a sample of Iranian university students who self-injured using ISAS. Our analyses support a three-factor model comprising intrapersonal, social identification, and communication functions. We had hypothesized a two-factor model, as most studies utilizing ISAS revealed support for a two-factor model (e.g., Kortge et al., 2013; Klonsky & Glenn, 2009; Klonsky et al., 2015), at either the function or item level analysis. However, this is one of the first studies suggesting a three-function model using ISAS.

In our three-factor model, intrapersonal function (factor 1) consisted of the four ISAS functions of self-punishment, anti-dissociation, anti-suicide, and self-care. This factor aligns with the intrapersonal function indicated in previous studies (Klonsky & Glenn, 2009; Klonsky et al., 2015; Kortge et al., 2013). There are, however, several differences with respect to previous research. First, consistent with Kortge et al. (2013), our results provided evidence that self-care fits better as an intrapersonal factor rather than a social function. Self-care, as a function of NSSI, was defined as “self-injuring to create a physical wound that one can care for more easily than one’s emotional distress” (Klonsky & Glenn, 2009; p 218). Although Klonsky and Glenn (2009) originally theorized self-care as a self-focused function, self-care loaded slightly higher on the social function in their analysis (Klonsky & Glenn, 2009). Second point of divergence is the lack of loading of affect regulation on any of the factors. Consistent with previous research (e.g., Lindholm, Bjarehed, & Lundh, 2011; Sadeh et al., 2014; Taylor et al., 2018), affect

regulation had the highest mean with “calming myself” and “reducing anxiety, frustration, anger, or other overwhelming emotions” having the highest endorsement. In fact, 92% of the sample endorsed affect regulation as a function of NSSI. Despite the high level of endorsement, affect regulation did not correlate with other ISAS functions except from a small correlation with self-care and marking distress. Kortge et al.’s (2013) results provide partial support for this finding as they also found that despite high endorsement, affect regulation had a slightly lower than .3 factor loading. We speculate that the lack of factor loading of affect regulation could be an indicator of a separate factor structure; alone it was too distinct to load on any of the factors but was not strong enough to be a separate factor. Future studies are needed to further examine the affect regulation functionality of NSSI among this population and clarify this finding.

Our analyses revealed two other factors—social identification (factor 2) and communication (factor 3) which were not correlated, suggesting two distinct constructs. The social identification factor consisted of five functions of interpersonal boundaries, peer bonding, sensation seeking, toughness, and autonomy. In fact, the social identification factor primarily represents that an individual would engage in NSSI to establish a sense of “self” in relation to “others” including engaging in NSSI to set psychological barriers between self and others, to connect to peers, or to demonstrate toughness or autonomy. Qualitative studies on adolescents’ self-harm suggest an identification functionality of NSSI in which the individual self-injures to construct or redefine their identity in social contexts (Breen, Lewis, & Sutherland, 2013; Stänicke et al., 2018). In fact, in their systematic review on reasons for self-harm, Edmondson et al. (2016) suggest a new theme of *defining the self* through NSSI that consists of motivations including setting psychological boundaries, bonding with peers, and demonstrating strength. Although social identification functionality of NSSI has not been previously identified in the

context of ISAS, the close relations between self-injury and identity has been a consistent discourse in the literature (e.g., Ahmed & Stacey, 2003; Breton, 2018; McAllister, 2003; Walker, 2009; Zamorano & Rojas, 2017). It is also important to situate this result within the sociocultural context of the study sample. Youth in Iran hold both collectivistic family-oriented values as well as individualistic ambitions. In fact, Iranian society has undergone decades of identity crisis attempting to adhere to both Western and traditional values at the same time (Mehran, 2013). Therefore, emerging adults in universities in Iran experience unique challenges in forming their identities as they begin to navigate through the discrepancy between the traditional family values and individualistic aspirations. Additionally, due to poor economic conditions, the transition from adolescence to adulthood seems to be uncertain and difficult for some emerging adults in Iran, which also could contribute to the identity crisis among Iranian youth (Salehi-Isfahani, 2011). Therefore, the social identification factor, as a function of NSSI, may reflect the significance of the challenge of identity formation among emerging adults in Iran, manifesting through self-injury.

Our third factor, communication, consisted of interpersonal influence, marking distress, and revenge. This factor indicates a functionality of communicating emotional pain through NSSI by influencing someone, taking revenge, and/or communicating to others the emotional pain through physical marks. Although marking distress is suggested as an intrapersonal function (Klonsky & Glenn, 2009), a communication aspect could easily be conceptualized from this function as it contains a desire to signal inner distress or an attempt to build an external picture of an internal world (Straker, 2006). The concept of communicating distress through self-injury has recently gained heightened attention in the field of self-injury (Hooley & Franklin, 2017). We can also situate the communication functionality within the sociocultural context with reference



to the broader self-harming behaviours in Iran. For instance, self-immolation is a method of suicide in some parts of Iran, Middle East, as well as India (Kelly, 2011; Sharif-Alhoseini et al., 2012). Around 27% of suicide cases in Iran are actually through self-burning, with the majority of the cases being females and ethnic minorities (Ahmadi et al., 2008). Self-immolation is usually chosen due to its communication functionality including sending a threat, taking revenge, voicing the suffering, and/or expressing a deep protest to familial or socio-political circumstances (Rezaie et al., 2014). Considering the close relationship between suicidal behaviours and NSSI, emergence of a communication functionality of NSSI within our sample appears to be culturally relevant.

Surprisingly, we found no significant correlation between social identification and communication factors, but a significant correlation was found between intrapersonal and social identification factors. Additionally, intrapersonal and social identification factors were associated with greater severity in NSSI and higher symptoms of anxiety compared to the communication factor. Some theories, such as attachment and relational theories, suggest that these emergent factors demonstrate a close intersectionality among “affect”, “self”, and “others” (Pietromonaco & Barrett, 2000; Straker, 2006). If we explore outside the learning theories of NSSI, we can find a focus on the role of body, or more specifically skin, in the functionality of NSSI. Within our current societies, our skin has an important influence on shaping different aspects of identity (Breton, 2018). Skin is a boundary between inside and outside, self and others, which makes it an important site for forming a sense of self and/or identity as well as communicating to others when words fail (Breton, 2018; Straker, 2006; Suchet, 2009). Therefore, our results suggest that self-injuring the body not only has intrapersonal functionality, but also serves in constructing a

sense of self in relation to others and a way of communicating to and influencing the outside world.

In sum, our results highlight the importance of identity development and communication functionality of NSSI, as well as regulation of internal experiences in an Iranian sample. Our findings support the existing evidence indicating that ISAS is a useful instrument in investigating the factor structure of NSSI functions and reveal patterns beyond the reinforcement theory of NSSI. However, these findings should be interpreted in the context of the study's limitations. First, this study is based on self-report questionnaires, developed in the West, without qualitative or clinical confirmation. In fact, compared to previous research (Klonsky & Glen, 2009), our participants endorsed fewer functions on ISAS suggesting that other functions not listed might be at play. Therefore, further research could use multiple methods to provide a more nuanced and robust picture of NSSI functions. Second, the cross-sectional design does not allow for causal inferences. Longitudinal and qualitative studies are needed to elucidate the development of NSSI regarding its functionality. Third, as mentioned in the method section, we had to omit three items from the inventory. We are unclear regarding the significance of the omission impact on the results. Further studies can clarify this issue. Fourth, in this study, the NSSI severity was defined solely based on methods of NSSI (i.e., cutting, scratching, self-hitting, etc.). Indeed, measuring NSSI severity has become a controversial topic in the research literature with research indicating different criteria for defining NSSI severity (e.g., Buser, Peterson, & Hill, 2016; Muehlenkamp, Xhunga, & Brausch, 2018). Further research can investigate the relations among NSSI functions and NSSI severity exploring other ways of defining severity. Finally, we were unable to run an item-level analysis on the ISAS factor structure due to limited sample size.

Despite these limitations, our results indicate that ISAS could be a useful instrument within the Iranian samples in assessing the functionality of NSSI in both research and clinical contexts. This study also revealed a new pathway in factor structure of ISAS in a culturally novel sample and contributed to the NSSI research literature by contextualizing the functionality of NSSI based on a non-Western sample which was different from prior work. Being the first study investigating functions of NSSI among Iranian university students, our findings also provided important new information on how NSSI can manifest among this population.

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Table 1.

*Correlations among 13 ISAS Functions*

	1	2	3	4	5	6	7	8	9	10	11	12	13
1.Affect Regulation	-												
2.Interpersonal Boundaries	.15	-											
3.Self-Punishment	.13	.24	-										
4.Self-Care	.27*	.47**	.42**	-									
5.Anti-dissociation	.15	.61**	.39**	.71**	-								
6.Anti-suicide	.12	.19	.25	.50**	.42**	-							
7.Sensation Seeking	.18	.38	.21	.40**	.30*	.22	-						
8.Peer bonding	-.07	.51**	.17	.54**	.48**	.28*	.41**	-					
9.Interpersonal Influence	.18	.19	.18	.25*	.08	.02	.27*	.38**	-				
10.Toughness	.17	.64**	.23	.56**	.59**	.45**	.51**	.62**	.16	-			
11.Marking Distress	.35*	.44**	.32*	.40**	.24	.27**	.42**	.33**	.55**	.50**	-		
12.Revenge	.20	.25*	.22	.30**	.14	.01	.55**	.39**	.76**	.20	.54**	-	
13.Autonomy	.16	.50**	.25*	.47**	.44**	.38**	.37**	.52**	.30*	.70**	.37**	.32*	-

Note: Pearson Correlation,  $N=63$ \* $p < .05$ , \*\* $p < .01$ .

Table 2.

*GEOMIN Rotated Factor Loadings of 13 ISAS Functions*

ISAS Functions	<i>M (SD)</i>	Factor		
		Intrapersonal	Social Identification	Communication
Affect Regulation	.97 (.54)	.09	.04	.07
Self-Punishment	.71 (.60)	<b>.44*</b>	-.03	.13
Self-Care	.51 (.52)	<b>.84*</b>	.00	.09
Anti Dissociation	.49 (.59)	<b>.76*</b>	.12	-.03
Anti Suicide	.53 (.63)	<b>.43*</b>	.23	-.14
Interpersonal Boundaries	.39 (.50)	.22	<b>.54*</b>	.01
Sensation Seeking	.38 (.53)	.00	<b>.46*</b>	.39
Peer Bonding	.21 (.34)	.20	<b>.48*</b>	.20
Toughness	.45 (.49)	.01	<b>.97*</b>	-.03
Autonomy	.40 (.49)	.03	<b>.68*</b>	.06
Interpersonal Influence	.51 (.52)	.00	.00	<b>.82*</b>
Marking Distress	.64 (.59)	.00	<b>.40*</b>	<b>.46*</b>
Revenge	.50 (.54)	.01	.00	<b>.94*</b>

\* $p < .05$

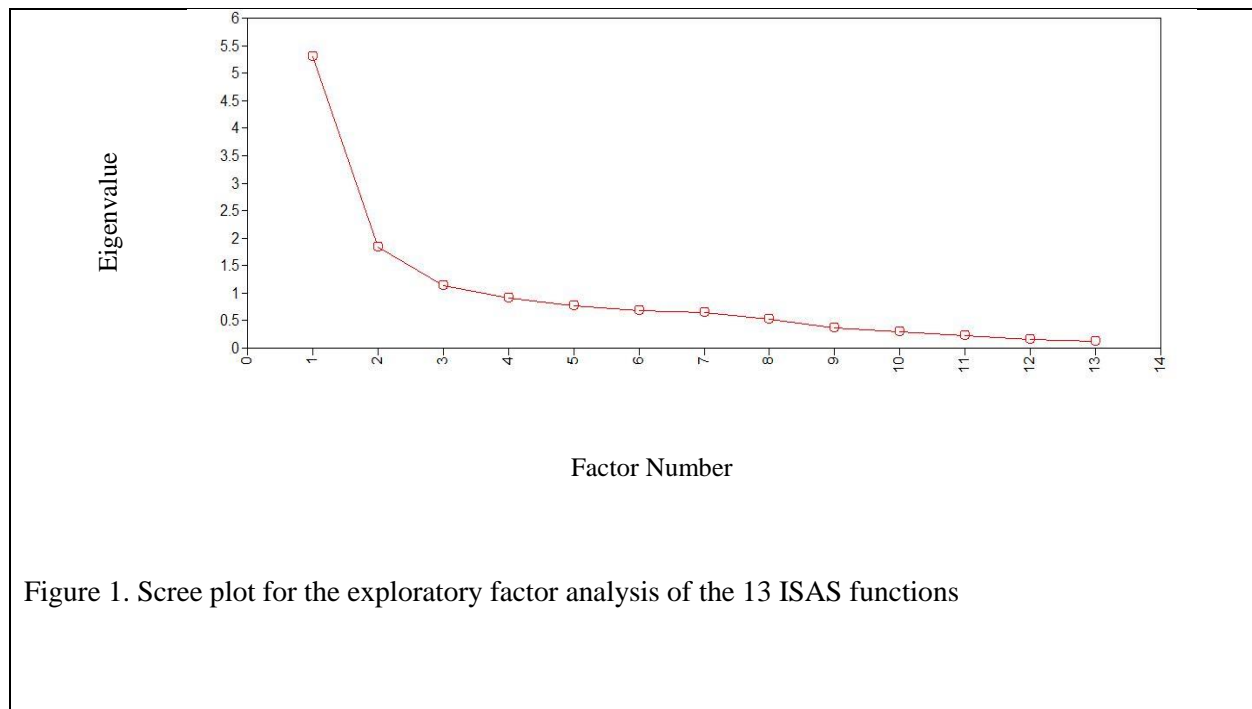
Table 3.

*Relations of Emergent Factors with NSSI Characteristics, Suicidality, Depressive, and Anxiety**Symptoms*

	Intrapersonal	Social Identification	Communication
Lifetime NSSI frequency	.24	.15	.10
NSSI onset	-.09	-.30*	-.21
Depression	.30*	.33**	.28*
Anxiety	.44**	.36**	.20
Suicide risk	.01	.04	-.01

Note: Pearson Correlation

\* $p < .05$ , \*\* $< .01$ .





### **Bridging to Manuscript 4**

As highlighted in the first manuscript, individuals from non-Western countries and ethnic/racial minorities in the West are understudied in the NSSI research literature. Manuscript 2 and 3 focused on a single non-Western context – Iran – where there has been almost no previous study of NSSI in community settings, and found different patterns regarding NSSI characteristics, risk factors and functions than in the West. This final study sought to expand on including culturally novel samples in the literature and examined whether the ethnic/racial minority status in a Western context is associated with a different NSSI profile.

Manuscript 4 aimed to investigate NSSI among an ethnically/racially diverse sample of university students in Canada. As stated in Manuscript 1, there has been insufficient attention to ethnic/racial minority emerging adults in the NSSI research literature. Manuscript 1 pointed out that some ethnic/racial groups might be particularly at high risk of NSSI by systematically reviewing the few studies focused on NSSI among ethnic/racial minorities in the West. However, these studies are rare in Canada and not much is known about mental health utilization of ethnic/racial emerging adults who self-injure in Canada which is the focus of Manuscript 4. Due to the importance of cultural understanding and responses to any given psychological issue on help-seeking behaviours (Chaze et al., 2015), a complementary qualitative component was included to investigate the subjective experience of the participants regarding cultural responses to NSSI, in the sample of ethnic/racial minority students with lifetime NSSI engagement.

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**CHAPTER 4****Manuscript 4: Nonsuicidal Self-Injury, Mental Health Service Use, and Cultural Responses  
among Ethnically/Racially Diverse University Students**

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### **Abstract**

We aimed to investigate non-suicidal self-injury (NSSI), help-seeking, and cultural responses to NSSI among a diverse sample of university students in Canada. NSSI prevalence was examined in a sample of students ( $n= 5450$ ; 63.9% female), yielded a sample of ethnic minorities, who self-injured ( $n =101$ ; 81.2% female), to study service use and cultural responses to NSSI. Asian, Southeast Asian, White, and multiracial backgrounds were at the most risk of NSSI. Three categories of responses to NSSI emerged: responses embedded in stigma, emotional, and constructive responses. Implications for cultural differences in help seeking and attitudes towards NSSI are discussed.

**Keywords:** non-suicidal self-injury, ethnic/racial minorities, help-seeking behaviours, cultural responses

## **Introduction**

Non-suicidal self-injury (NSSI) is defined as deliberate self-inflicted destruction to one's own body tissue that leads to immediate damage, without conscious suicidal intent and for reasons not socially sanctioned (Nixon & Heath, 2009). NSSI has been included in the Diagnostic and Statistical Manual of Mental Disorders – 5th Edition, Section III (DSM-5, American Psychiatric Association, 2013), and described as emerging in adolescence and decreasing in adulthood (Moran et al., 2012; Plener et al., 2015). Thus, NSSI is common among university students, with an average lifetime prevalence of 10.5%, with rates ranging from 3.8 to 17.3% (Swannell et al., 2014).

Despite increased understanding of self-injury, most research is based on White majority samples and far less is known about NSSI among ethnic minority individuals (Gholamrezaei, De Stefano, & Heath, 2015). For instance, gender differences in NSSI prevalence and methods used (Bresin, & Schoenleber, 2015) are based on White majority data, with few studies examining gender differences and other characteristics of NSSI among ethnic/racial minorities. Turner, Arya, and Chapman (2015) compared NSSI in White versus Asian university students, and found higher rates of NSSI among White students, who were also more likely to report engaging in cutting. However, they argued that overemphasis on cutting may hinder accurate assessment and identification of Asian students who self-injure. Additionally, Turner et al. (2015) found a similar pattern of gender difference with higher prevalence of NSSI among Asian female students. Despite these results and evidence suggesting that certain ethnic/racial groups are at higher risk for NSSI (Gholamrezaei et al., 2015), little NSSI research focuses on ethnic/racial minorities.

Recent NSSI research also centers on topics related to recovery such as stigma, help-seeking behaviours, and perceptions of mental health professionals, teachers, and parents (e.g., Baetens et al., 2011; Bosman, & Meijel, 2008; Heath et al., 2011; Oldershaw et al., 2008). For example, almost half of youth who self-injure do not seek help for their self-injury and when they do ask for help it is most likely from informal resources such as family, friends, and websites (Rowe et al., 2014). This is further illustrated by Baetens et al.'s study (2011) that found that 67% of adolescence with NSSI felt that they needed professional help regarding their NSSI but only 17% actually received psychological help. Stigmatization, fear of confidentiality breach, minimization of self-injury as a problem, and fear of being seen as attention-seeking are all barriers to help-seeking for NSSI (Rowe et al., 2014). In a qualitative study conducted in Britain, Oldershaw et al. (2008) found that parents who were exposed to their adolescents' self-injury, felt confused and minimized its significance (Oldershaw et al., 2008). Similar negative attitudes from teachers and mental health professionals (e.g., De Stefano et al., 2012; Heath et al., 2011; McAllister et al., 2002) and a lack of shared understanding of self-injury between youth who self-injure and their parents (Oldershaw et al., 2008) and mental health providers (Bosman, & Meijel, 2008) negatively impact recovery. These barriers may be even more prohibitive for some groups. Indeed, ethnic minorities are more likely to hold culturally-specific stigma, negative attitudes towards mental illness, and mistrust of the mental health system compared to White individuals (Chaze et al., 2015; Menke & Flynn, 2009).

Stigma is a major barrier to help-seeking for psychological issues, and exists when 'elements of labeling, stereotyping, separation, status loss, and discrimination co-occur in a power situation that allows the components of stigma to unfold' (Link & Phelan, 2001, p 367). In their systematic review, Clement et al. (2015) argued that stigma has a more profound effect on

help-seeking of ethnic minority groups compared to their White counterparts regarding mental health issues. Research also demonstrates a disproportionate effect of stigma towards mental health care utilization among ethnic minority groups (Alegría et al., 2008; Cummings & Druss, 2011; Tiwari & Wang, 2008); Chaze et al. (2015) argued that stigma towards the individual and their family members in some cultures is so profound that it can lead to somatization of the psychological suffering to avoid the stigma. Still, factors contributing to the help-seeking behaviours and mental health service use of ethnic minority youths who engage in NSSI are not well-established.

In sum, underrepresentation of ethnic minority samples in NSSI research can contribute to poor identification and understanding of individuals at high risk for NSSI. Failing to situate self-injury within specific cultural contexts may also lead to misconceptions and inappropriate treatment. The present study had four objectives: (1) to investigate the prevalence and gender difference of NSSI among a diverse group of ethnic/racial minority students; (2) to examine the NSSI characteristics including age of onset, frequency, and methods of NSSI among those individuals who engaged in NSSI; (3) to investigate mental health service use and its relation to ethnic identity among those ethnic/racial minority students who self-injure; and (4) to explore cultural responses to NSSI experienced by the ethnic minority students who engaged in NSSI. Consistent with previous research (Gholamrezaei et al, 2015; Turner et al, 2015), we hypothesized that White, East Asians, Indigenous, and multiracial students would be at higher risk of NSSI engagement compared to other ethnic/racial backgrounds; we aimed to control for general perceived stress, sexual orientation, and immigration status, found to be contributing factors related psychological issues among ethnic/racial minority groups (e.g., Deliberto & Nock, 2008; Plener et al., 2015; Wei et al., 2010; Wong et al., 2017). Further, we posited that there

would be a significant gender difference in prevalence of NSSI among White and East Asian students with females reporting greater prevalence of NSSI than males (Turner et al., 2015).

Third, based on the link between immigration status and mental health service use (e.g., Alegría et al., 2007), we hypothesized a higher rate of perceived need and mental health service use regarding NSSI among the ethnic minority students born in Canada than international students and/or first-generation immigrants. However, the focus of the study regarding investigating NSSI characteristics, help-seeking behaviours, and cultural responses to NSSI remained exploratory and descriptive in nature due to the lack of existing literature.

All students with different ethnic/racial backgrounds were included in the analyses, due to the exploratory nature of the study and limited number of ethnic minority students with NSSI in our sample. Ethnicity and race are different constructs and those used in the current study are broad categories, which are certainly not homogeneous; to acknowledge that our sample is not representative of all backgrounds, we simply refer to it as a diverse group of ethnic/racial minority students. Qualitative research also requires a context for the researchers as interpretative tools in the analytic process; two of the authors self-identify as belonging to ethnic/racial minority backgrounds and two authors self-identify as White.

## **Method**

### **Participants and Procedures**

A large university sample ( $n = 6453$ ;  $M_{age} = 19.3$ ;  $SD = 1.97$ ; 65% female) was recruited using a convenience sampling method. Undergraduate students across different departments and faculties (including engineering, arts, science, and education) of a large Canadian university were invited to participate in a 15-minute paper-and-pencil survey on stress and coping. Classroom instructors had been contacted regarding study goals and procedures and those who



consented to allocate time, either at the beginning or end of class, to the completion of the survey were approached. All students were informed regarding the goals and procedures of the study. They were also informed that participation was completely voluntary, and they could withdraw from the study at any time without any prejudice or punishment. All the participants signed an informed consent form with a copy of the consent form provided to students as a record. At the end of the survey, students were invited to provide their contact information to participate in further studies. Participants with unknown ethnicity/race (15.5%,  $n = 1003$ , 73% female) were excluded from all the analyses and the final sample consisted of 5450 students (63.9% female). There were no significant differences in the level of perceived stress or lifetime NSSI engagement between the omitted and retained participants ( $t = .659$ ,  $p = .51$ ;  $\chi^2 = 1.1$ ,  $p = .29$ , respectively). From this sample, ethnic/racial minority students with a history of NSSI who consented to be contacted for follow-up studies ( $n = 260$ ) were invited via email to participate in an online survey. Out of 260 invited students, 101 students completed the online survey. Therefore, the second study sample consisted of a diverse group of 101 ethnic/racial minority students ( $M_{\text{age}} = 20.45$ ;  $SD = 1.46$ ; 81.2% female) with a history of NSSI. Table 1 summarizes the demographic information for both samples. This study was conducted in compliance with the university's ethics board and included a detailed consent and a list of available mental health campus and community resources.

## **Instruments**

**The paper-and-pencil survey.** A 15-minute paper and pencil survey for the large sample ( $n = 5450$ ) consisted of the following measures:

**Demographic information.** Age, gender, sexual orientation, ethnicity/race, and immigration status in Canada were reported (see Table 1). Participants indicated their

ethnicity/race by responding to an open-ended question. The average age of the sample was 19.28 years old ( $SD= 2.00$ ).

***Perceived Stress Scale (PSS- 4-item)***. This scale consists of 4 items used to assess general perception of stress within the last month, ranging from 0 (never) to 4 (very often). A higher score indicates a greater level of perceived general stress (Cohen, Kamarck, & Mermelstein, 1983). PSS-4-item is used worldwide and has acceptable psychometric properties among university students in North America (Caldwell et al., 2010). In this study, an acceptable Cronbach's alpha reliability ( $\alpha = .78$ ) was found for this scale.

***Nonsuicidal self-injury (NSSI)***. This scale was developed by the second author to assess coping strategies, including NSSI, over the last 12 months and across the lifetime. Participants chose No or Yes in response to each behaviour listed. The NSSI item was worded as "self-injuring without wanting to die; e.g. self-cutting, self-hitting, burning, bruising, scratching". No previous psychometric properties are available regarding this scale.

**The online survey.** The online questionnaire for the small sample ( $n=101$ ) comprised of five sections and included 35 items with an open-ended question. The first section assessed demographics, such as gender, age, ethnicity/race, immigration status, and subjective evaluation of socioeconomic status (i.e., how would you describe your family income?). Ethnicity/race was assessed using a drop-down menu based on the Statistics Canada's classification of visible ethnic minorities in Canada, with some modification (Statistics Canada, 2011) and with the opportunity to specify ethnicity/race if needed. In the second section, participants were asked about NSSI including 12-month engagement, methods used, age of onset, and lifetime frequency. The third section assessed the need to seek help for NSSI, mental health service use regarding NSSI, mental health service use for other issues, history of a psychiatric diagnosis, and prescribed

medications. The Multigroup Ethnic Identity Measure-Revised (MEIM-R; Phinney & Ong, 2007) was also included in the online survey. MEIM-R consists of two subscales of exploration (e.g., “I have spent time trying to find out more about my ethnic/racial group”) and commitment (e.g., “I have a strong sense of belonging to my own ethnic/racial group”), each having three items ranging from ‘strongly disagree’ to ‘strongly agree’. Research suggests high internal consistency among both European Americans (Cronbach’s  $\alpha = .89$ ) and minorities (Cronbach’s  $\alpha = .88$ ) and adequate construct and theoretical validity (Yoon, 2011). In the present study, internal consistency measured by Cronbach’s alpha was .87. The last section included an open-ended question to examine cultural responses to NSSI (i.e., “In your culture, what is the general response to people who engage in self-harming behaviours?”). The question was initially developed by reviewing the existing literature on responses to NSSI among teachers and mental health professionals (De Stefano et al., 2012; Heath et al., 2011) and then consulting with senior authors who have expansive clinical and research experience in the field of NSSI. The question was then piloted and adapted for quality.

### **Data Analysis**

Chi-square analyses were used to examine the prevalence rates and gender differences of lifetime NSSI among the large sample. Rates across different ethnic/racial backgrounds were also compared. To address the first hypothesis, logistic regression was used investigating the ethnic/racial backgrounds at a higher risk of NSSI after controlling for perceived stress and sexual orientation. Primary analysis revealed no correlation between NSSI engagement and immigration status among ethnic/racial minorities therefore immigration status was omitted from the regression analysis. To address the second and third objectives, descriptive analyses and comparison tests were conducted to examine NSSI characteristics and mental health service use.

Missing data in 3% of cases ( $n = 170$ ) in the large sample was omitted from the analyses; there was no missing data in the small sample.

To analyze the responses from the open-ended question, we used inductive data-driven content analysis (Elo & Kyngäs, 2008). All responses were divided into “meaning units”, including phrases or sentences that relate to a central meaning. Therefore, our abstraction process focused on analyzing manifest content (see Graneheim & Lundman, 2004) and generating final categories, whereby emergent codes were classified into sub-categories and then grouped based on commonalities to generate the final broad categories. To ensure the trustworthiness of the results, the analysis was performed by the first author and audited by the fourth author. The generated codes and categories were subsequently discussed among all the authors and agreement was achieved upon the divergent opinions (Elo et al., 2014). Results are reported in summary tables demonstrating the connection between the data and the results. Finally, verbatim quotations were used throughout the text to reflect the participants’ voices (Elo et al., 2014).

## **Results**

### **NSSI Prevalence and Gender Difference in the Large Sample**

Results revealed that 17.4% ( $n = 951$ ) of the large sample indicated engaging in NSSI at least once in their lifetime. Table 2 displays the prevalence of NSSI across different racial/ethnic groups. Chi-square analysis revealed a significant difference across ethnic groups for lifetime NSSI ( $\chi^2 = 23.26$ ,  $p < .01$ ). Post-hoc analysis, z score comparisons, suggested a significantly higher rate of lifetime NSSI among White students ( $\chi^2 = 7.73$ ,  $p < .01$ ) and significantly lower rate of lifetime NSSI among Middle Eastern students ( $\chi^2 = 11.6$ ,  $p < .001$ ).

With a Bonferroni-corrected  $p$  value ( $= .00625$ ), a series of chi-square tests of independence were conducted to identify gender differences across the eight ethnic/racial

backgrounds regarding lifetime NSSI engagement. A significant gender difference was found for White students ( $\chi^2 = 67.21, p < .0001$ ) with higher rate of lifetime NSSI for those identifying as female or other (see Table 2). Participants identifying as “other” were omitted for the rest of ethnic/racial backgrounds due to limited sample sizes. The only gender difference among the minority groups was found for Middle Eastern students with higher reported rates of NSSI for female students ( $\chi^2 = 7.45, p < .00625$ ).

A logistic regression with a single variable of ethnicity with eight categories was conducted using presence/absence of NSSI engagement as the dependent variable and controlling for perceived stress and sexual orientation. Indigenous students were excluded from the analysis due to limited sample size ( $n=15$ ). As the Middle Eastern students had the lowest rate of lifetime NSSI, the Middle Eastern category was selected as the reference category for calculating odds ratios of other categories and identify high risk ethnic/racial groups regarding NSSI. As existing research also suggests a lower NSSI prevalence among students with Middle Eastern background compared to other ethnicities/races (Kuentzel et al., 2012), using this group as a reference category for identifying high risk groups seemed appropriate.

Goodness-of-fit was examined using Hosmer Lemeshow chi-square test, indicating an adequate goodness-of-fit for the full model ( $\chi^2(7) = 11.2, p = .13$ ). The full model was significant [ $\chi^2(9) = 404.1, p < .000$ ] and accounted for 7.5% (Cox and Snell  $R^2$ ) of variability of NSSI group membership. As shown in Table 3, East Asian, South East Asian, White, multiracial ethnic/racial categories were significant in the model controlling for perceived stress and sexual orientation.

#### **NSSI Profile and Service Use in the Small Diverse Sample ( $n = 101$ )**

**NSSI profile.** Of the total sample of diverse students with lifetime NSSI engagement ( $n=101$ ), 42.6% ( $n = 43$ ; 79% female) indicated that they engaged in NSSI within the past 12

months. Overall, 74.3% of the sample indicated engaging in more than one method of NSSI. The only gender difference found was regarding the use of ‘punching against a wall’ with higher prevalence among male students (20.7% of females Vs. 62.5% of males;  $\chi^2 = 11.7$ , Bonferroni-corrected  $p < .007$ ) (see Table 4). Average NSSI age of onset reported to be 13.72 ( $SD = 2.8$ , *Median* = 14), with the youngest age of onset being 7 years old, with no gender difference ( $t = 1.66$ ,  $p = .1$ ). Finally, 24.7% of the participants reported engaging in NSSI less than 5 times in their lifetime, 28.7% engaged 5 to 10 times, and 46.6% more than 10 times. Appendix 1 summarizes the prevalence and characteristics of NSSI across different ethnic/racial groups.

**Service use.** Regarding mental health service use, only 30% indicated that they felt the need to seek help for NSSI; 35% reported using mental health services for NSSI and 64.4% reported using them for other issues. There were no gender differences for any of these categories. Results of multiple chi-square tests revealed no significant difference in perceived need and service use for NSSI across different immigration statuses. Of the students who sought professional help for NSSI, 26% ( $n = 9$ ) reported receiving medication, including antidepressants (Escitalopram, Venlafaxine, Citalopram, Fluoxetine, Bupropion) and other types of psychiatric medication (Quetiapine and lorazepam). Table 5 summarizes the services used for NSSI and/or other issues. All the results are also summarized across the ethnic/racial groups in Appendix 2.

Finally, 41.6% of the sample ( $n = 42$ ; 83% female) indicated that they had received a psychological diagnosis with no gender difference ( $\chi^2 = .73$ ,  $p = .7$ ). Of those who received psychiatric diagnoses, 69% ( $n = 29$ ) were diagnosed with an anxiety disorder, including panic disorder, and 66.7% ( $n = 28$ ) were diagnosed with depression. Other diagnoses included 11.9% sleep disorder ( $n = 5$ ), 9.5% Anorexia ( $n = 4$ ), 4.8% Bulimia ( $n = 2$ ), 4.8% ADHD ( $n = 2$ ), 4.8% OCD ( $n = 2$ ), 2.4% BPD ( $n = 1$ ), and 2.4% substance abuse ( $n = 1$ ). Of those receiving psychiatric

diagnoses, 38.1% ( $n=16$ ) received their diagnoses within the past year and 42.9% ( $n=18$ ) within the past three years.

Finally, results of t-test analyses revealed no difference in MEIM-R scores regarding perceived need for service use for NSSI, help-seeking for NSSI, or other issues ( $t(83) = 0.87, p = 0.4$ ;  $t(99) = 0.37, p = 0.7$ ;  $t(99) = 1.6, p = 0.18$ ; respectively).

### **Results of Content Analysis**

Of the total sample of diverse students, 92 participants (74% female) responded to the question about cultural perspectives/responses to NSSI. Three main categories emerged: stigma-based responses, emotion-based responses, and constructive responses (Table 6).

**Stigma-based responses.** The stigma-based responses produced five subcategories (1) mental health knowledge; (2) prejudiced attitudes; (3) prejudiced behaviours; (4) norm/value/religion incompatible; and (5) hindered help-seeking behaviour. According to participants' experiences, there seems to be a lack of knowledge and awareness about NSSI and mental health issues within their ethnic cultures; according to our participants, some people would respond negatively by shaming the individuals, maintaining secrecy about NSSI, expressing prejudice, and distancing themselves from the individuals. According to a participant, some cultures may lack knowledge and understanding of NSSI or other mental health issues which can be taken for granted in Western cultures:

There isn't really an established cultural mindset about how to deal with it [NSSI], and if people do take action their responses can be uninformed by certain understandings that North America can sometimes take for granted about depression and other mental illnesses.

In addition to the insufficient knowledge about mental illness, some students described the failure within their culture to make a link between NSSI and the underlying psychological reasons, leading to stigma and blame:

There is a stigma placed on saying one has mental health issues that are out of our control. Both my parents somewhat invalidated my anxiety, and to some extent still do, believing that I created this anxiety for myself and can eliminate it just as easily.

Some of the participants noted how their self-injury was considered against social norms, religious practices and/or family values, and, therefore, caused shame and dishonour to their family: “That God is punishing them or an evil spirit is taking over. For the most part, it is not talked about.” Some students also described the notion of family honor and considering NSSI a dishonorable act: “Self-harm is seen very poorly in my culture. It is seen as dishonorable (emphasis on "honor")”. Self-injury specifically and mental illness were perceived to be a stereotypical Western phenomenon which does not exist in their ethnic culture: “I think it is stereotyped to be more of a Western thing. From my parents' perspective, it is hard to react to something that they thought didn't even exist”. Denying psychological issues, linking self-injury to lack of faith, and considering NSSI a shameful act that is damaging family honour leads to secrecy in the family and a lack of discussion within the culture, both of which hinders help-seeking behaviours for the individual who self-injures:

It's not talked about. Ever. Depression and mental health issues are extremely misunderstood. Some people think that if you just pray enough all of a sudden you will be healed of depression, and so many people don't seek help because of this. Depression is called a "white people" sickness.



In addition to public stigma towards NSSI and mental health issues, there are prejudiced attitudes and behaviours towards the individuals who self-injure: “They're described as *bian tai*, which roughly translates to abnormal, anti-social, or freak” and “people tend to see those suffering from these symptoms as unworthy of care, attention and prioritization”.

**Emotion-based responses.** Culturally-based negative emotional reactions to NSSI included (1) ambivalent/splitting; (2) fear-based response; and (3) anger-based response. The ambivalent/splitting subcategory represents reactions to NSSI consists of mixed, sometimes incongruous reactions that reveal the family's and ethnic culture's confusion, denial, and minimization of the self-injury. It also includes extreme responses indicating either minimization/denial or overreaction to the behaviour. For instance, a student highlights this ambivalence as “either neglect or taking the person to the hospital (public)”. Fear-based responses included reactions stemming from shock, worry, and disbelief. A participant stated that the response to NSSI in their culture would be “extreme fear and shock, people in our ethnic group (Kurdish/Turkish) take it very seriously”. Similarly, another student indicated the response would be “panic and discomfort [because] most don't know how to handle self-harm”. The last subcategory of emotion-based responses is anger-based response which includes blaming the individuals who self-injure and using force/control to stop the behaviour. For instance, a participant explained that the individual who self-injures is responsible for their struggles: “they are responsible for their own depression”. Additionally, that self-injury is viewed as manipulative, attention seeking, and/or as ingratitude towards parents: “If it's present in youth, it is seen as complaining about nothing, ingratitude, a behavioural problem, and a way to hurt your parents”. Similarly, another participant noted that “In my case, I was treated like I was misbehaving or demanding attention, rather than suffering from serious mental illness”. The

emotion underlying these interpretations seems to convey subtle forms of anger towards the individual who engages in self-injury. Clearly, these negative reactions hinder an empathic and supportive response to the individual and his/her struggles with NSSI.

**Constructive responses.** The evolving response category consists of three subcategories of (1) acceptance, (2) support, and (3) idiosyncratic response. Some participants noted recent emergence of knowledge about mental health issues and acceptance towards individuals struggling with such issues:

I think in my generation people are somewhat more accepting (for lack of a better word) of self-harming behaviors and are less likely to stigmatize them in comparison to my parents' generation.

This category also includes supportive responses such as sympathy and/or encouraging the individual to seek professional help. For example, a student wrote about the sympathy she received despite the general lack of link between NSSI and the underlying mental health issues:

“although there is a lot of sympathy, in my personal experience, there is often a lack of understanding or acknowledgement of underlying mental issues that may lead to self-injury.”

Finally, some students stated that the response to NSSI in their culture would depend on the family, context, and/or the severity of the self-injury, and we classified these responses under the constructive responses subcategory. For instance, a student wrote that the response “largely depends on the person, however” or “depends on the severity”.

## **Discussion**

The current study investigated the prevalence and profile of NSSI among a diverse sample of ethnic minority students as well as their experiences with mental health service. We

also explored the perceived responses to NSSI of the family/communities who come from different ethnic/racial backgrounds.

### **NSSI Prevalence, Profile, and Service Use**

Our results suggest that certain ethnic/racial backgrounds are at higher risk of lifetime NSSI, which is consistent with previous research (Gholamrezaei et al., 2015; Turner et al, 2015). Specifically, multiracial, White, and East Asian students are at a higher risk of NSSI compared to those from other backgrounds, after controlling for perceived stress. We also found a higher prevalence of NSSI among South East Asian students which is a new finding in the NSSI literature. However, we did not find a higher prevalence of NSSI among Indigenous students, which differs from previous research (Gholamrezaei et al., 2015), but this could be due to the very small number of Indigenous students in the sample. The lower rate of NSSI among Middle Eastern students is consistent with previous research (Kuentzel et al., 2012).

Identification of high risk ethnic/racial backgrounds regarding NSSI engagement is vital, but we must note the limitations of this study in explaining these differences. The intersectionality of ingroup and outgroup sociocultural factors may contribute to certain backgrounds being at higher risk of NSSI. Factors such as collectivism versus individualism, acculturation conflicts, increased pressure on immigrant youths to do well in school, and racism (Chew-Graham et al., 2002; Husain et al., 2006; Marshall & Yazdani, 1999; Tse & Ng, 2014) should be included. Marshall and Yazdani (1999) also caution against pathologizing certain cultures when interpreting these ethnic/racial differences. In sum, more culture-sensitive research is needed to identify factors contributing to the high prevalence of NSSI among ethnic/racial minority youths at high risk of NSSI. Nevertheless, the current findings reveal that certain

ethnic/racial groups appear to be at higher risk for NSSI which should stimulate further investigation in this area.

The gender difference among White students with NSSI being more prevalent among female students is consistent with previous research (Bresin, & Schoenleber, 2015). While no study exists on the gender difference specifically among Middle Eastern students, studies conducted in the Middle East have not found gender differences among university students (e.g., Gholamrezaei, Heath, & Panaghi, 2016) or higher prevalence among male students (e.g., Toprak et al., 2011). Using a less conservative cut off ( $p < .05$ ), we found multiracial and East Asian female students reporting higher rates of NSSI engagement. Although this is the first study to examine gender difference in NSSI among multiracial students, the higher rates among East Asian students compared to their male counterparts had been previously identified (Turner et al., 2015).

Results regarding the profile of NSSI among the diverse group of ethnic minority university students are similar to those characteristics of the White majority samples. Age of onset, use of multiple methods of NSSI, and multiple episodes of self-injury were largely consistent with previous research. While cutting and scratching are reported to be more prevalent in female White students (Bresin & Schoenleber, 2015), we found no gender difference for this characteristic. Higher rates of male students' punching a wall was the only gender difference regarding NSSI methods, which can be seen as outward-focused aggression and more commonly used by males (Whitlock et al., 2011). Due to limited sample size, we were unable to analyze the gender difference in NSSI methods used for each ethnic/racial background separately.

Compared to Baetens et al.'s (2011) results, our sample reported substantially lower rates of perceived need for receiving professional help for self-injury. Although only 30% of our

participants reported a perceived need to seek professional help, 35% did seek help for their self-injury. The discrepancy between perceived need and help-seeking behaviour might be linked to involuntary help-seeking and coerced treatment by the students' family or school personnel. Interestingly, more than half of the participants indicated using mental health services for other issues. Also, we found no relation among perceived need, service use, immigration status, and ethnic identity, in contrast to the few studies that investigated the relations between ethnic identity and mental health utilization (Burnett-Zeigler et al., 2017; Keyes et al., 2012). However, samples used in previous studies consisted mostly of adults older than 30 years from lower SES groups (e.g., Burnett-Zeigler et al., 2017). Therefore, the relationship between ethnic identity and immigration status and service used seems to be influenced by factors such as age, SES, and perhaps healthcare systems.

Besides the low perceived need for professional help, we did not find different patterns for service use among ethnic/racial minority students compared to studies with White majority samples, which is inconsistent with research regarding disparities in use of care among racialized groups (Ault-Brutus & Alegria, 2016; Cummings & Druss, 2011; Pumpa & Martin, 2015). However, caution is needed in interpreting these results in light of the sample characteristics. First, in the small sample, 79% of the students reported having middle to upper class family backgrounds. Second, it may be that participants who completed the online survey may have been more comfortable with disclosing and seeking help. Third, access to universal healthcare in Canada as well as to student health care might be a facilitative factor in help-seeking despite barriers faced by racialized groups (see Lasser, Himmelstein, & Woolhandler, 2006).

Our results suggest that ethnic minority students who self-injure might be more willing to seek help for anxiety and depression rather than self-injury. Indeed, research suggests that the

presence of some psychological symptoms such as suicidal ideation and alcohol use (Czyz et al., 2013) negatively impacts help-seeking behaviours. Therefore, the self-destructive nature and physical manifestations of self-injury might hinder disclosure for help-seeking for NSSI. Negative reactions and social stigma towards self-injury as well as associated shame, guilt, and secrecy with self-injury also seem to deter from seeking appropriate help (Pumpa & Martin, 2015). Another explanation is that NSSI might not be perceived as a problem itself but a strategy for attempting to cope with other psychological issues. Therefore, merely eliminating self-injury might not be the goal of help-seeking.

### **Cultural Responses**

Previous research suggests that, overall, attitudes towards individuals who self-injure are negative. These attitudes include shaming and stigmatizing people who self-injure, either overreacting or dismissing the self-injury, and failing to consider NSSI a meaningful action for the individual, and, instead, considering NSSI merely as a pathological symptom to be stopped quickly (e.g., Bosman & Meijel, 2008; Heath et al., 2006; Kokaliari et al., 2015; McAllister et al., 2002; Toste & Heath, 2010). However, most of this is based on White majority samples, with little attention to how self-injury among ethnic minorities is perceived and responded to within their contexts. As Kokaliari et al. (2015) suggest, cultural and religious factors shape how NSSI is responded to even among mental health professionals, and therefore, should be considered. Overall, our results share some similarities to what has been articulated in the NSSI research based on White majority samples. For example, the emotion-based response category, including responding to NSSI as a manipulative and/or attention seeking behaviour, was noted previously in the research literature focused on White majority samples (Favazza, 1989; Rayner et al., 2005). Stigma and insufficient knowledge about NSSI, discussed by our participants, have been

also reported in studies focusing on White samples (Heath et al., 2011; McAllister et al., 2002; Oldershaw et al., 2008).

Despite these commonalities, some unique themes emerged from our participants' voices. Many participants reported that their self-injury was responded to with a lack of understanding of the underlying emotional suffering of NSSI. A common theme that emerged from participants' responses was a perceived lack of link between NSSI and mental health issues; instead, self-injury was understood as lack of faith, bad spirit, immorality, weakness, and insanity. Thus, it appeared to be an incongruency between how our participants understood and made sense of their NSSI compared to people in their local cultures. Accordingly, our participants might have been adhering more to Western bio-medical approaches in understanding NSSI than their parents, relatives, and friends in their cultures. As Chaze et al. (2015) argue, religion and spirituality seem to be important factors for some ethnic/racial groups in making sense of different aspects of life including mental health versus illness. However, this incongruency reported regarding understanding NSSI seemed to be perceived as invalidating by our participants.

Participants also described profound shame, secrecy, and condemnation due to perceived damage to family honor, and a lack of an open discussion about these issues within the local culture. They also noted beliefs that mental health issues are "White" problems and did not exist in their culture. Therefore, the stigma-based category emerged in our study seems to have unique qualities compared to stigma in cultures promoting Western bio-medical approaches to mental illness. Most importantly, some participants directly referred to the hindering impact of such responses to their help-seeking behaviours. Previous research suggests that some ethnic minorities, including first and second-generation immigrants, are vulnerable to strong ingroup

stigma towards mental illness which at times could lead to isolation and social rejection (Chaze et al., 2015). Likewise, our results suggest some ingroup secrecy and discrimination towards ethnic minority youth's self-injury contributes to additional shame and guilt. Although discussing the issues raised by the students is crucial, we should note that students also highlighted the emergence of a more accepting approach to self-harm in their local cultures, notably among younger generations, and wrote about some helpful responses from family and friends within their culture such as sympathy, support, and encouragement to seek help despite the incongruent view points to understanding self-injury.

In general, it seems to be of a general negative ingroup response to NSSI among ethnic minority students which is partly similar to the responses documented in White-majority samples. However, there are also unique qualities to the responses received by ethnic/racial minority students who self-injured which appeared to be imbedded within the incongruent and differing points of view on making sense of NSSI perhaps due to generational differences and acculturation processes. Whereas, ethnic/racial minority university students might tend to relate more to Western medicalized approaches in understanding NSSI, there might be more of a religious and spiritual understanding of NSSI within their local cultures. Ingroup sympathy, empathy, and support seemed to be noticed and appreciated by participants despite the perceived incongruent perspectives.

### **Study Limitations**

Although this study highlighted different aspects of self-injury among ethnic minority individuals, it is not without limitations. First, causality cannot be established because of the cross-sectional and descriptive nature of the data. Second, regarding the diverse sample of ethnic/racial minority students with NSSI, we did not have a comparison group to systematically



compare the help-seeking behaviours and ethnic identity of the ethnic minority diverse group who self-injured with a control group, and hypothesis-driven studies are needed to facilitate generalizability. Third, small sample sizes within the different ethnic/racial groups restricted the analyses, notably regarding the NSSI characteristics and service use, for each ethnic/racial group distinctly. Fourth, our samples only consisted of eight ethnic/racial backgrounds, and was not representative of all ethnic/racial groups living in Canada. Finally, to assess the responses to NSSI that come from family, friends, or professionals within the student's cultural context, we only used one open-ended question. We acknowledge that the open-ended question was only a complementary component of the study, which cannot fully capture the complexity of the topic.

### **Clinical Implications**

Exploring NSSI is particularly important when dealing with ethnic minority youth as they encounter both mainstream and local cultures. Therefore, it is vital that cultural meanings of, and reactions towards NSSI are explored and considered in assessment and treatment planning in clinical settings. Considering the profound levels of stigma and secrecy noted by our sample, there might be additional aspects of shame and guilt which deters individuals from self-disclosure or negatively impacts the therapeutic outcome. Because of the close link between NSSI and suicidality (Klonsky, May, & Glenn, 2013), it might be necessary to explicitly explore NSSI, otherwise it may remain unnoticed. Furthermore, practitioners need to attend to the underlying struggle instead of merely focusing on eliminating self-injury to strengthen the alliance and facilitate the therapeutic process.

Previous literature suggests religious consultation and practice as a remedy to mental illness among some cultural backgrounds (Chaze et al., 2015), but we found very limited religious consultation. Perhaps the demographic characteristics of the sample such as, age, SES,

immigration status, and the university setting might have contributed to the limited use of traditional and culture-congruent copings. More studies needed to elucidate the role of non-professional forms of healing such as community approaches, religious mobilization, and traditional healing regarding self-harming behaviours among ethnic minority university students. Finally, almost 11% of the ethnic minority students indicated using websites as a resource of help-seeking for NSSI and 22% for other mental health problems. Considering the both beneficial and harmful influences of NSSI websites (Lewis et al., 2012), it is important for practitioners to explore online activities of the young individuals who self-injure and for preventive and outreach programs in colleges and universities to promote professionally-driven NSSI websites (Lewis et al., 2012).

## **Conclusions**

Despite the previous belief that NSSI mainly occurs among middle/upper class White young females (Chandler, Myers, & Platt, 2011), our results suggest that some racial/ethnic minority groups (i.e., Multiracial, East Asian, and South East Asian) are particularly at high risk of lifetime NSSI. However, socio-psychological factors contributing to this higher prevalence among certain ethnic/racial groups are yet to be determined. One of the profound influences of sociocultural contexts, supported by our results, is regarding how self-injury is perceived, made sense of, and responded to by family and society members. Overall, there needs to be more research regarding the subjective experience of ethnic minority individuals who self-injure to capture the nuances in how NSSI is made sense of, responded to, and manifests in different cultural contexts.

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Table 1

*Demographic Characteristics of both Study Samples*

Large Sample ( <i>n</i> =5450)			Small Sample ( <i>n</i> =101)		
Characteristics	n	Percent	Characteristics	n	Percent
Gender			Gender identity		
Male	1931	35.4	Female	82	81.2
Female	3480	63.9	Male	16	15.8
Trans	11	.2	Other	3	3
Not Listed	15	.3			
Missing data	13	.2			
Sexual Orientation			Ethnic/racial background		
Heterosexual	4886	89.7	African descent (Black)	3	3
Gay	93	1.7	East Asian	50	49.5
Lesbian	42	.8	Latin American	6	5.9
Bisexual	254	4.7	South East Asian	3	3
Not Listed	84	1.5	South Asian	14	13.9
Missing data	91	1.6	Middle Eastern	11	10.9
			Multiracial	9	8.9
			Other	5	4.9
Ethnicity/Race			Social Economic Status (subjective)		
African descent (Black)	162	3	Low	10	9.9
European descent (White)	2837	52.1	Low average	11	10.9
East Asian	1216	22.3	Average	44	43.6
Latin American	106	1.9	High average	29	28.7
Middle Eastern	363	6.7	High	7	6.9
Multiracial	316	5.8			
Indigenous	15	0.3			
South Asian	360	6.6			
Southeast Asian	75	1.4			
Status in Canada			Current Status in Canada		
Citizen	3687	65.8	Second generation immigrant	33	32.7
Immigrant	191	3.5	First generation immigrant	42	41.6
International student	1584	29.1	International student	21	20.8
Not listed	72	1.3	Not listed	5	5
Missing data	16	.3			
			Country of birth		
			Canada	34	33.7
			China	18	17.8
			United States	12	11.9
			Other countries reported	37	36.7

Table 2.

*NSSI Prevalence and Gender Difference in the Large Sample (n= 5450)*

Ethnic/racial Affiliation	Total	Male		Female		Other		$\chi^2$
	<i>Lifetime NSSI</i>	<i>NSSI</i>	<i>Non-</i>	<i>NSSI</i>	<i>Non-</i>	<i>NSSI</i>	<i>Non-</i>	
			<i>NSSI</i>		<i>NSSI</i>		<i>NSSI</i>	
	<i>Percent (n)</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	
Multiracial	21.1 (67)	11	75	55	166	1	0	5.37 <sup>1</sup>
Southeast Asian	20.0 (15)	4	22	11	36	0	1	.66
White	18.9 (536)	118	867	406	1363	11	8	67.21*
East Asian	16.5 (201)	56	355	143	615	1	1	5.2 <sup>1</sup>
Latin American	16.0 (17)	5	33	12	52	0	0	.54
South Asian	14.7 (53)	20	108	33	189	0	0	.04
African Descent (Black)	13.0 (21)	6	52	14	82	1	0	.57
Middle Eastern	11.1 (40)	8	132	32	179	0	2	7.45*
Indigenous	6.7 (1)							

\* Significant gender difference using Bonferroni-corrected  $p < .00625$ <sup>1</sup>  $p < .05$

Table 3.

*Results of Logistic Regression Predicting Presence/Absence of Lifetime NSSI Engagement*

Predictors	<i>B</i>	<i>SE</i>	Wald	<i>Odds Ratio</i>	95% Confidence Interval
Perceived Stress	.199	.01	226.82***	1.22	1.18-1.25
Sexual Orientation	1.2	0.11	121.3***	3.25	2.64-4
Ethnicity/Race					
East Asian	.55	.19	7.9**	1.7	1.18-2.52
Southeast Asian	.75	.35	4.62*	2.12	1.01-4.2
White	.73	.18	15.93***	2.1	1.45-2.98
Multiracial	.74	.23	10.36**	2.1	1.34-3.29

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 4.

*Prevalence and Gender Differences Regarding NSSI Methods Used in the Small Sample (n=101)*

NSSI Method Used	Total	Male	Female	Gender
	Percent	Percent	Percent	difference
				$\chi^2$
Cutting	57.4	37.5	59.8	2.7
Scratching	60.4	43.8	64.6	2.46
Self-hitting	41.6	43.8	40.2	.07
Biting	29.7	43.8	26.8	1.8
Punching a wall	28.7	62.5	20.7	11.7*
Head-banging	19.8	37.5	17.1	3.44
Burning	7.9	0	7.3	1.25

\* Bonferroni-corrected  $p < .007$



Table 5.

*List of Mental Health Services Used among the Small Sample (n=101)*

Mental Health Services	For NSSI	For Other Issues
	Percent (n)	Percent (n)
Counsellor/therapist/psychologist	19.8 (20)	43.6 (44)
Psychiatrist	13.9 (14)	20.8 (21)
Physician (e.g., your family doctor, doctor in a hospital or walk-in clinic)	4 (4)	14.9 (15)
Social worker	5.9 (6)	5 (5)
University mental health services	14.9 (15)	34.7 (35)
Peer support programs	5 (5)	9.9 (10)
Crisis hotline	5.9 (6)	8.9 (9)
Emergency services	5 (5)	4 (4)
Websites	10.9 (11)	21.8 (22)
Religious consultants	(0)	2 (2)
Other	1 (1)	4 (4)

Table 6.

*The Illustration of the Abstraction Process of the Cultural Responses to NSSI*

Category	Stigma-based responses					Emotion-based responses			Constructive responses		
Subcategory	mental health knowledge	prejudiced attitudes	prejudiced behaviours	evaluated as norm/ value/ religion incongruence	Hindered Help-seeking Behaviour	ambivalent/ splitting	Fear-based	Anger-based	Acceptance	Support	idiosyncratic
Indorsement Frequency	42%	35%	22%	25%	4%	14%	19%	21%	3%	11%	4%
Codes	ignorance	Taboo & stigma	Social condemn	Secrecy (within the family)	reduced help seeking behaviour due to considering faith as cure	Inconsistency in how to respond to /handle it	fear and shock	Considered an attention seeking behaviour	Emergence of acceptance and awareness	Asking for help from professionals	The response depends on the family
	Insufficient open discussion (within the culture/society)	Consider the individual insane/ unstable/ crazy/ abnormal	Social exclusion/ estrangement	Considered immoral/ wrong	Shaming/ Shameful	Dismissing and minimizing	Disbelief	Using force/ pressure to stop the behaviour		Sympathy	depends on the degree of NSSI
	Insufficient knowledge and awareness about NSSI/ mental health issues	Consider the individual weak	Pity	Depression and/or NSSI are Seen as a Western/White phenomenon	help-seeking behaviours are discouraged due to stigma	Confusion	Worry	Considered manipulative		Empathy	Similar to mainstream response
	Not realizing that the behaviour indicates underlying inner suffering/ mental health issues	Taboo and stigma in older generation	insufficient support/ care	Dishonour on family		Considered a phase		Considered ingratitude (to parents)			
	Praying or faith as the cure			result of insufficient faith or connection to God				Blame			
				being punished by god or evil taking over				considered childish/ irresponsible			

## CHAPTER 5

### Conclusion

The interaction between cultural contexts and self-harm is well documented (Colucci, 2006). Sociocultural contexts shape the meaning of suicide, suicide rates, choice of suicide method, and gender differences (Canetto & Lester, 1998; Colucci, 2006; Khan, 2005; Lenzi, Colucci, & Minas, 2011). Yet, the field of NSSI is dominated by data drawn from middle-class White majority samples and individuals who do not fit the dominant cultures are underrepresented. Narrowing the focus to emerging adulthood, the aim of the present dissertation was to provide a culturally nuanced understanding of and knowledge about NSSI and include these understudied groups in the research literature.

The objectives of this dissertation were fourfold: (1) to systematically examine the research literature regarding prevalence, characteristics, and risk factors of NSSI among non-Western samples and ethnic/racial minorities; (2) to investigate prevalence, characteristics, and risk factors of NSSI among a sample of university students in Iran as well as the relations between NSSI and suicide attempts amongst the sample; (3) to examine the functions of NSSI among a sample of university students in Iran who reported lifetime NSSI engagement; and (4) to investigate the role of race/ethnicity on the NSSI prevalence of ethnic/racial minority university students in Canada, their mental health service utilization, and their subjective experience of cultural responses to NSSI.

Manuscript 1 presented a comprehensive literature review on prevalence, characteristics, and risk factors of NSSI among non-Western samples and ethnic/racial minorities. To the best of my knowledge, this was one of the first reviews that systematically synthesized, analysed, and integrated the existing research on NSSI among non- White samples comparing and contrasting to

White majority data. Results of this systematic review drew attention to the emerging studies in non-Western countries suggesting dissimilarities in terms of gender differences in NSSI prevalence and methods used compared to the West. The results also indicated some divergence regarding function of NSSI emphasizing the relational functionality of NSSI in non-Western societies. Additionally, reviewing the few existing studies on NSSI among ethnic/racial minorities indicated that some ethnic/racial groups might be particularly at high risk of NSSI. The review also suggests an intersectionality among ethnicity/race, gender, and socioeconomic status. In summary, the systematic review of the existing literature emphasized a growing need for a more comprehensive knowledge of NSSI among non-Western countries and minority groups in the research literature.

To contribute to a culturally nuanced understanding of NSSI, Manuscript 2 investigated NSSI prevalence, characteristics, and risk factors among university students in Tehran, Iran; a sample that differs substantially from prior work in this area. Results of Study 2 indicated that NSSI is a common phenomenon among both male and female university students in Iran. New patterns were revealed regarding gender differences in prevalence and method used of NSSI. Consistent with the existing studies conducted among emerging adults in non-Western countries, no gender difference was found regarding prevalence and methods use for NSSI. Also, some interesting findings were obtained regarding the relationship between emotion regulation and NSSI, particularly among female students. It appeared that, unlike in the West, female students who self-injured reported more emotional awareness compared to those with no history of NSSI. Moreover, their NSSI was not related to symptoms of anxiety and depression and may have been linked to experience of frustration and/or anger. Finally, a strong relationship between NSSI and suicide attempt was found above and beyond depressive symptoms and suicide ideation for both male and female students highlighting the clinical importance of NSSI among the sample.

Manuscript 3 aimed to investigate functions of NSSI among the sample of Iranian university students who self-injured. Manuscript 3 was one of the few studies conducted in non-Western countries using the Inventory of Statements About Self-Injury (ISAS), a well-designed and empirically supported instrument identifying a wide range of motivations for engaging in NSSI. Results of Study 3 contributed to the research literature by revealing additional patterns of functionality among the sample. Three functions of NSSI were identified including intrapersonal, social identification, and communication factors. The emergent intrapersonal factor mostly aligned with the intrapersonal function indicated in previous studies representing a self-focused functionality of NSSI centering on self-punishment, anti-dissociation, anti-suicide, and self-care functions of NSSI. The social identification function represented a motif which is to establish a sense of self/identity in relations to others. Finally, the communication factor highlighted the desire to communicate the emotional pain through NSSI. Although no previous studies using ISAS identified social identification and communication functionality, the close relations between self-injury and identity and the communication functionality of NSSI have been well-discussed in the research literature.

In summary, Study 2 and 3 revealed new findings in how NSSI can manifest itself differently in a non-Western culture. To make better sense of these findings, we need to situate the results of the two studies within the sociocultural contexts of the sample. To do so, a brief history of the sociopolitical situation in Iran will follow to give readers some contexts regarding the challenges that university students in Iran may need to face.

Right after a remarkable economic growth in 1970s, the Revolution occurred in Iran, in 1979, by overthrowing Mohammad Reza Shah's secular and westernized monarchy and brought dramatic changes in political, social, cultural, and economic landscape of Iran (Milani, 1994). A

year after, a devastating eight-year war occurred between Iran and Iraq when Saddam Hussein used mustard gas against Iranian troops with no international repercussion (Milani, 1994). Shi'i fundamentalists with the leadership of Khomeini were able to take over in 1979 while they were neither the cause of the revolution, nor the only force in the revolution. They gradually established a full-scale dictatorship by repressing their rivals through suppression and mass executions. Despite national protests against the government dress code regulation, veiling of women became compulsory in 1983 (Milani, 1994). Decades of "mutual satanization" took place, and has been occurring, between Iran's regime and the US including an exaggeration of perceived negative aspects of each side; spreading misunderstanding, mistrust, hatred, and paranoia in both countries; and portraying a fictional image of ordinary Iran (Milani, 1994). However, on the positive side, the emergence of a mass schooling system and the security provided by veiling for girls in religious conservative rural areas led to a unique education opportunity for both girls and boys in urban as well as rural areas (Salehi-Isfahani, 2009). Nevertheless, for the regime, manipulating school curriculum was a massive project to produce "New Islamic Citizens" through exposing young children to the post-revolutionary ideology (Malekzadeh, 2012). Being highly politicized, up until 2003, elementary school textbooks revealed minimum acknowledgement of childhood as a distinct developmental stage portraying a "mini-adult" projection of childhood years. Resistance and sacrifice well-illustrated through stories from the "Palestinian child" were promoted, encouraging students to develop an idealized child-as-adult concept (Malekzadeh, 2012). Girls were encouraged to a passive transition to womanhood by the onset of menstrual cycle through embracing their religious obligations (Malekzadeh, 2012). Nonetheless, this massive project has failed. The regime failed to realize that the post-revolution children are not just passive recipients of the post-revolutionary ideology. In fact, at a young age, Iranian students engage in deconstructing,

reinterpreting, and ignoring the ideology imposed in school years (Malekzadeh, 2012). However, sorting through the different explicit and implicit messages is not an easy task and without consequences. Iranian youth undergo complex and conflicting emotions as they navigate through guilt, fear, hate/love as well as anger/longing within the school experience. Profound nostalgia for a bygone childhood and/or experiencing the present as a loss are usually the minimum outcomes of this struggle for the post-revolution generations who did schooling between 1980s well into 2000s (Malekzadeh, 2012). The bigger challenge is yet to come as Iranian youth approach late adolescence. A corrupted political state and dysfunctional economy have created a chronic state of youth unemployment leading to an uncertain transition from adolescence to adulthood in Iran. As the result, there exists a prolonged emerging adulthood or “waithood” when young individuals have to continue their education to the postsecondary and postgraduate levels while staying at home with their parents hoping they could enter the job market at some point (Salehi-Isfahani, 2011).

In summary, as Iranian university students’ lives, particularly females’, are politicized from childhood, the ongoing process of deconstructing and reconstructing major sociocultural and political discourses began at an early age for our participants. Emerging adults in our sample, as a post-revolution generation, had to confront and navigate multiple and confusing battles to shape their personhood; the political ideology of the regime imposed in school years; their own family traditions and conventions; massive governmental surveillance and control through restrictions such as veiling and incomprehensible prohibitions towards art, music, sexuality, entertainment etc.; uncertain and unfavourable outlook on future; rapid globalization; and exposure to idealized portraits of life in the West projected in social media.

This is an ongoing battle for university students in Iran which no doubt leads to emotional and psychological consequences such as profound frustration and helplessness (Salehi-Isfahani,

2011). Therefore, if we situate the results of Study 2 within the frustration and helplessness caused by the sociopolitical situation, it is not surprising that self-hitting is the preferred method used for both males and females. Also, Study 2 indicated that, contrary to the West, emotional awareness was a risk factor of NSSI among females. There seems to be an important question to consider here. In reflecting on what exactly emotional awareness looks like in a young woman's life in Iran, we need to ask ourselves whether any clear line can be drawn between emotional awareness and sociopolitical awareness when an Iranian woman's life is involuntarily politicized and heavily surveilled from childhood. In other words, we may speculate that reaching emotional awareness also includes awareness of sociopolitical suffocation, notably for women, as the air they breathe is politicized. Thus, considering the link between emotional and sociopolitical awareness, in an Iranian woman's intrapersonal world, emotional awareness appears to become a deadfall and, therefore, can understandably correlate with NSSI. In conclusion, the concept of emotional awareness may need to be approached here by considering the sociopolitical atmosphere; as this concept is introduced by studies conducted in middle-class White samples and might have complete different dimensions and meanings in other societies. However, future studies of a more qualitative nature are needed to elucidate these interpretations.

Results of Study 3 can also be situated within the study sample contexts. Emergence of two new NSSI functions of social identification and communication are socioculturally relevant. The process of identity exploration and formation for emerging adults in Iran occurs in the context of long-lasting task of navigating through highly conflicting view points proposed by school, religion, family traditions, local media, global media, as well as personal aspirations and ambitions. Also, as previously noted, the process of transitioning to adulthood may look very uncertain for some emerging adults in Iran as they may remain economically excluded from the society due to high



periods of unemployment (Salehi-Isfahani & Egel, 2007). In addition to the current battles for emerging adults in Iran, there has been an ongoing “national identity” crisis in Iran for the past couple of centuries when it has undergone radical secularization to radical Islamization (Soltan Zadeh, 2012). Therefore, emergent of social identification function within the factor structure of ISAS appears to reflect the difficult endeavor of forming an identity during the tough times of the postrevolution crises. Within the era in Iran that high levels of governmental surveillance, censorship, and control are explicitly practiced by a multi-layer sophisticated system (e.g., “moral police” and “cyber police unit”), notably on university students (Aryan, Aryan, & Halderman, 2013), self-harm could manifest as an effective communication strategy. As discussed before, self-immolation is a common method of suicide among marginalized groups in Iran including ethnic minorities and socioeconomically disempowered women who deal with unfair familial and/or social circumstances. Therefore, it can be said that due to sociopolitical conditions in Iran some youth would tend to utilize private yet loud and clear methods of communication such as self-injury as a safe but effective strategy of expressing their internal distress or responding to the external pressures.

In summary, despite the important intersectionality among sociocultural factors and self-harm, there are a limited number of studies taking into account broader contexts of study samples in interpreting their results. In their qualitative study on mostly a White sample of college female students who self-injured, Kokaliari and Berzoff (2008) argue that within the context of capitalism, self-injury appears to be a “quick fix” and a “Western form of personal and social control” which is serving capitalist societies by helping the individual to regain their capacity to compete and produce. For ethnic/racial minorities who live in capitalist or individualistic societies self-injury may show itself differently as it is embedded within both the majority and the local cultural

contexts. Therefore, Manuscript 4 aimed to examine the relations among ethnicity/race, NSSI engagement, and mental health service use as well as cultural responses to NSSI. Results countered the belief that NSSI is mainly prevalent among young middle/upper class White females and that multiracial, East Asian, and Southeast Asian students are also at a higher risk of NSSI compared to those from other backgrounds, after controlling for perceived stress. Also, our results found a low perceived need for professional help regarding NSSI and indicated that ethnic minority students who self-injure might be more willing to seek help for anxiety and depression rather than self-injury. The results of the qualitative component of the study revealed that ethnic minority students generally experience an unhelpful response from people in their local cultures to their self-injury stemming from the stigmatization of NSSI and mental health issues and/or negative emotionality towards NSSI. Furthermore, the stigma experienced by the ethnic minority students seemed to have some unique qualities. Many students saw that their local culture had insufficient psychological explanation for NSSI but linked it to a lack of religious faith, immorality, or weak will. Secrecy about a family member's NSSI was used to protect the family honour and reputation. Another salient theme was the definition of NSSI as a "White problem" thereby denying its existence in the local culture. In summary, cultural and religious contexts shape how NSSI is understood and responded to even among mental health professionals (Kokaliari et al., 2015). Investigating these cultural understanding and responses to NSSI are crucial when examining help-seeking behaviours and service use of individuals who self-injure.

### **Clinical Implications**

The findings from the four studies have important clinical implications. Results of the presented studies indicate that NSSI occurs among people from non-Caucasian cultures and in non-Western countries but might express itself differently. Therefore, sociocultural contexts and

cultural factors relevant to each population need to be considered at both policy making and clinical setting levels to deliver culturally-tailored preventive/management strategies and treatment interventions.

The studies conducted in the Iranian sample were some of the first studies using clear terminology of NSSI distinguishing it from suicidality among university students in Iran. The acknowledgment of NSSI as a clinical condition separate from suicide is the vital first step for policy makers and strategy planners in Iran. This differentiation needs to be promoted among practitioners and mental health professionals dealing with university students as well as faculty and administrative staff who may encounter such issues. In fact, the strong relationship between NSSI and suicide attempts and the rather high rates of NSSI found among both male and female students indicate the importance of providing education and implementing training programs for mental health professionals in Iran. The results of this dissertation could provide primary knowledge about the prevalence, gender differences, risk factors, and functions of NSSI for practitioners who work with Iranian university students and is a critical first step in establishing this issue among student populations in Iran.

Results of Manuscript 2 and 3 not only can provide valuable knowledge for mental health professionals in Iran but could also help to normalize and de-stigmatize self-injury behaviours among Iranian university students and facilitate help-seeking by these individuals. A major barrier in help-seeking identified by university students in Iran is the perceived stigmatization of individuals struggling with a psychological issue as well as the stigma of receiving psychological treatments (Peykari et al., 2011). Furthermore, in addition to providing correct information to practitioners and university staff, normalizing and destigmatizing NSSI among mental health professionals as well as faculty and staff interacting with university students is a critical step in

promoting further clear and constructive discussions regarding this issue in both community and clinical settings in Iran.

In addition, the results emphasize the necessity of culturally tailored interventions as NSSI appeared to be embedded in the sociocultural contexts of Iranian university student life. For instance, clinicians, may also need to consider the social identification and the communication functionality of NSSI in addition to its intrapersonal functions, in the assessment and treatment of university students in Iran who self-injure. In a qualitative study, university students in Iran highlighted the importance of counselling services within universities but noted a disconnect and inconsistency between student population needs and policy making of the counselling services in Iranian universities (Peykari et al., 2011). Therefore, findings from research conducted among these populations deserve a more prominent role in identifying and addressing student mental health related needs.

This dissertation also drew attention to the sociocultural contexts of NSSI among ethnic minority university students in Canada. NSSI is common and particularly high among some ethnic/racial minority individuals including multiracial, East Asian, and Southeast Asian students despite the ongoing myth that cutting mainly occurs among White female teenagers (Chandler, Myers, & Platt, 2011). We have to, first, overcome this misconception to be able to efficiently identify and attend to self-injury among other ethnic/racial groups. The intersectionality of gender/race/SES also needs to be taken into account, at both policy making and clinical levels, as it appeared that gender and SES play an important role regarding risk of NSSI engagement.

The present findings also drew specific attention to how ethnic minority students, in Canada, who self-injure experience family/community responses to their NSSI. Stigma and negative and unconstructive responses towards NSSI exists even among White majority samples

(Heath et al., 2011; McAllister et al., 2002; Oldershaw et al., 2008). However, our study underscores the importance of attending to cultural understanding of NSSI in ethnic minority students, as in addition to the stigma embedded in mainstream cultures, these students may experience additional stigma embedded in their local cultures.

The results of Manuscript 4 also indicated that university mental health or counselling centers as well as websites/internet are the important resources that ethnic minority students seek help from regarding their NSSI or other issues. Therefore, cultural competency among practitioners working in university mental health or counselling centers is crucial in facilitating help-seeking, disclosure of NSSI in therapy, as well as maximizing positive outcomes for ethnic minority students who self-injure. Even a quick review of websites offering help and resources to youth with NSSI shows images of predominantly White female teenagers with few representations of ethnic minority individuals, notably males, who self-injure. This might promote the widespread misconception that NSSI is a White young female phenomenon ignoring the fact that NSSI also exists among people from other backgrounds and genders. These misconceptions are held not only by public but also by scholars, researchers, as well as clinicians working in the field of NSSI (Chandler et al., 2011). Thus, it seems that a more deliberate attention to the inclusion of racially/ethnically diverse young individuals in community and clinical discourses regarding NSSI is needed. Ethnic minority students in our sample had low rates of perceived need to seek help as well as low rates of help-seeking regarding NSSI. Therefore, further steps may need to be taken to facilitate help-seeking of ethnic minority students who self-injure including reconsidering and deconstructing the misconceptions we hold regarding NSSI within the context of race/ethnicity and gender.

### **Directions for Future Research**

Overall, more attention to culturally nuanced studies is needed in the field of NSSI. The studies presented suggest several specific directions for future research. The studies on the Iranian samples revealed a rather high prevalence of NSSI and a different manifestation regarding risk factors and functionality of NSSI. However, the developmental trajectory of functions and risk factors of NSSI in Iran is unknown. Considering the early NSSI onset reported in the sample, there seems to be a critical need to investigate the developmental aspect of NSSI utilizing longitudinal study designs. Functions and risk factors of NSSI need to be examined at different developmental stages using clear definitions, terminology, and distinction between NSSI and suicidal behaviours. Moreover, considering increasing rates of psychological disorders and suicide mortality in Iran (Hassanian-Moghaddam & Zamani, 2017; Sharifi et al., 2015), investigating help-seeking behaviours of students who self-injure and barriers to their service use should be a priority.

The studies on the Iranian sample highlight the importance of culturally-sensitive research in Iran in the field of NSSI. Qualitative studies tapping into the role of sociocultural factors on NSSI might shed more light on the different manifestations of NSSI in Iran. Moreover, future research can specifically examine potential culture-specific risk and protective factors of NSSI in Iran such as familial factors, collectivistic versus individualistic values and inspirations, and religious beliefs.

Also, future research should examine university counsellors' awareness about, knowledge of, and skills in responding to NSSI in university students in Iran. In fact, in the West, there have been numerous studies conducted among mental health professionals and teachers to investigate the level of skill and training in dealing with NSSI in students (e.g., Bosman & Meijel, 2008; Heath et al., 2011). Kokaliari et al. (2015) investigated cultural beliefs of social work students in a non-

Western as well as some European countries and argued that sociopolitical factors and cultural beliefs highly influenced the social worker trainees' perspectives on characteristics, aetiology, and treatment of NSSI. Therefore, a future line of research in Iran would be to examine mental health professionals' understanding of NSSI and particular challenges faced when encountering individuals who self-injure in their practice. Identifying perspectives and challenges of practitioners in Iran in working with NSSI is vital to contextualize future educational programs that acknowledge NSSI as a public health issue in Iran.

An important but neglected population in Iran, particularly when we talk about self-harming behaviours, are LGTBQ communities. Due to rigid restrictions imposed by the government, very few official studies have been conducted focusing on this population. In fact, 'homosexual acts' are considered a crime and can be punished by death within the postrevolution legal system in Iran (Rehman & Polymenopoulou, 2013). Studies in other Muslim countries indicate that LGBTQ communities might be at high risk of psychological distress and suicidality (Mohammadi, 2018). Future research may be able to identify LGBTQ university students in their study samples to investigate NSSI and suicidal behaviours among this marginalized population in Iran.

The findings from the sample of ethnic minority students in Canada also points to further research on determining contributing factors in the high prevalence of NSSI among specific ethnic/racial groups. Therefore, a specific focus on NSSI among multiracial, East Asian, and Southeast Asian university students is required to identify specific risk factors contributing to the high prevalence of NSSI among these groups of students. Additionally, this study highlights the importance of a more comprehensive research to investigate cultural understanding and responses to NSSI among ethnic minority individuals. This should also include examining the awareness and knowledge of mental health professionals in Canada about NSSI in ethnic minorities. Investigating

multicultural competency of mental health professionals when encountering NSSI in ethnic minority students can be also a critical topic of research. Another line of research could include an investigation of the understandings and responses of mainstream cultures to ethnic minorities' NSSI. In other words, it is unclear how the misrepresentation of ethnically/racially diverse individuals in public, scholarly, and clinical discourses on NSSI impacts ethnic/racial minorities who self-harm.

In summary, there is a clear need for future research on NSSI in culturally diverse samples in order to advance the field of NSSI. As previously noted, DSM-5 a widely used diagnostic guide in many developing and non-Western countries, has proposed NSSI as a potential disorder. The dominance of Western cultures and White majority samples in the field of NSSI may lead to the emergence of a disorder that is not culturally-informed. Therefore, it is vital to include individuals struggling with NSSI from different racial/ethnic/cultural backgrounds within the current and emerging discourses. This will not be accomplished without future studies giving voice and representing these understudied groups in the NSSI research literature.



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