

Prevalence of Nonsuicidal Self-injury and Suicide Attempt among Young Adult University Students

Jhun Robbie U. Galicia¹ and Tomas D. Bautista²

¹Department of Psychiatry and Behavioral Medicine, Philippine General Hospital, University of the Philippines Manila

²Department of Psychiatry and Behavioral Medicine, College of Medicine and Philippine General Hospital, University of the Philippines Manila

ABSTRACT

Objective. To determine the prevalence and possible risk factors associated with nonsuicidal self-injury (NSSI) and suicide attempt among young adult university students.

Methods. A cross-sectional study involving six colleges from a university in Manila, from which randomization through a computer-generated random number was done. Data were obtained through self-administered questionnaires. Descriptive analysis and logistic regression were done to evaluate the data.

Results. A total of 225 students participated in the study (mean age of 20.33 years). Majority were females (60.44%). Ideations of self-harm were reported in 49.33%. NSSI and suicide attempts were reported at 26.22% and 14.67%, respectively. In general, self-harm (NSSI and/or suicidal attempt) was reported at 33.78%, while 7.11% of the respondents reported both NSSI and suicidal attempt in the past. Furthermore, 2-3 out of 10 students who engaged in NSSI would have a suicide attempt. Associated factors of NSSI and suicide attempt were age, female gender, gender orientation, parental civil status, employment, economic standing, and psychopathology which support the findings cited in literature.

Conclusion. The high prevalence of self-harm NSSI and/or suicidal attempt (33.78%) and the finding that NSSI was a gateway for suicidal attempt and that 2-3 out of ten who engaged in NSSI would have a suicide attempt underscores the need to develop an early intervention upon detecting self-harming behaviors and a preventive program for the progression of NSSI to suicide attempts.

Key Words: nonsuicidal self-injury, NSSI, suicide attempt, self-harm

INTRODUCTION

Behaviors of self-injury are an increasing issue among adolescents and young adults. According to recent research, self-injurious behavior occurs in 4% to 49% of adolescents in the general population and the numbers are predicted to rise.¹ What is more alarming is that many incidents of self-injury may go unnoticed until it inadvertently (or advertently) leads to a suicide attempt. Self-injury has been reported throughout history. The terms self-mutilation, deliberate self-harm, self-inflicted violence, self-abuse and even wrist-cutting are ambiguous in including self-injurious acts with or without suicidal intent.² Hence, clear and consistent terminologies and definitions are vital in research and treatment of persons with these types of behaviors. For the purposes of this study, nonsuicidal self-injury (NSSI) pertains to intentional, self-inflicted damage to the surface of one's body likely to induce bleeding, bruising, or pain, with the expectation that the injury will lead to only minor or moderate physical harm (ie, there is no suicidal intent).³ Suicide attempt, on the other

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Corresponding author: Jhun Robbie U. Galicia, MD
Department of Psychiatry and Behavioral Medicine
Philippine General Hospital
University of the Philippines Manila
Taft Avenue, Ermita, Manila 1000 Philippines
Telephone: +63 925 7286667
Email: jhun.robby@gmail.com

hand, is defined as a self-initiated sequence of behaviors by an individual who, at the time of initiation, expected that the set of actions would lead to his or her own death.³ NSSI and suicide attempts will, for the purposes of this study, be collectively termed as self-harm or self-harming behaviors.

Suicide is a global phenomenon that deserves attention. Suicide was the tenth leading cause of death for all ages in 2013.⁴ Among persons aged 15-34, suicide is the second leading cause of death. Among adults aged 18-22 years, similar percentages of full-time college students and other adults in this age group had suicidal thoughts (8.0 and 8.7%, respectively) or made suicide plans (2.4 and 3.1%, respectively).⁵ In the WHO Western Pacific Region Statistics in 2002, suicidal thoughts among Filipino youth aged 15-19 years old were 6.4% in male and 16.3% in female; and those aged 20-24 years old were 8.6% in male and 18.2% in female.⁶ In other sources, female-to-male prevalence ratio was about 3:1 to 4:1.³

University life is a period of rapid changes and transition, stress, and vulnerabilities.⁶ College students frequently have more complex problems today than they did over a decade ago. Common stressors in college include greater academic demands, being on your own in a new environment, changes in family relations, changes in social life, and exposure to new people and ideas.¹ Students may struggle with sleep deprivation, substance abuse, and other risky behavior during college life that could impact their risk for suicide. Presence of a diagnosable mental illness, often major depression, has been consistently identified as a major risk factor for suicide in all segments of the population. Certain environmental triggers can also increase the risk for suicide. Whilst suicide attempts more often than not reach medical attention, nonfatal, nonsuicidal self-inflicted injuries often go unnoticed.

Evidence of NSSI has been appearing in the modern era. In more recent years, NSSI has entered the mainstream with celebrities reporting histories of 'cutting'.⁶ There has also been a proliferation of videos featuring NSSI on the internet. NSSI has been considered by many researchers as a maladaptive coping mechanism or emotion regulation strategy, as this may be used to alleviate overwhelming emotions and decrease tension,⁷ which are experienced in stressful situations. In studies relying upon retrospective recall, individuals report a variety of high-activation negative emotions prior to NSSI including tension, anxiety, nervousness, anger, sadness, frustration, and self-hatred. For the most part, individuals recall that high-activation negative emotions are significantly decreased after NSSI. Significant increases in feelings of relief, as well as feeling calm, peaceful, and attentive during and after NSSI are reported.⁸ Estimates of NSSI prevalence among nonclinical samples vary widely. The most commonly cited figure for nonclinical adults is that 4% report having engaged in NSSI.⁹ A more recent study of adults (aged 19-92 years old) across 48 US states found a lifetime NSSI prevalence of 5.9%.¹⁰ In adolescent to young adult student population, a study of 9th to 12th graders in the US, identified

rates of self-cutting ranging from 26% to 37%.¹¹ A recent study reported the 12-month prevalence as high as 46.5%.¹² Risk for self-injury among college students, particularly, is found to be higher than the general population; ranging from 12% to 38%.^{7,13-16} Unlike that of suicide attempts, male and female prevalence rates of NSSI are closer to each other.³ Predictors for NSSI include negative temperament, poor adaptive skills, pessimism, and social isolation.² There is some evidence that the incidence of NSSI is elevated among those who report exclusive homosexual attraction or same-sex attraction. Other risk factors occur similarly in suicide attempts (Figure 1). The great majority of individuals who engage in NSSI do not seek clinical attention. It is not known if this reflects frequency of engagement because accurate reporting is seen as stigmatizing, or because the behaviors are experienced positively by the individual who is unmotivated to receive treatment.³ Unfortunately, there has been no local study on NSSI.

This study was formulated in line with the Psychosocial Wellness Program in a chosen university, whose inception in 2013¹⁷ was brought about by a completed suicide of one of its students. Providing local data for future programs or intervention is necessary for the program to develop. Previous studies on the prevalence of depressive symptoms of first year college students of the said university showed an increasing trend. In 2014, it was found that, of the 785 first year college students who completed the Beck's Depression Inventory (BDI), 18% had significant depressive symptoms, 8% had borderline clinical depression, 9% had moderate depression, and 1% had severe depression.¹⁸ Another study in 2015 on first year college students showed 12% (115) of 950 freshmen had scores ranging from borderline to severe depression. In effect 1 out of 8 college freshmen were at risk for borderline to severe depression.¹⁹

The relationship between NSSI and suicide is complex.²⁰ The overall risk of suicide increases after NSSI over time, with a 1.7% increase after 5 years, 2.4% at 10 years, and 3.0% at 15 years.²¹ There is evidence that a strong correlation between suicide and NSSI exists. Empirical research indicated that as much as 40% of those who engaged in NSSI had thoughts about suicide while inflicting the injury²²⁻²⁴ and approximately 50% to 85% of people who injured themselves attempted suicide at least once during their lifetime.²⁵ With this bulk of evidences, it can be said that NSSI prior to suicide behavior serves as a "gateway" behavior for suicide and may reduce inhibition through habituation to self-injury.²⁶ Thus, intervening even before a suicide attempt emerges (ie, situations of NSSI and on its probable causative factors) might affect the risk of it ever happening.

METHODS

Study design and setting

This research was a cross-sectional study involving students from a selected university in Manila. Only students

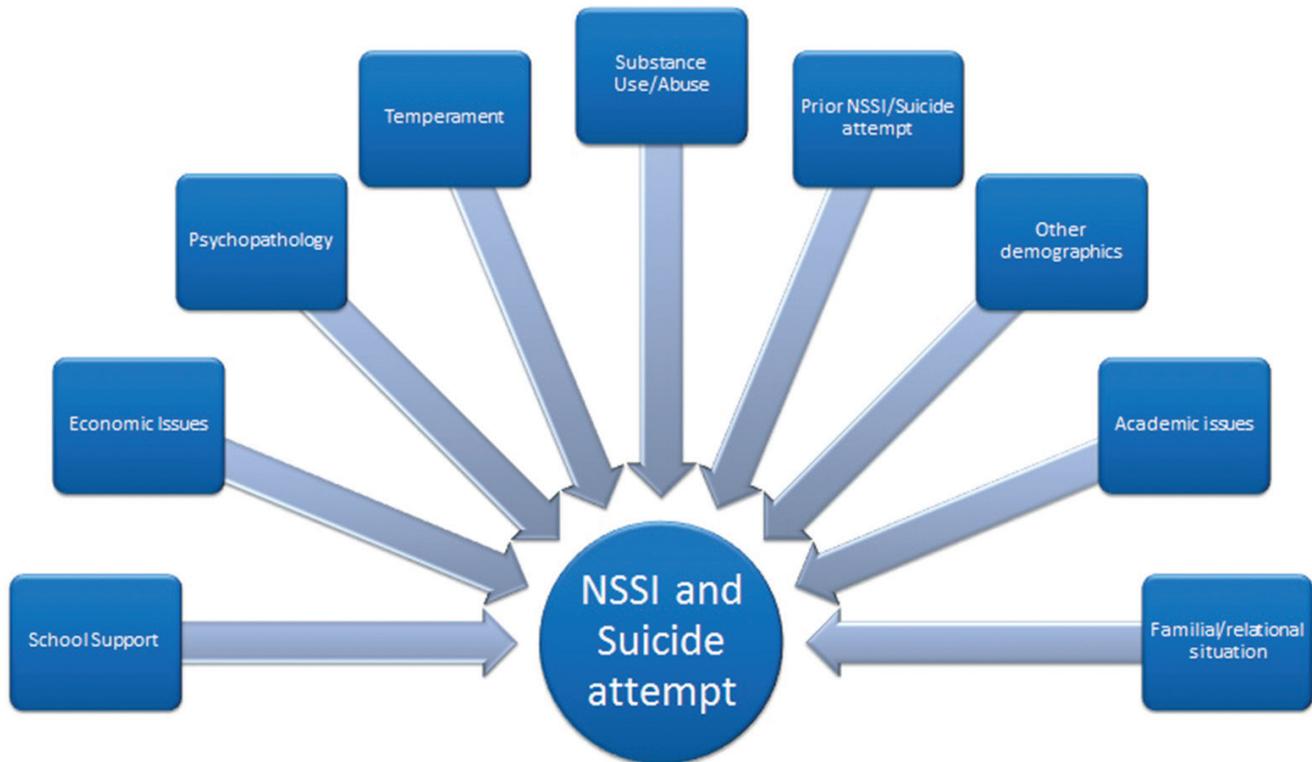


Figure 1. NSSI and suicide attempt conceptual framework.

This conceptual framework summarizes the possible risk factors pointed out in researches cited in this paper. Absence of school support as well as mental health programs can be a predictor.²⁷ Other possible risk factors are economic issues,^{3,13} presence of a psychopathology,^{2,3,27} temperament (ie, introversion – social isolation),² substance use,²⁷ prior history of NSSI/suicide attempt, other demographics such as age,^{4,5} gender,^{2,3} sexual orientation,^{13,28} academic issues²⁷ and familial/relational situation.³

from the seven (7) out of the nine (9) colleges of the university were selected in consideration of the chosen age group (young adult) and geographic accessibility of the students. After forwarding a letter of request to the deans of each of the 7 colleges, six (6) agreed to participate in the study.

Randomization process

Due to one college’s withdrawal from the study, the sample size was recomputed for the participating colleges (N=225). From these colleges, a list of students (excluding the 1st and 2nd years) was obtained from their respective college secretaries. This was then randomized by obtaining an online computer-generated random number.

Measures

Demographic questionnaire. This was a 2-page questionnaire consisting of demographic information as well as possible factors that can be associated with self-harming behavior, as cited in literature.

Self-harm questionnaire (Appendix). Adapted from the Deliberate Self-Harm Inventory (DSHI): this is a 17-item, yes/no, self-report questionnaire that explores the direct destruction of body tissue. Respondents are also asked about the onset, frequency, most recent episode, the need for hospitalization/medical treatment, and duration of

such events. The last question related to suicide attempts. Additional questions pertaining to suicidal ideations and other forms of self-injurious behavior were included. The DSHI was validated by Gratz in 2001 on a sample of 150 undergraduate psychology students and was shown to have high internal consistency and adequate test-retest reliability at 2-4 weeks.⁷ Permission to use the DSHI was obtained from the author via email.

Procedure

Informed consent forms were given out to the randomized sample population based on their available schedule. The study was briefly explained to the respondents with options of either 1) consenting to the study, 2) taking more time as they need to read and understand the consent form, and 3) not consenting to the study. For those who consented, the signed informed consent form was taken back by the researcher and stored in a separate envelope. They were then given the questionnaires. Respondents were given similar pens to answer the questionnaire with. Each respondent was given one (1) hour to complete the questionnaire. The researcher and a research assistant stood nearby as the respondents completed the questionnaire. Any questions were entertained by the researcher. Topics on nonsuicidal self-injury and suicide attempt may be uncomfortable to some individuals.

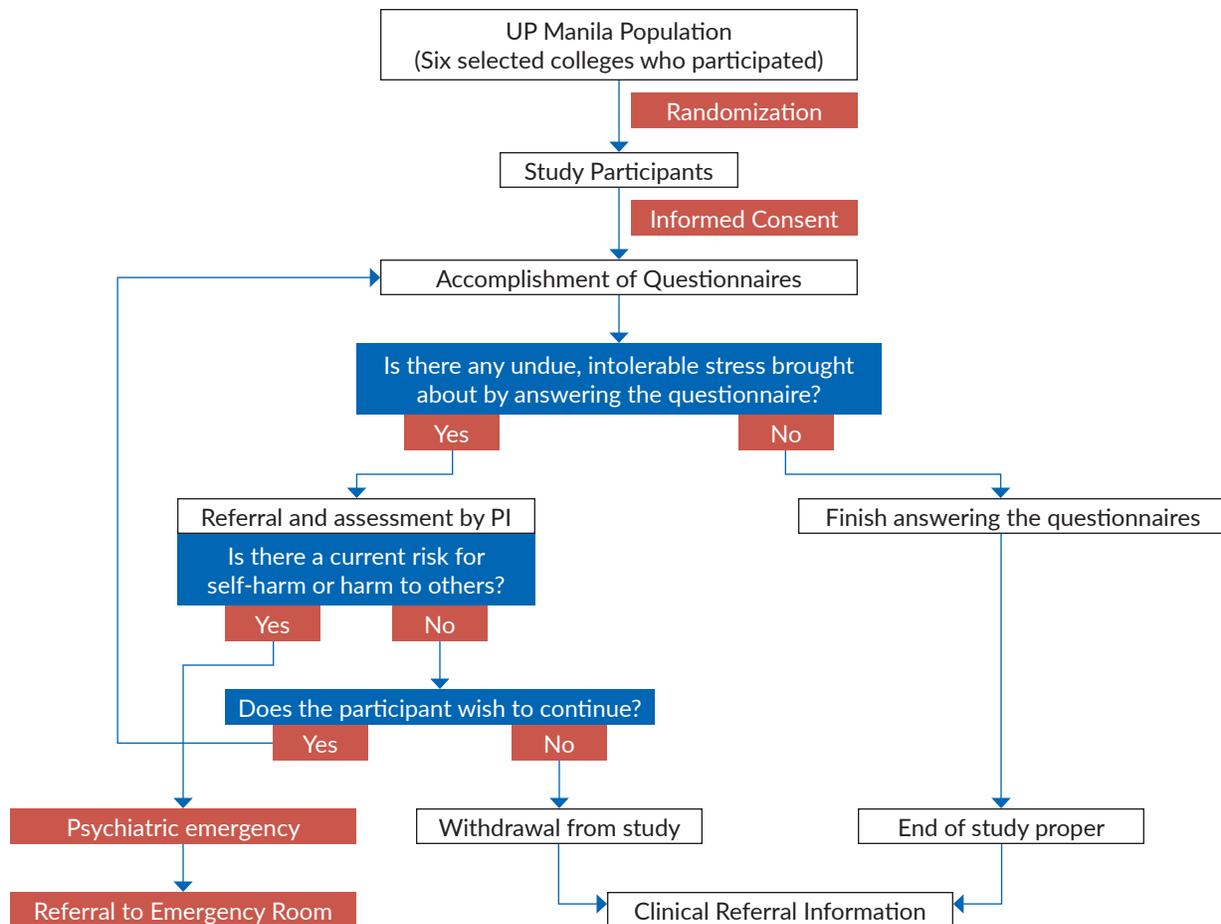


Figure 2. Referral flowchart for adverse events.

If discomfort would be experienced while answering the questionnaire, the participant was instructed to inform the principal investigator and the referral flowchart would be followed (Figure 2). Fortunately, all the respondents were able to complete the questionnaire without any adverse events. All respondents were then given clinical referral information. This contained information on who to contact if the respondent experiences thoughts of self-harm. The completed questionnaires were returned to the research assistant and stored in a separate envelope. Data were analyzed through descriptive analysis and logistic regression.

Ethical issues

The research proposal was approved by an ethics board prior to the initiation of the study. Issues concerning anonymity, confidentiality, and risks were noted. To protect the identity of the respondents, the signed informed consent forms were given and stored separately from the completed questionnaires. No identifying marks were placed on the questionnaires and all the respondents used the same type of pen in answering the questionnaire. Only numerical codes were used in each of the questionnaire. Data were stored in a password-protected laptop owned by the primary investigator.

Foreseen risks of inducing intolerable stress while answering questions on self-harm were considered. Hence, questionnaires were accomplished in the presence of the researcher – to manage any adverse event that may occur. However, reporting of any intolerable stress was still respondent-driven. If there is a psychiatric emergency (wherein the respondent poses a threat of harm to self or others), the respondent will be asked to stop completing the questionnaire and immediately be ushered to the emergency room. All respondents were given clinical referral information. No monetary incentive or compensation was given to the respondents of the study.

RESULTS AND DISCUSSION

Demographic profile

A total of 225 students were given the questionnaire and all of them participated in the study. The mean age was 20.33 years. The youngest and oldest were aged 19 and 27 years, respectively. Majority of the respondents were Roman Catholic (74.22%), members of an organization inside the campus (77.33%), full-time students (97.78%), heterosexual (80.89%), and non-smokers (81.33%); drank caffeinated

beverages (83.11%); and lived with family members or other roommates (85.78%). Two-fifths (38.67%) of the respondents drank alcohol less than once per month; 30.67% drank \geq once per month; and 9.33% (21 out of 225) tried it only once. Only 23 (10.22%) reported previous use of cannabis.

About 11 out of 225 (4.89%) respondents reported that they were diagnosed with a psychiatric condition. Most (83.11%) of the respondents were under the care of parents who are married. More than one-third (34.67%) of the respondents had a household income of more than Php 200,000.

Prevalence of self-harm

Ideations of self-harm were reported to be prevalent at 49.33% (111 out of 225). Similar to other literature cited in this study (prevalence of self-injury among college students ranging from 12% to 38%),^{7,13-16} the prevalence of self-harm found in this study was at 33.78% (76 out of 225). This meant that approximately 3 out of 10 students would have engaged in any self-harm behavior. The prevalence of NSSI was 26.22%, while that of suicidal attempts was 14.67% (Table 1). This coincides with the WHO Western Pacific Region Statistics in 2002. Respondents who reported that they had done both NSSI and attempted suicide in the past were 7.11% (16 out of 225). Twenty nine (29) out of 76 respondents who reported that they had done NSSI and/or attempted suicide claimed that they sought help, either from friends, family members, or physicians/health care professionals. Among those who engaged in NSSI, 27.12% had attempted suicide. This meant that approximately 2-3 out of 10 students who engaged in NSSI would have a suicide attempt. This alarming data could be related to how university students value academic achievements. Asian students usually have high academic burden,³ low satisfaction regarding their academic performance and high expectations,⁴ and may suffer more academic stress⁵ than their western counterparts. Academic achievement is highly valued by Asians because it is perceived as one of the few avenues for upward mobility and expanded options.² Exposure to stress ultimately leads to the development of adaptive or maladaptive coping mechanisms; where NSSI and suicide attempt are considered maladaptive.

Possible associated factors for self-harm

In the computation for the odds ratio, logistic regression was used (Table 2). Age was the only quantitative variable among the factors and was interpreted differently.

I. NSSI (alone), associated factors

In the association of factors with NSSI, the likelihood of engaging in NSSI decreased by 31% per year increase in age. On the other hand, there was a ten-fold increase in the likelihood of engaging in NSSI among those with a diagnosed psychopathology on medications.

Table 1. Prevalence of self-harm among college students (N=225)

Outcome	Point estimate	95% C.I.*	
Self-harm (NSSI and/or suicide attempt)	33.78%	27.55%	40.01%
NSSI	26.22%	20.43%	32.01%
Suicide attempt	14.67%	10.01%	19.32%

*C.I. - Confidence interval

II. Suicide attempt (alone), associated factors

In the association of factors with suicidal attempts, there was an almost three-fold increase in the likelihood of attempting suicide among females compared to males. A diagnosed psychopathology entailed a ten-fold increase in the likelihood of attempting suicide. The likelihood of attempting suicide among those whose parents are unmarried was increased by a third.

III. Both NSSI and suicide attempt, associated factors

In the association of factors with both NSSI and suicide attempt, the likelihood of engaging in both NSSI and suicide attempt decreased by 70% per year increase in age. The likelihood was also decreased by 90% among those with a monthly income of \geq Php100,000. The likelihood was increased among: those who responded with 'Others' under sexual orientation (twelve-fold increase); those who were working part-time (ten-fold increase); those with a diagnosed psychopathology (eleven-fold increase); and, those whose parents were unmarried (increased by a third).

IV. Suicide attempt among those with NSSI, associated factors

In the final association, only results with the female gender were found to be statistically significant; in that among those who engaged in NSSI, the female gender entailed a five-fold increase in likelihood of attempting suicide. Lastly, although not statistically significant, it is important to note that, with regard to age, the likelihood of attempting suicide among those with self-harming behavior increased by 2% per year increase in age; which was significantly higher than those cited in literature (Hawton et al, 2003).

Characterization of self-harming behaviors

Among the respondents who engaged in any self-harming behavior (N=76), 62% (47 out of 76) were female while 37% (28 out of 76) were males. One respondent failed to answer the question on gender. The respondents endorsed three most common forms of NSSI: 1) severe scratching (43%), 2) cutting (37%), and 3) punching self (32%). Table 3 lists down the other forms of NSSI and its respective frequencies. Majority of the respondents (62% or 47 out of 76) who endorsed engaging on self-harming behaviors, employed multiple forms of self-harming behavior. The mean age of onset for any form of self-harm was found to be 13.75 years. Lastly, of the 76 respondents who reported engaging in

Table 2. Odds ratio of various factors included in the study

Factor	Association with NSSI** alone		Association with suicide attempt alone		Association with NSSI** and suicide attempt		Association of suicide attempt among those with NSSI**		
	OR***	p-value	OR***	p-value	OR***	p-value	OR***	p-value	
Age	0.69	0.005	0.82	0.129	0.30	0.016	1.02	0.899	
Religion									
	Non-Catholic	1.00	-	1.00	-	1.00	-	1.00	-
	Catholic	0.51	0.05	0.53	0.126	0.79	0.697	1.19	0.726
Gender									
	Male	1.00	-	1.00	-	1.00	-	1.00	-
	Female	0.75	0.363	2.84	0.031	1.80	0.332	4.98	0.003
Sexual orientation									
	Heterosexual	1.00	-	1.00	-	1.00	-	1.00	-
	Homosexual	0.38	0.22	0.38	0.368	0.92	0.941	1.58	0.749
	Bisexual	1.67	0.357	2.22	0.213	4.00	0.062	2.11	0.355
	Others	3.75	0.155	5.00	0.116	12.00	0.018	3.17	0.357
Organization									
	Yes	1.00	-	1.00	-	1.00	-	1.00	-
	No	1.02	0.973	0.43	0.27	0.43	0.422	0.32	0.186
Employment									
	No	1.00	-	1.00	-	1.00	-	1.00	-
	Yes	3.88	0.143	4.68	0.13	10.36	0.024	2.71	0.424
Lives alone									
	No	1.00	-	1.00	-	-	-	-	-
	Yes	0.62	0.326	0.55	0.352	-	-	-	-
Alcohol use									
	No	1.00	-	1.00	-	1.00	-	1.00	-
	Yes	1.09	0.822	3.07	0.078	1.33	0.67	3.03	0.116
Nicotine use									
	No	1.00	-	1.00	-	1.00	-	1.00	-
	Yes	1.21	0.627	1.77	0.199	2.15	0.188	1.93	0.248
Cannabis use									
	No	1.00	-	1.00	-	1.00	-	1.00	-
	Yes	1.44	0.466	2.32	0.116	2.41	0.21	2.11	0.281
Caffeine use									
	No	1.00	-	1.00	-	1.00	-	1.00	-
	Yes	1.04	0.931	1.53	0.458	1.48	0.618	1.66	0.445
Parental status									
	Single	1.00	-	1.00	-	1.00	-	1.00	-
	Married	0.34	0.099	0.33	0.018	0.27	0.03	0.73	0.557
	Separated	1.17	0.855	1.00	-	1.00	-	1.00	-
	Widowed	0.40	0.382	1.00	-	1.00	-	1.00	-
	Guardian	0.33	0.404	1.00	-	1.00	-	1.00	-
Student status									
	Regular	1.00	-	1.00	-	1.00	-	1.00	-
	Irregular	1.68	0.249	1.49	0.496	1.61	0.51	0.87	0.827
Household income									
	<10k - <30k	1.00	-	1.00	-	1.00	-	1.00	-
	30k - <50k	0.90	0.855	1.18	0.806	0.74	0.673	1.07	0.94
	50k - <100k	0.67	0.466	0.75	0.656	0.28	0.111	0.64	0.587
	100 - <200k	0.48	0.204	0.29	0.121	0.10	0.041	0.30	0.206
	>200k	0.49	0.161	0.47	0.229	0.10	0.011	0.48	0.354
Psychiatric diagnosis									
	None	1.00	-	1.00	-	1.00	-	1.00	-
	Diagnosed with medication	10.74	0.036	10.74	0.001	11.15	0.005	4.56	0.076
	Diagnosed without medication	1.34	0.811						

**NSSI – Nonsuicidal self-injury

***OR – odds ratio

self-harming behaviors, 57 (75%) had engaged in self-harm within the past 12 months, while 19 (25%) had engaged in self-harm at least 2 years ago.

CONCLUSION AND RECOMMENDATIONS

Based on this study, those with statistically significant associated factors were similar to those cited in literature. Females were at an increased risk for attempting suicide but gender differences in engaging in NSSI were minor. Younger people are more at risk for engaging in NSSI and/or suicide attempts, as stated in the literature. This is supported by evidence found in this study that the risk decreases to a certain amount per year increase in age. However, the risk

of suicide increases per year increase in age (although with no statistical significance). Similarly, findings on gender orientation, parental civil status, employment, economic standing, and psychopathology also supported the findings cited in literature.

It is important to note that the sample size might have affected the statistical significance of other associated factor. It is recommended that a larger sample size, as well as a more stringent recruitment and methodology be employed in future studies (such as using drop boxes and single-blinded randomization). Also, it is important to evaluate those 18 years and below as findings of this study was suggestive of an even higher prevalence rate among adolescents (eg, employment of scales on entry level of first year students with

Table 3. Frequency of individuals endorsing the various self-harming behaviors (N=76)

Self-harm behavior	Frequency	Percentage
Cutting	28	37%
Burning with cigarette	2	3%
Burning with lighter or match	3	4%
Carving words into skin	13	17%
Carving pictures into skin	6	8%
Severe scratching	33	43%
Biting	11	14%
Rubbing sandpaper on skin	2	3%
Dripping acid on skin	0	0%
Using bleach or oven cleaner to scrub skin	2	3%
Sticking pins, needles, staples into skin	19	25%
Rubbing glass into skin	1	1%
Breaking bones	1	1%
Banging head	12	16%
Punching self	24	32%
Interference with wound healing	9	12%
Other forms of self-harm	31	41%

adequate follow-up). Finally, the finding that 2-3 out of 10 students who engaged in NSSI would have a suicide attempt underscored the need to develop an early intervention (eg, through an accessible peer-counselling/support group and/or guidance counsellors in all colleges) upon detecting self-harming behaviors as this can be preventive of the progression to suicide attempts.

Statement of Authorship

All authors have approved the final version submitted.

Author Disclosure

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APPENDIX

Self-harm questionnaire

This questionnaire asks about a number of different things that people sometimes do to hurt themselves. Please be sure to read each question carefully and respond honestly. Often, people who do these kinds of things to themselves keep it a secret, for a variety of reasons. However, honest responses to these questions will provide us with greater understanding and knowledge about these behaviors and the best way to help people. Please answer yes to a question only if you did the behavior intentionally, or on purpose, to hurt yourself. Do not respond yes if you did something accidentally (eg, you tripped and banged your head on accident). Also, please be assured that your responses are completely confidential. In each of the questions, if you answer no, you may proceed to the succeeding number.

1. Have you ever intentionally (ie, on purpose) cut your wrist, arms, or other area(s) of your body (without intending to kill yourself)? (circle one):

1. Yes 2. No

If yes,

How old were you when you first did this?

How many times have you done this?

When was the last time you did this?

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

Was this behavior accompanied by suicidal ideations?

In the questionnaire given to participants, the above format is used for each of the following items, with each index question followed by the five follow-up questions. Like Item 1, each of the following items begins with the phrase: Have you ever intentionally (ie, on purpose)

2. Burned yourself with a cigarette?
3. Burned yourself with a lighter or a match?
4. Carved words into your skin?
5. Carved pictures, designs, or other marks into your skin?
6. Severely scratched yourself, to the extent that scarring or bleeding occurred?
7. Bit yourself, to the extent that you broke the skin?
8. Rubbed sandpaper on your body?
9. Dripped acid onto your skin?
10. Used bleach, comet, or oven cleaner to scrub your skin?
11. Stuck sharp objects such as needles, pins, staples, etc into your skin, not including tattoos, ear piercing, needles used for drug use, or body piercing?
12. Rubbed glass into your skin?
13. Broken your own bones?
14. Banged your head against something, to the extent that you caused a bruise to appear?
15. Punched yourself, to the extent that you caused a bruise to appear?
16. Prevented wounds from healing?
17. Done anything else to hurt yourself that was not asked about in this questionnaire (with or without intending to kill yourself)?
If yes, what did you do to hurt yourself?