Psychological Distress as a Predictor of Non-Suicidal Self Injury among Adolescents

Charles Ganaprakasam\textsuperscript{1,*}, Syeda Humayra\textsuperscript{2}, Suppiah Nachiappan\textsuperscript{3}, Samita Karunaharan\textsuperscript{4}, and Basir Abidin\textsuperscript{5}

\textsuperscript{1}Department of Educational Psychology and Counselling, University of Malaya, Malaysia.
\textsuperscript{2}Faculty of Medicine, University of Cyberjaya, Malaysia.
\textsuperscript{3}Faculty of Human Development, Sultan Idris Education University, Malaysia.
\textsuperscript{4}Faculty of Allied Health Sciences, University of Cyberjaya, Malaysia.
\textsuperscript{5}Center for Research & Graduate Studies, University of Cyberjaya, Malaysia.

\textbf{Correspondence:}
Charles Ganaprakasam
Department of Educational Psychology and Counselling, University of Malaya, 50603 Kuala Lumpur,
Email: Ganaprakasamcharles@gmail.com

\textbf{Abstract}

\textbf{Background:} Non-Suicidal Self Injury (NSSI) is commonly associated with numerous poor outcomes in young adolescents, including eventual suicide. Much of our understanding on NSSI among young people is limited in the Malaysian context. \textbf{Aim:} This study aims to identify the prevalence of NSSI across gender and ethnicity and investigate the association between NSSI and psychological distress. \textbf{Material and Method:} This is a cross sectional study which comprised 175 young adolescents from three secondary schools who were required to complete a questionnaire. \textbf{Results:} The result shows that 20.6\% of young adolescents are engaged in NSSI behaviour with significant difference between male and female. NSSI is also pertinent among the Indian ethnic as compared to Malay and Chinese. Further analysis also revealed that psychological distress could significantly predict NSSI behaviour. \textbf{Conclusion:} Overall, the finding demonstrated that NSSI behaviour are present among adolescents and linked to psychological distress. Effective prevention and intervention strategies may help prevent and control NSSI behaviors in adolescents who have experienced psychological distress.

\textbf{Keywords:} Non-Suicidal Self Injury; Psychological distress; Adolescents; Malaysia

\section*{Introduction}

\url{www.turkjphysiotherrehabil.org}
Mental health is considered the most essential element in human life. Approximately 4.2 million Malaysian adolescents age 16 to 19 years old are reportedly experiencing mental illness.\textsuperscript{1} Non-Suicidal Self Injury (NSSI) is a growing mental health issue affecting adolescents worldwide\textsuperscript{2}. It is defined as an individual attempt to deliberately injure themselves without the intention to die.\textsuperscript{3} NSSI is often used interchangeably with Deliberate Self-Harm (DSH) since both have similarity in its conceptual definition.\textsuperscript{4} NSSI behaviour is a growing clinical and public health problem. It has been estimated that around 13 to 18\% of adolescents deliberately injured themselves at some point in their life. Researchers have found that adolescents who injured their body are likely to repeat this when they enter adulthood. Various social and mental issues and pressures affecting adolescents make them vulnerable to self-injury.\textsuperscript{5}

Despite the destructive impact, NSSI provides certain advantages for an individual. For instance, the Barrier Model of NSSI\textsuperscript{6} indicates that people who engaged in NSSI are able to improve their mood and utilise it as an emotion regulation strategy.\textsuperscript{7} Notably, NSSI is associated with a reduction in negative mood and an increase in positive mood. As NSSI is followed by emotional relief or mood improvement, stimuli such as knives or razors that are used in self-injury are likely, over time, to become associated with well-being.\textsuperscript{8}

In Asia, issues related to NSSI are a major concern nowadays. A community based research study in South India found that self-injury behaviour is prevalent among adolescents particularly among female adolescents. In the local context, several community and review studies have proven the presence of NSSI in Malaysia among non-clinical samples.\textsuperscript{9} It was also revealed that 56.81\% adolescents from 342 secondary schools students are reportedly involved in self-injury behaviour.\textsuperscript{10}

**NSSI Gateway to Future Suicide**

Suicide has become a major concern in most low and middle income countries and it is the second leading cause of death among adolescents aged between 15 to 29 years old.\textsuperscript{11} The estimation rate of suicide in Malaysia is 13.1 deaths per 100,000, which is one of the highest in the Southeast Asian region.\textsuperscript{12}
Past literature views NSSI as a gateway to future suicide attempts among adolescents. Empirical studies conducted in western countries found a significant relationship between self-harm and suicide. In the interpersonal-psychological theory of suicidal behaviour, Joiner posit that experiences with NSSI change the feelings and sensations (e.g., the experience of emotional relief as opposed to fear and anxiety during instances of self-injurious behaviour) that enable the respective individual to inflict more serious self-injury, that is attempt suicide, during future crises.

**Gender Differences in NSSI**

A number of studies have further indicate the NSSI difference across gender by stating that female adolescents are more prone towards self-injuring behaviour compared with male adolescents. In the context of Malaysia, Armitage reported that NSSI is prevalent among female adolescent aged 16 to 24 years old. However, there are inconsistent findings regarding the gender prevalence of NSSI. Furthermore, no significant relationship was found between gender differences and the NSSI behaviour among middle-school students in China.

**Ethnic Differences in NSSI**

Malaysia is a multi-ethnic country comprising a majority of Malay and several minorities such as Chinese, Indian (mostly in Peninsular Malaysia), and numerous indigenous groups in Sabah and Sarawak. Most of the Malaysian secondary school comprise of students from multi-ethnic backgrounds. Hence, understanding the difference in multi-ethnic society is important to develop prevention programs in the school context. It is important to situate NSSI within the contexts of ethnicity in order to make better sense of what is occurring at a deeper level. For example, in the context of NSSI within the Turkish society, Toprak argued that self-harm is traditionally acceptable among males particularly in low-income areas.

Previous literature demonstrated the existence of ethnic difference in relation to the NSSI. For instance, studies among college students indicated that Caucasians and individuals self-identifying as Multiracial
possessed a high risk of NSSI whereas Arab Americans and African Americans had particularly low rates. In the Malaysian context, research on NSSI among Chinese students revealed that 170 out of 250 respondents were involved in NSSI behaviour. A systematic review study on completed suicide and self-harm in Malaysia demonstrated that the prevalence of self-harm among Indian adolescents is higher as compared to other ethnics. As ethnicity and culture are considered an important elements that influence the primary outcome of any intervention, therefore its crucial to identify the ethnic difference in NSSI.

To date, scarce studies have addressed the issue of NSSI and its link with psychological distress among early adolescents in Malaysia. Therefore, the current study aims to provide better understanding on the widespread of NSSI by identifying the differences across ethnicity, gender, family status, and its relation with psychological distress.

Methods

Study Design and Respondents

A cross sectional study design was applied with a total of 175 adolescents aged 14 to 17 years old participated in this survey. The majority of them were 15 years old (67.4%), followed by 16 years old (17.1%), 17 years old (8%) and 14 years old (7.4%). In terms of family status, most of them were living with both parents (77.7%), followed by those who lived with single parents (15.4%) and caretaker/guardian (6.9%). The racial composition of these respondents is mostly formed by Malay (80.6%) followed by Indian (10.9%), other ethnics (6.3%), and Chinese (2.3%). Finally, the gender proportion of the respondents comprises 57.1% female and 42.9% male.

Procedure

Following the retrieval of consent from the parents and the permission from school authorities, the questionnaire was distributed to the respondents. The researchers took 5 to 10 minutes to explain the rationale of the present study and ensured that all respondents completed the questionnaire willingly. All respondents completed the questionnaire with the supervision of their school counsellor and the researchers. Since mental health related issues are considered taboo among Malaysians, the researchers strictly adhered
to the appropriate data collection, storage, and processing practices to protect against unauthorised access, alteration, and disclosure. All respondents received a voucher of free breakfast meal after completing the survey as a token of appreciation.

**Measures**

GHQ-12 is a widely used instrument across to assess psychological distress. This is because the GHQ-12 tends to have good specificity, reliability, and reasonably high sensitivity. In different segments of the populations across countries, psychometric properties of this questionnaire in a variety of studies has also been appraised. This questionnaire comprised 12 items and each of the items contains four response options from “Better than usual”, “Same as usual”, “Less than usual”, and “Much less than usual”. The total scores range from 0 to 36 with higher scores (more than 12) indicate psychological distress. Items in the GHQ-12 are rated on a 4-point scale using a timeframe of “in the last two weeks.” For this study, the researchers adopted a Likert scoring method (0-1-2-3).

The researchers had utilised the adapted version of the Deliberate Self-Harm Inventory (DSHI) to assess the type and frequency of DSHI. The adapted version of this inventory has a 16-items, behaviourally based, self-report questionnaire to assess deliberate self-harm. These items are DSH1: Cutting, DSH2: Burning with cigarette, DSH3: Burning with lighter or match, DSH4: Carving words into skin, DSH5: Carving pictures into skin, DSH6: Severe scratching, DSH7: Biting, DSH8: Rubbing sandpaper on skin, DSH9: Dripping acid on skin, DSH10: Using bleach or oven cleaner to scrub skin, DSH11: Sticking pins, needles, staples into skin, DSH12: Rubbing glass into skin, DSH13: Breaking bones, DSH14: Banging head, DSH15: Punching self, and DSH16: Interference with wound healing. Preliminary findings indicate that the DSHI has high internal consistency, adequate construct, convergent, and discriminant validity, as well as adequate test-retest reliability.

**Statistical Analysis**

The data were first exported to Microsoft Excel and then to Statistical Package for Social Sciences (SPSS version, 22) computer software used for quantitative statistical analyses. Descriptive analysis were executed
to comprehend the demographic details and to understand the distributional characteristics of NSSI and psychological distress across gender and ethnic. Regression analysis were conducted to predict NSSI based on psychological distress.

**Results**

*Outliers*

Outliers refer to a substantial difference between the actual and values for the dependent or independent variable. It may also occur due to error in data entry. In this research, outliers were identified by using boxplot. Hence, a total of 175 samples were deemed valid and proceeded to the normality test.

*Descriptive analysis*

A descriptive analysis was performed to determine the distributional characteristics of all variables under investigation. The Deliberate Self-Harm Inventory and psychological distress scores were summed up by adding all the items scores. The total, mean, standard deviation, median, and IQR along with minimum and maximum scores on the DSHI and psychological distress were calculated.

Descriptive statistics showed that the minimum score of DSHI was 15.0, and maximum score was 40.0. The result also revealed that the mean score for DSHI ($M = 20.89, SD = 5.35$). Meanwhile, the minimum score of psychological distress was 2.0 and maximum score was 25.0. The result also revealed the mean score for psychological distress ($M = 15.26, SD = 3.73$).

For statement ‘Have you consciously injured yourself such as cutting off the wrist and other parts of the body (Except attempted suicide)’, the majority of respondents answered ‘No’ (79.4%) compared to ‘Yes’ (20.6%). The frequency and percentage output showed that half of the respondents had been in the situation
of DSH10: Using bleach or oven cleaner to scrub skin (56.6%), DSH15: Punching self (56.6%), DSH16: Interference with wound healing (49.7%), and DSH7: Biting (49.1%) where they were either rarely, sometimes, or always commit such DSHI items.

**NSSI across gender and ethnic**

As the total scores of the DSHI measures were non-normally distributed with skewed distribution, the median and inter-quartile range (IQR) for each item in DSHI and DSHI total scores were reported. Initially, the distribution for DSHI was non-normal (resulting in z-scores for skewness = 5.63, z-scores kurtosis = 2.01). Specifically, the DSHI scores were moderately, positively skewed, thus a natural logarithmic transformation was used to transform these scores. Following the transformations, the DSHI variables approximated have followed normal distributions (resulting in z-scores skewness = 2.95, z-scores kurtosis = -1.28). For non-normally distributed data, median and IQR should be reported. The following descriptive statistics were used to summarise the questionnaire results, frequency, percentage, median, and IQR for the DSHI items.

The result revealed that the median score for the Deliberate Self Harm Inventory (DSHI) was 20.5 (IQR = 8.00) and the mean score was 21.56 (SD = 5.26). As shown in Table 1, the NSSI across gender indicates that the median scores of DSHI for female (Mdn = 20.50, IQR = 8.00) are higher than male (Mdn = 18.00, IQR = 8.00). This shows that the rates are consistently higher among female than male.

As shown in Table 1, the NSSI across ethnics indicates that the median scores of DSHI for Indian (Mdn = 20.00, IQR = 5.00) are the highest, followed by Malay (Mdn = 19.00, IQR = 7.00), Chinese (Mdn = 18.50, IQR = 14.25), and others (Mdn = 18.00, IQR = 8.00).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>Median</th>
<th>IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>18.00</td>
<td>8.00</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>20.50</td>
<td>8.00</td>
</tr>
<tr>
<td>Ethnic</td>
<td>Malay</td>
<td>19.00</td>
<td>7.00</td>
</tr>
<tr>
<td></td>
<td>Chinese</td>
<td>18.50</td>
<td>14.25</td>
</tr>
<tr>
<td></td>
<td>Indian</td>
<td>20.00</td>
<td>5.00</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>18.00</td>
<td>8.00</td>
</tr>
</tbody>
</table>
**Association between NSSI and psychological distress**

Table 2 shows the association between NSSI and psychological distress. Prior to performing the regression analysis, a few assumptions were performed such as normality of the residuals and linearity as attached in the Appendix (a). After checking that all the assumptions were met, then the regression was suitable to be conducted. A simple linear regression using natural logarithmic transformation was calculated to predict NSSI based on psychological distress. A significant regression equation was found ($F(1,173) = 6.75$, $p = .010$) with an $R^2$ of 0.04. It was revealed that psychological distress could significantly predict NSSI ($\beta = .194$, $t(173) = 37.50$, $p = .010$). The estimated coefficient for psychological distress is $\beta_1 = 0.01$, so it can be said that an increase of one unit in psychological distress is associated with a $100 \times (e^{\beta_1} - 1) \approx 1\%$ increase in NSSI.

**Table 2: Associations of NSSI and psychological distress**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimate (SE)</th>
<th>$\beta$</th>
<th>t</th>
<th>p</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>2.82 (0.08)</td>
<td></td>
<td>37.50</td>
<td>&lt; .001</td>
<td>.04</td>
</tr>
<tr>
<td>Psychological distress</td>
<td>0.01 (0.01)</td>
<td>.194</td>
<td>2.60</td>
<td>.010*</td>
<td></td>
</tr>
</tbody>
</table>

*significant at 0.05

**Discussion**

The aim of the present study is to identify the prevalence of NSSI across gender and ethnicity and investigate the association between NSSI and psychological distress. This study attempted to fill the gap by providing empirical evidence on the prevalence of NSSI among adolescents in Malaysia. The finding shows that 20.6% from a total of 175 respondents are engaged in NSSI behaviour. Consistent with previous findings, the present study confirms that NSSI is common form of behaviour among adolescence youth and more studies are needed in the future to comprehend this phenomenon. Since establishing a stable identity is a major challenge for adolescents, impairment of identity development might be related to the
occurrences of NSSI behaviour. Therefore, reasonable approach to tackle this issue could be initiated in order to develop empirically grounded theoretical models and effective treatments. These results add to the rapidly expanding field of mental health among adolescents and lay the groundwork for future research into the exploration of NSSI behaviour.

Regarding ethnic differences in NSSI behaviour, the finding of this study indicates that Indian has the highest NSSI behaviour followed by Malay and Chinese. However, with a small sample size of Indian adolescents who participated in this study, caution must be applied as the findings might not be generalised to the entire Indian ethnic in Malaysia. As mentioned in the literature review, high NSSI behaviour among Malaysian Indian adolescents is an expected outcome following evidences indicating higher suicidal ideation linked with imbalance mental health among Malaysian Indian adolescents. These findings may assist to understand the contextual elements which contribute to the development of good mental health and adapting cultural elements as part of the prevention and intervention strategies at the holistic level. Furthermore, contrary to recent finding, this study found that NSSI behaviour to be significantly different between male and female, whereby female reported higher NSSI behaviour than male. Such result is similar with previous finding which indicates that female are prone to engage in NSSI related behaviour. Although the finding suggests the gender difference in NSSI, it does not identify the reason behind such gender disparity. For instance, the gender socialisation of emotion may impact the type of emotions experienced by men and women in a way that leads women to be more likely to engage in NSSI. Given this result and based on the limited number of respondents, it would be more significant to explore the possibility of gender differences in NSSI related behaviour.

Consistent with previous literature, the finding of this study also reveals that psychological distress significantly predicts NSSI behaviour. This is in line with the General Strain Theory which explains that strains/stressors from various contexts may increase the likelihood of NSSI among adolescents. Furthermore, previous evidences also indicated that NSSI functions as emotion regulation strategies to alleviate the negative emotions that result from strains. The finding suggested that more concern should
be given to adolescents on the matter of psychological wellbeing in every context. For instance, schools should have wider execution of mental health service and diminish the stigma related to mental health.

The present study has some limitations, which were well considered for. First is the sample size and racial/ethnic composition imbalance within the sample which limit generalisability. Second is biasedness that may exist in the sample population since the respondents selected were not chosen at a national-level. Convenience sampling method was done for this project that might limit its generalisability. Since the present study has raised many questions, it needs further investigation with larger samples to identify potential contributing factors and explore effective prevention strategies. Despite these limitations, the findings reported in the present study serve as an attempt to comprehend the phenomenon of NSSI among Malaysian adolescents.

Conclusion

The present study has revealed a number of significant findings. First, it is found that the difference across gender and ethnicity is related with NSSI and that psychological distress predicts the occurrences of NSSI. Overall, the finding suggests that NSSI is prevalent among Malaysia secondary school students, both for female and male. Therefore, it will be essential to develop and strengthen an effective support system for secondary school students who are engaged in NSSI in order to prevent future suicide attempt.

Conflict of Interest Statement

There are no conflicts of interest or any financial or personal relationships with other people or organizations.

Acknowledgment

The authors would like to thank everyone who made a significant effort towards the successful completion of this study, especially the participants who took this work seriously enough and passed the message of awareness.
References:


