

Original Paper

# Prevalence of Self-Harm Behaviors and Deliberate Self-Cutting in High School Students in Northern Iran and Its Relationship with Anxiety, Depression, and Stress



Elahe Abdollahi<sup>1,2</sup>, Maryam Kousha<sup>1,2\*</sup>, Arvin Bozorgchenani<sup>1,3</sup>, Mohammadreza Bahmani<sup>4</sup>, Elahe Rafiei<sup>5</sup>, Fatemeh Eslamdoust-Siahestalkhi<sup>1,5</sup>

1. Assistant Professor, Kavosh Cognitive Behavior Sciences and Addiction Research Center, Guilan University of Medical Sciences, Rasht, Iran.
2. Department of Psychiatry, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran.
3. MD, Department of Psychiatry, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran.
4. Epidemiology (MSc), Razi Clinical Research Development Unit, Guilan University of Medical Sciences, Rasht, Iran.
5. MSc, Department of Psychiatry, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran.



**Citation** Abdollahi E, Kousha M, Bozorgchenani A, Bahmani M, Rafiei E, Eslamdoust-Siahestalkhi F. Prevalence of Self-Harm Behaviors and Deliberate Self-Cutting in High School Students in Northern Iran and Its Relationship with Anxiety, Depression, and Stress. *J Holist Nurs Midwifery*. 2022; 32(3):169-177. <https://doi.org/10.32598/jhnm.32.3.2193>

**Running Title** Self-Harm Behaviors in High School Students

**doi** <https://doi.org/10.32598/jhnm.32.3.2193>



**Article info:**

**Received:** 13/02/2021  
**Accepted:** 03/01/2022  
**Available Online:** 01/07/2022

**Keywords:**

Self-harm, Depression, Anxiety, Stress, Adolescents

## ABSTRACT

**Introduction:** Self-harm has increased among adolescents in recent years, turning it to one of the major public and mental health concerns.

**Objective:** The present study aims to investigate the prevalence of self-harm and deliberate self-cutting in high school students in northern Iran, and its relationship with anxiety, depression, and stress.

**Materials and Methods:** In this analytical cross-sectional study, participants were 617 high school students in Rasht, Iran in 2018 who were selected through multistage cluster random sampling. Data collection tools were a demographic form, the Self-Harm Inventory (SHI), and the 21-item Depression, Anxiety, and Stress Scale (DASS-21). Data analysis was done by independent t-test, Kruskal-Wallis test, one-way analysis of variance, chi-square test, Fisher's Exact test, and linear and logistic regression.

**Results:** The mean age of students was 16.11±1.35 years, and the majority of them were male (64.2%). The prevalence of self-harm behaviors was 54.9% (n=339), 20.3% in females and 79.7% in males. Deliberate self-cutting was found in 11% of students. The score of SHI was significantly higher in boys than in girls, while the prevalence of deliberate self-cutting was more in girls (P=0.001). Self-harm behaviors increased with increasing depression, anxiety, and stress (P=0.001). Gender (B=0.704, 95%CI; 0.149-1.258, P=0.013), grade (B=-1.011, 95%CI; -1.517- -0.504, P=0.001), family size (B=0.620, 95%CI; 0.344-0.895, P=0.001), age (B=0.624, 95%CI; 0.286-0.962, P=0.001), and the grade point average in the past year (B=-0.945, 95%CI; -1.197- -0.693, P= 0.001) had significant relationship with self-harm behaviors (R<sup>2</sup>= 0.145). Moreover, gender (OR=4.874, 95%CI; 2.297-10.344, P=0.001), grade point average in the past year (OR=0.727, 95%CI; 0.567-0.932, P=0.012), substance abuse (OR=7.972, 95%CI; 3.424-18.564, P=0.001), depression (OR=1.163, 95%CI; 1.065-1.271, P=0.001), stress (OR=1.105, 95%CI; 1.006-1.213, P=0.036), and father's educational level (OR=7.897, 95%CI; 1.138-54.807, P=0.001) had significant relationship with deliberate self-cutting.

**Conclusion:** Self-harm behaviors in adolescents are associated with anxiety, depression, and stress.

\* Corresponding Author:

**Kousha Maryam, Assistant Professor.**

**Address:** Kavosh Cognitive Behavior Sciences and Addiction Research Center, Guilan University of Medical Sciences, Rasht, Iran.

**Tel:** +98 (911) 3344401

**E-mail:** maryamkousha@yahoo.com

## Highlights

- Self-harm behaviors are prevalent in more than half of adolescents in Rasht, Iran.
- Self-harm behaviors are more prevalent in boys, while deliberate self-cutting is more prevalent in girls.
- Self-harm behaviors in adolescents are associated with anxiety, depression, and stress.

## Plain Language Summary

Self-harm is a wrong way to cope with psychological distress. Its prevalence has increased among many adolescents in recent years. This study aims to investigate the prevalence of self-harm behaviors and deliberate self-cutting in high school students in Rasht, Iran, and its relationship with anxiety, depression, and stress. The results showed that more than half of students had experienced self-harm behaviors. Self-harm behaviors were more common in boys, while deliberate self-cutting was more common in girls. Substance abuse and family history of self-harm or suicide were associated with the prevalence of self-harm behaviors and deliberate self-cutting. Moreover, the presence of depression, anxiety, and stress were highly associated with the increasing prevalence of self-harm behaviors.

## Introduction

**S**elf-harm or self-injury is seen as a way for dealing with emotional problems, anger, depression, and distress [1]. Deliberate self-harm is defined as the intentional direct and indirect harm the self [2]. It is a behavior that causes minor or severe physical injury. For example, trying to burn oneself, head banging, jumping from high places, poisoning oneself without attempting suicide [1], cutting/scratching the skin, and preventing wounds from healing [2]. Self-harm behavior is a wrong way to cope with psychological distress. This behavior is a risk factor for suicide [3]. The most common type of self-harm behavior is self-cutting which usually occurs on the forearm or wrist [4]. In addition to physical consequences, self-harm behaviors have psychological outcomes [5]. Self-harm behaviors may be associated with various disorders, including substance abuse, post-traumatic stress disorder, severe depression, anxiety, schizophrenia, and personality disorders (especially borderline personality disorder) [6], most common of which are anxiety and depression [7]. In a study on 140 high school students in southern Taiwan, the correlation between self-harm behaviors and depressive symptoms was positively significant, and depressive symptoms could significantly predict self-harm behaviors [8]. In a study by Zubrick et al. on Australian adolescents aged 12-17 years with a major depressive disorder, it was found that depressive symptoms were related to non-suicidal self-harm and suicidal ideation [9]. Morgan et al. in a study on 1943 adolescents in Australia, also reported the significant relationship of de-

pression and anxiety with self-harm behaviors [10]. Several studies have shown the effect of stress on self-harm behaviors [11, 12]. For example, Hinze et al. in 2021, showed an association between stressful life events and self-harm behaviors in youth [13].

The results of a meta-analysis showed that, in 686, 672 children and adolescents from different countries, the lifetime prevalence of non-suicidal self-injury was 22.1% and its 12-month prevalence was 19.5% [14]. The prevalence of self-harm behaviors in European adolescents was reported at 25-35% [15]. In China, the prevalence of self-harm behaviors in 4,176 adolescents from senior middle schools was 27.6%. Being female, living in a urban area, being an only child, poor school performance, stressful life events, strict parenting style, and poor mental health were the risk factors for self-harm behaviors [16]. In Ireland, the prevalence of self-harm behaviors in adolescents was reported 10%. Alcohol use, drug use, physical and sexual abuse, and low self-esteem were associated with self-harm in girls, while lack of physical activity, sexual orientation concerns, anxiety, and impulsivity were risk factors in boys [17]. The findings of a study in southern Iran reported self-harm behaviors in 2166 individuals (Mean±SD age=25.7±2.6 years) from 2007 to 2011, which were more frequent in male, low-educated, and unemployed individuals [18]. Another research in Iran showed a self-harm prevalence of 40.5% in 100 male and 100 female college students, which were more prevalent in males (48%) than in females (33%) [19].

Self-harm has increased among secondary and high school students; hence, it should be considered as one of the major public health concerns in adolescents [20-23]. Despite the high prevalence of self-harm in adolescents [24], few studies have assessed it in Iran. It is necessary to pay more attention to the mental health of adolescents and take decisive measures to prevent and address their mental and behavioral problems. In this regard, this study aims to determine the prevalence of self-harm behaviors in high school students in Rasht, northern Iran, and assess its relationship with anxiety, depression, and stress.

## Materials and Methods

This is a cross-sectional study conducted from January to July 2018. The study population consists of all high school students (Grade 7-12) in Rasht, Iran. After obtaining permission from the Education Organization in Guilan province, eight high schools in Rasht were selected through multistage cluster random sampling method based on different educational districts of Rasht city and gender of students. From each school, different classrooms were selected by cluster random sampling method and from each class, students who were willing to participate in the study were selected. The sample size was estimated 411 according to Ross's study [25], where the self-harm prevalence was 13%, and considering a test power of 90% at 95% Confidence Interval (CI). Since the cluster sampling method had been used, and considering the design effect, the sample size was increased by 1.5 times and reached 617.

The data collection tools included a demographic form (surveying age, gender, Grade Point Average (GPA) of the past year, family size, history of suicide or self-harm in the family and close relatives, and history of substance abuse and smoking), and the 21-item Depression, Anxiety, and Stress Scale (DASS-21) where each question is rated on a scale from zero (Did not apply to me at all) to 3 (Applied to me very much). Based on this scale, the severity of depression (Scores 0-9 indicates no depression; scores 10-13, mild depression; scores 14-20, moderate depression; scores 21-27, severe depression; and scores  $\geq 28$ , extremely severe depression), anxiety (scores 0-7 indicates no anxiety; scores 8-9, mild anxiety; scores 10-14, moderate anxiety; scores 15-19, severe anxiety; and scores  $\geq 20$ , extremely severe anxiety), and stress (scores 0-14 indicates no stress; scores 15-18, mild stress; scores 19-25, moderate stress; scores 26-33, severe stress; and scores  $\geq 34$ , extremely severe stress) are determined [26]. Henry et al. performed a factor analysis on this instrument and confirmed its validity and reliability [27]. In our study, the Persian

version of this scale was used [28]. For measuring self-harm behaviors, we used the Self-Harm Inventory (SHI) developed by Sansone et al., which consists of 22 items with dichotomous scoring (yes/no) assessing the direct and indirect self-harm behaviors. Higher scores of this scale indicate higher severity of self-harm behaviors. In this study, zero indicates no any self-harm behavior while score 1 and higher represents different degrees of self-harm behaviors. The relationship between self-harm behaviors and other variables were scored from 0 to 22 [29]. Since this scale had been previously used in Iranian studies [30, 31], we used the Persian version of this questionnaire localized by Tahbaz Hoseinzadeh et al., who confirmed its validity and reliability [32]. For determining the reliability of SHI in the present study, we tested it on 30 students as a pilot study, and its internal consistency using Cronbach's alpha was obtained 0.87, indicating its good reliability. In this study, the second question was used to assess deliberate self-cutting (Cut yourself on purpose? If yes, number of times).

After sufficient explanations about the study objectives and procedures, the students filled out the questionnaires. Incomplete questionnaires were excluded. The collected data were analyzed in SPSS v. 21 software. We used Mean, Standard Deviation (SD), frequency, independent t-test, Kruskal-Wallis test, one-way analysis of variance, chi-square test, Fisher's Exact test, and linear and logistic regression in data analysis. The statistically significance level was set at 0.05.

## Results

Of 640 students, 617 completed the questionnaires. Therefore, the response rate was over 96%. The mean age of students was  $16.11 \pm 1.35$  years and their mean GPA for the past year was  $18.92 \pm 1.21$ . Most of them had a family size of 4 people; 5% had a history of suicide in their family or relatives; 6.3% had a history of self-harm behaviors in their family or relatives, and 7.5% had a history of substance abuse in their family or relatives. The frequency of self-harm behaviors was 339 (54.9%), 69 in girls (20.3%) and 270 in boys (79.7%). The mean score of SHI was  $2.37 \pm 3.42$  (ranged 0-22). It was found that 68 (11%) had deliberate self-cutting.

Table 1 shows the mean scores of SHI in terms of demographic variables and levels of depression, anxiety, and stress. The mean SHI scores were significantly different in terms of gender, grade, age, GPA of the past year, and levels of depression, anxiety, and stress. There was also a significant difference between SHI scores in terms of substance use and family history of self-harm

**Table 1.** The Self Harm Inventory (SHI) scores in terms of demographic variables, depression, anxiety, and stress

Variables		No. (%)	SHI, Mean±SD	P
Gender	Female	221(35.8)	1.78±0.254	0.001*
	Male	396(64.2)	2.70±0.159	
Genderx	≤9	99(16.0)	1.70±3.84	0.001**
	10	248(40.2)	2.07±0.184	
	11	159(25.8)	2.90±0.260	
	12	111(18.0)	2.88±0.388	
Family size	2	6(1.0)	5.67±8.16	0.396**
	3	121(19.6)	2.38±3.26	
	4	352(57.1)	2.27±2.86	
	≥5	138(22.4)	2.49±4.41	
Age (y)	12	16(2.6)	0±0	0.001**
	13	19(3.1)	1.63±2.63	
	14	18(2.9)	1.56±2.77	
	15	112(18.2)	1.60±3.24	
	16	203(32.9)	2.32±3.07	
	17	161(26.1)	3.07±3.62	
	18	88(14.3)	2.95±4.14	
GPA of the past year	12-15	15(2.4)	5.87±3.83	0.001**
	16-18	205(33.2)	3.24±3.74	
	19-20	397(64.3)	1.79±3.05	
Depression	Normal	536(86.9)	1.70±2.64	0.001***
	Mild	43(7.0)	4.81±3.50	
	Moderate	36(5.8)	9.11±4.65	
	Severe	2(0.3)	7.50±4.95	
Anxiety	Normal	544(88.2)	1.74±2.55	0.001***
	Mild	24(3.9)	5.08±5.01	
	Moderate	36(5.8)	7.11±4.50	
	Severe and very severe	13(2.1)	10.54±5.11	
Stress	Normal	593(96.1)	2.07±2.95	0.001***
	Mild	19(3.1)	10.00±5.78	
	Moderate	5(0.8)	8.80±4.76	

\*Independent t-Test, \*\*Kruskal-Wallis Test, \*\*\*One-Way ANOVA

**Table 2.** Frequency and percentage of deliberate self-cutting in terms of demographic variables, depression, anxiety, and stress

Variables		No. (%)		P
		Deliberate Self-Cutting		
		Yes	No	
Gender	Female	38(17.2)	183(82.8)	0.001**
	Male	30(7.6)	366(92.4)	
Grade	≤9	16(46.2)	83(53.8)	0.167**
	10	18(7.3)	230(92.7)	
	11	22(13.8)	137(86.2)	
	12	12(10.8)	99(89.2)	
Family size	2	2(33.3)	4(66.7)	0.046**
	3	15(12.4)	106(87.6)	
	4	30(8.5)	322(91.5)	
	≥5	21(15.2)	117(84.8)	
Age	12	0(0)	16(100)	0.016**
	13	5(26.3)	14(73.7)	
	14	2(11.1)	16(88.9)	
	15	7(6.3)	105(93.8)	
	16	17(8.4)	186(91.6)	
	17	27(16.8)	134(83.2)	
	18	10(11.4)	78(88.6)	
GPA* of the past year	12-15	4(26.7)	11(73.3)	0.001**
	16-18	34(16.6)	171(83.4)	
	19-20	30(7.6)	367(92.4)	
Depression	Normal	34(6.3)	502(93.7)	0.001***
	Mild	10(23.3)	33(76.7)	
	Moderate	23(63.9)	13(36.1)	
	Severe	1(50)	1(50)	
Anxiety	Normal	38(7)	506(93)	0.001***
	Mild	4(16.7)	20(83.3)	
	Moderate	17(47.2)	19(52.8)	
	Severe and very severe	9(69.2)	4(30.8)	
Stress	Normal	53(8.9)	540(91.1)	0.001***
	Mild	13(68.4)	6(31.6)	
	Moderate	2(40)	3(60)	

\*\*Chi-Square Test, \*\*\*Fisher’s Exact Test

**Table 3.** Linear regression analysis results of self-harm behaviors and independent variables

Variables	B	Standard Error	t	P	95%CI Lower Upper
Gender					1
Girl					
Boy	0.704	0.282	2.492	0.013	0.149-1.258
Grade	-1.011	0.258	-3.920	0.001	-1.517- -0.504
Family size	0.620	0.140	4.419	0.001	0.344-0.895
Age	0.624	0.172	3.630	0.001	0.286-0.962
GPA* of the past year	-0.945	0.128	-7.367	0.001	-1.197- -0.693

\* Grade Point Average

or suicide ( $P=0.001$ ). The mean of SHI was higher in students with a history of substance use and family history of self-harm or suicide. Most of the students had no depression, anxiety, or stress (86.9%, 88.2%, and 96.1%, respectively).

Table 2 presents the frequency of deliberate self-cutting in terms of demographic variables and levels of depression, anxiety, and stress. According to the results, deliberate self-cutting was significantly more in students with a history of substance use and with family history of self-harm or suicide ( $P=0.001$ ). The frequency of deliberate self-cutting was significantly different among students with different levels of depression, anxiety, and stress ( $P=0.001$ ). Students with moderate

depression and stress, and severe anxiety showed more deliberate self-cutting behaviors.

Based on the results of linear regression (Table 3) by backward selection method, the variables of gender, grade, family size, age, and GPA of the past year had relationship with self-harm behaviors. In boys, the score of SHI was significantly higher than in girls ( $B=0.704$ , 95% CI; 0.149-1.258,  $P=0.013$ ). Moreover, the score of SHI was higher in students with more family members ( $B=0.620$ , 95%CI; 0.344-0.895,  $P=0.001$ ) and older age ( $B=0.624$ , 95%CI; 0.286-0.962,  $P=0.001$ ), while it decreased by the increase of grade ( $B=-1.011$ , 95%CI; -1.517- -0.504,  $P=0.001$ ). Table 4 presents the simultaneous relationship between independent variables and

**Table 4.** Logistic regression analysis results of deliberate self-cutting and independent variables

Variables	B	Standard Error	OR	95%CI	P
Gender					
Girl				1	0.001
Boy	1.584	0.384	4.874	2.297-10.344	
GPA* of the past year	-0.319	0.127	0.727	0.567-0.932	0.012
Substance use					
No				1	0.001
Yes	2.076	0.431	7.972	3.424-18.564	
Depression	0.151	0.045	1.163	1.065-1.271	0.001
Stress	0.100	0.048	1.105	1.006-1.213	0.036
Father's education					
Lower than high school				1	0.018
Diploma	2.066	0.988	7.897	1.138-54.807	0.037
Associate's degree	1.859	1.072	6.415	0.784-52.486	0.083
Bachelor's degree	0.771	1.040	2.161	0.282-16.595	0.459
Master's degree	1.872	1.024	6.501	0.874-48.340	0.067

deliberate self-cutting using logistic regression model. Only the variables of gender, GPA of the past year, substance use, depression, stress, and father's education remained in the model. According to the results, deliberate self-cutting was 4.87 times more common in girls than in boys (OR=4.874, 95%CI; 2.297-10.344, P=0.001), and 7.97 times more common in those with a history of substance use than in non-abusers (OR=7.972, 95%CI; 3.424-18.564, P=0.001). Moreover, deliberate self-cutting was more common in students whose fathers had a high school diploma than in those with fathers having other educational levels (OR=7.897, 95%CI; 1.138-54.807, P=0.037).

## Discussion

This study investigated the prevalence of self-harm behaviors and deliberate self-cutting among high school students and its relationship with depression, anxiety, and stress. According to the results, more than half of the students had self-harm behaviors. We reported higher frequency of self-harm behaviors compared to other studies. There are several factors to explain this result, such as substance use, internalized anger, and despair associated with socio demographic status. This result is consistent with the results of Lim et al., who reported that in non-western countries, the youth had suicide thoughts but did not attempt suicide [14].

In our study, in five students with self-harm behaviors, one was female and four were male, but girls had more deliberate self-cutting. Some studies have shown higher risk of self-harm behaviors in girls than boys [16, 20, 22]. However, studies in Iran have reported similar results [18, 19]. This result may be due to cultural issues; boys in developing countries have easier access to a variety of materials such as alcohol and other substances, but the most accessible way for self-harm in girls is the razor blades; of course, this is an advantage that should be easily hidden [18, 19]. In this study, self-harm behaviors and deliberate self-cutting significantly increased with the increase of depression, anxiety, and stress. Similar to our results, other studies demonstrated a significant relationship between depression and self-harm behaviors, such that the likelihood of self-harm behaviors increases as the depression level increases [8, 9]. According to a narrative review in Iran, mental disorders such as depression are associated with self-harm behaviors, and depression is the most important risk factor for these behaviors [33]. Moreover, the results of the present study showed a high correlation between anxiety and self-harm behaviors. Other study has also reported the increase in possibility of self-harm behaviors as the

level of anxiety increases [9]. Similar to depression and anxiety, our results showed the high correlation between stress and self-harm behaviors. This is also supported by other studies suggesting stressful life events as a risk factor for self-harm in adolescents [16, 34]. This behavior occurs in youth for several reasons [35]. The most common reasons for self-harm behaviors by adolescents are their consideration as a coping strategy, a method for relief and regulation of feelings, self-punishment, attention-seeking, and sensation seeking [36]. It seems that in adolescents who experience high level of anxiety and depression and do not use appropriate coping strategies for psychological distress, self-harm behaviors may temporarily reduce stress. These results showed the importance of negative emotions, like self-punishment, self-directed anger, and sense of worthlessness in self-harm behaviors. Early attention to negative emotions and using proper psychological interventions for building positive emotion can reduce the prevalence of self-harm behaviors in adolescents.

The strength of this study was the separation of deliberate self-cutting from self-harm behaviors. However, it had some limitations. The samples in our study were high school students. Therefore, the results cannot be generalized to all adolescents. Some adolescents may not be able to study at high school due to financial constraints. It is difficult to study general population of adolescents. Another limitation was that some adolescents might be reluctant to disclose their problems, for a variety of reasons. To this end, researchers tried to assure participants that their information would be kept confidential. Based on the results of this study, it is recommended that health policies should be made in Iran to identify adolescents at risk for self-harming behaviors and to screen and treat risk factors such as depression and anxiety. It is also recommended that future studies be conducted to evaluate the effectiveness of therapeutic and family interventions in reducing these behaviors.

## Ethical Considerations

### Compliance with ethical guidelines

The study was approved by the ethical committee of [Guilan University of Medical Sciences](#) (Code: IR.GUMS.REC.1397.164). Informed consent was obtained from all students and their parents, and they were assured of the confidentiality of their information.

### Funding

This research was funded by **Guilan University of Medical Sciences** (Grant No.: 97031603).

### Authors' contributions

Conceptualization, writing original draft, review & editing: all authors; Methodology: Elahe Abdollahi, Maryam Kousha; Data collection: Arvin Bozorgchenani, Mohammadreza Bahmani; Data analysis: Elahe Rafiei, Fatemeh Eslamdoust-Siahestalkhi, Elahe Abdollahi, Maryam Kousha; Funding acquisition: Elahe Abdollahi; Supervision: Elahe Abdollahi, Maryam Kousha.

### Conflict of interest

The authors declared no conflicts of interest.

### Acknowledgments

The authors would like to thank the **Guilan University of Medical Sciences** and the students who participated in this research for their support and cooperation.

### References

- [1] Harris IM, Beese S, Moore D. Predicting future self-harm or suicide in adolescents: A systematic review of risk assessment scales/tools. *BMJ Open*. 2019; 9(9):e029311. [DOI:10.1136/bmjopen-2019-029311] [PMID] [PMCID]
- [2] Baralla F, Ventura M, Negay N, Di Napoli A, Petrelli A, Mirisola C, et al. Clinical correlates of deliberate self-harm among migrant trauma-affected subgroups. *Frontiers in Psychiatry*. 2021; 12:529361. [DOI:10.3389/fpsy.2021.529361] [PMID] [PMCID]
- [3] Tao Y, Bi XY, Deng M. The impact of parent-child attachment on self-injury behavior: Negative emotion and emotional coping style as serial mediators. *Frontiers in Psychology*. 2020; 11:1477. [PMID] [PMCID]
- [4] Gardner KJ, Bickley H, Turnbull P, Kapur N, Taylor P, Clements C. The significance of site of cut in self-harm in young people. *Journal of Affective Disorders*. 2020; 266:603-9. [DOI:10.1016/j.jad.2020.01.093] [PMID]
- [5] Hetrick SE, Subasinghe A, Anglin K, Hart L, Morgan A, Robinson J. Understanding the needs of young people who engage in self-harm: A qualitative investigation. *Frontiers in Psychology*. 2020; 10:2916. [PMID] [PMCID]
- [6] Colle L, Hilviu D, Rossi R, Garbarini F, Fossataro C. Self-harming and sense of agency in patients with borderline personality disorder. *Frontiers in Psychiatry*. 2020; 11:449. [DOI:10.3389/fpsy.2020.00449] [PMID] [PMCID]
- [7] Junker A, Bjørngaard JH, Bjerkeset O. Adolescent health and subsequent risk of self-harm hospitalisation: A 15-year follow-up of the Young-HUNT cohort. *Child and Adolescent Psychiatry and Mental Health*. 2017; 11:25. [DOI:10.1186/s13034-017-0161-8] [PMID] [PMCID]
- [8] Yang FY, Lai CY, Yen CF, Hsu YY, Zauszniewski JA. The depressive symptoms, resourcefulness, and self-harm behaviors of adolescents. *Journal of Nursing Research*. 2017; 25(1):41-9. [DOI:10.1097/jnr.000000000000127] [PMID]
- [9] Zubrick SR, Hafekost J, Johnson SE, Sawyer MG, Patton G, Lawrence D. The continuity and duration of depression and its relationship to non-suicidal self-harm and suicidal ideation and behavior in adolescents 12-17. *Journal of Affective Disorders*. 2017; 220:49-56. [DOI:10.1016/j.jad.2017.05.050] [PMID]
- [10] Moran P, Coffey C, Romaniuk H, Olsson C, Borschmann R, Carlin JB, et al. The natural history of self-harm from adolescence to young adulthood: A population-based cohort study. *The Lancet*. 2012; 379(9812):236-43. [DOI:10.1016/S0140-6736(11)61141-0]
- [11] Hack J, Martin G. Expressed emotion, shame, and non-suicidal self-injury. *International Journal of Environmental Research and Public Health*. 2018; 15(5):890. [DOI:10.3390/ijerph15050890] [PMID] [PMCID]
- [12] Curtis S, Thorn P, McRoberts A, Hetrick S, Rice S, Robinson J. Caring for young people who self-harm: A review of perspectives from families and young people. *International Journal of Environmental Research and Public Health*. 2018; 15(5):950. [DOI:10.3390/ijerph15050950] [PMID] [PMCID]
- [13] Hinze V, Ford T, Evans R, Gjelsvik B, Crane C. Exploring the relationship between pain and self-harm thoughts and behaviours in young people using network analysis. *Psychological Medicine*. 2021; 1-10. [DOI:10.1017/S0033291721000295] [PMID]
- [14] Lim KS, Wong CH, McIntyre RS, Wang J, Zhang Z, Tran BX, et al. Global lifetime and 12-month prevalence of suicidal behavior, deliberate self-harm and non-suicidal self-injury in children and adolescents between 1989 and 2018: A meta-analysis. *International Journal of Environmental Research and Public Health*. 2019; 16(22):4581. [DOI:10.3390/ijerph16224581] [PMID] [PMCID]
- [15] Plener PL, Kaess M, Schmahl C, Pollak S, Fegert JM, Brown RC. Nonsuicidal self-injury in adolescents. *Deutsches Arzteblatt International*. 2018; 115(3):23-30. [DOI:10.3238/arztebl.2018.0023] [PMID] [PMCID]
- [16] Zhang J, Song J, Wang J. Adolescent self-harm and risk factors. *Asia-Pacific Psychiatry*. 2016; 8(4):287-95. [DOI:10.1111/appy.12243] [PMID]
- [17] O'Connor RC, Rasmussen S, Hawton K. Adolescent self-harm: A school-based study in Northern Ireland. *Journal of Affective Disorders*. 2014; 159:46-52. [DOI:10.1016/j.jad.2014.02.015] [PMID]
- [18] Gholamzadeh S, Zahmatkeshan M, Zarenezhad M, Ghaffari E, Hoseni S. The pattern of self-harm in Fars Province in South Iran: A population-based study. *Journal of Forensic and Legal Medicine*. 2017; 51:34-8. [PMID]
- [19] Nobakht HN, Dale KY. The prevalence of deliberate self-harm and its relationships to trauma and dissociation among Iranian young adults. *Journal of Trauma & Dissociation*. 2017; 18(4):610-23. [PMID]



- [20] Steeg S, Carr MJ, Mok PLH, Pedersen CB, Antonsen S, Ashcroft DM, et al. Temporal trends in incidence of hospital-treated self-harm among adolescents in Denmark: National register-based study. *Social Psychiatry and Psychiatric Epidemiology*. 2020; 55(4):415-21. [DOI:10.1007/s00127-019-01794-8] [PMID]
- [21] Griffin E, McMahon E, McNicholas F, Corcoran P, Perry IJ, Arensman E. Increasing rates of self-harm among children, adolescents and young adults: A 10-year national registry study 2007-2016. *Social Psychiatry and Psychiatric Epidemiology*. 2018; 53(7):663-71. [DOI:10.1007/s00127-018-1522-1] [PMID]
- [22] Canner JK, Giuliano K, Selvarajah S, Hammond ER, Schneider EB. Emergency department visits for attempted suicide and self-harm in the USA: 2006-2013. *Epidemiology and Psychiatric Sciences*. 2018; 27(1):94-102. [DOI:10.1017/S2045796016000871] [PMID] [PMCID]
- [23] Geulayov G, Casey D, McDonald KC, Foster P, Pritchard K, Wells C, et al. Incidence of suicide, hospital-presenting non-fatal self-harm, and community-occurring non-fatal self-harm in adolescents in England (the iceberg model of self-harm): A retrospective study. *Lancet Psychiatry*. 2018; 5(2):167-74. [DOI:10.1016/S2215-0366(17)30478-9]
- [24] Lockwood J, Daley D, Townsend E, Sayal K. Impulsivity and self-harm in adolescence: A Systematic review. *European Child & Adolescent Psychiatry*. 2017; 26(4):387-402. [PMID] [PMCID]
- [25] Ross S, Heath N. A study of the frequency of self-mutilation in a community sample of adolescents. *Journal of youth and Adolescence*. 2002; 31(1):67-77. [DOI:10.1023/A:1014089117419]
- [26] Servatyari K, Mohammadzadeh S, Rahmani K, Yazdanpanah H, Abdi M, Yousefi F. The prevalence of depression, anxiety, stress, and related factors among COVID-19 patients in Kurdistan Province, Iran (2020). *WHO South-East Asia Journal of Public Health*. 2021; 10(1):18-24. [PMID]
- [27] Henry JD, Crawford JR. The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*. 2005; 44(Pt 2):227-39. [DOI:10.1348/014466505X29657] [PMID]
- [28] Asghari A, Saed F, Dibajnia P. Psychometric properties of the Depression Anxiety Stress Scales-21 (DASS-21) in a non-clinical Iranian sample. *International Journal of Psychology*. 2008; 2(2):82-102. [https://www.researchgate.net/publication/274721545\\_Psychometric\\_properties\\_of\\_the\\_Depression\\_Anxiety\\_Stress\\_Scales-21\\_DASS-21\\_in\\_a\\_non-clinical\\_Iranian\\_sample](https://www.researchgate.net/publication/274721545_Psychometric_properties_of_the_Depression_Anxiety_Stress_Scales-21_DASS-21_in_a_non-clinical_Iranian_sample)
- [29] Sansone RA, Wiederman MW, Sansone LA. The Self-Harm Inventory (SHI): Development of a scale for identifying self-destructive behaviors and borderline personality disorder. *Journal of Clinical Psychology*. 1998; 54(7):973-83. [DOI:10.1002/(SICI)1097-4679(199811)54:73.0.CO;2-H]
- [30] Amani M, Saemian H, Rezvan-Doust H. Comparison of residential and therapeutic community centers in preventing substance abuse recurrence and reducing self-destructive behaviors of substance users. *Addiction & Health*. 2019; 11(1):43-50. [PMID]
- [31] Jarahi L, Dadgarmoghaddam M, Naderi A, Ghalibaf AM. Self-harm prevalence and associated factors among street children in Mashhad, North East of Iran. *Archives of Public Health*. 2021; 79(1):139. [PMID] [PMCID]
- [32] Tahbaz Hoseinzadeh S, Ghorbani N, Nabavi SM. [Comparison of self-destructive tendencies and integrative self-knowledge among multiple sclerosis and healthy people (Persian)]. *Contemporary psychology*. 2011; 6(2):35-44. [https://bjcp.ir/browse.php?a\\_id=40&sid=1&slc\\_lang=fa](https://bjcp.ir/browse.php?a_id=40&sid=1&slc_lang=fa)
- [33] Ghaedi Heidari F, Bahrami M, Kheirabadi G, Maghsoudi J. Factors Associated with Non-Suicidal Self-injury (NSSI) in Iran: A narrative systematic review. *International Journal of Pediatrics*. 2020; 8(1):10785-99. [https://ijp.mums.ac.ir/article\\_13959\\_f0678de8f-7761bdaf5f0fd9208c0a406.pdf](https://ijp.mums.ac.ir/article_13959_f0678de8f-7761bdaf5f0fd9208c0a406.pdf)
- [34] Menon P, Chaudhury S, Saldanha D, Sahu S, Singh V, Pathak V. Stress levels and its association with self-harm and risk-taking behavior in medical undergraduates. *Industrial Psychiatry Journal*. 2018; 27(1):41-6. [DOI:10.4103/ipj.ipj\_31\_18] [PMID] [PMCID]
- [35] Taylor PJ, Jomar K, Dhingra K, Forrester R, Shahmalak U, Dickson JM. A meta-analysis of the prevalence of different functions of non-suicidal self-injury. *Journal of Affective Disorders*. 2018; 227:759-69. [DOI:10.1016/j.jad.2017.11.073] [PMID]
- [36] Asarnow JR, Mehlum L. Practitioner Review: Treatment for suicidal and self-harming adolescents - advances in suicide prevention care. *Journal of Child Psychology and Psychiatry*. 2019; 60(12):1357. [PMID]