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# The prevalence of Non-Suicidal Self-Injury (NSSI) among high school students in relation to age and sex

Halina Kądziela-Olech<sup>1</sup>, Gabriel Żak<sup>2</sup>, Barbara Kalinowska<sup>2</sup>, Anna Wągrocka<sup>2</sup>, Grzegorz Perestret<sup>2</sup>, Michał Bielawski<sup>2</sup>

<sup>1</sup> Child and Adolescent Psychiatry Unit, Department of Paediatrics and Developmental Disorder, Medical University of Bialystok, Head: prof. Janina Piotrowska-Jastrzębska

<sup>2</sup>Students' Scientific Group in Child and Adolescent Psychiatry at Child and Adolescent Psychiatry Unit, Medical University of Bialystok Supervisor: dr n. med. H. Kądziela-Olech

#### Summary

Aim. The undertaken research aimed at determining the frequency of deliberate selfinjurious behaviour (D-SIB) among the students of secondary schools and also the analysis of the frequency of repeated Non-Suicidal Self-Injury (NSSI) occurrences in accordance with DSM-5 criteria in reference to the age and sex in the studied population.

**Method:** The data was collected via survey method according to the questionnaire prepared in compliance with the criteria of DSM-5 and Self-Harm Inventory. The study included randomly selected students: 1193 boys and 1027 girls in Bialystok aged 13-19 (mean age  $\pm$ SD:16.8  $\pm$  1.65). Statistical analysis of the data was carried out using the application Statistica 10.0 PL, StatSoft.

**Results**: These results indicate that D-SIB and NSSI affect both sexes. In the studied group 8.3 % of students engage in deliberate self-injurious behaviour. The percentage of NSSI was 4.8% (6.3% in the group of boys, 3.2 % among girls; p(Chi<sup>2</sup>)=0.01). Self-cutting was most common among 15-year-old pupils ((D-SIB:14.75%; NNSI:8.1%). The majority of respondents (82% of girls and 74% of boys) revealed that as a result of self-injury behaviour they experience relief.

**Conclusions**: Conducting further research in the area of NSSI seems to be crucial due to chronicity and prevalence as well as the fact that numerous repeated self-injuries bringing relief or causing positive state of mind might indicate a mechanism similar to an addiction syndrome in adolescence.

Key words: self-injury, adolescence

#### Introduction

The phenomenon of self-harm has attracted the interest of researchers and clinicians for many years, but its nature has not yet been determined and remains unclear until today.

For a long time self-destructive behaviour has remained mainly in the area of interest within suicidology. Not until the year of 1938 was self-harm (self- mutilation) isolated from the wide spectrum of suicidal behaviour [1]. They were defined as intentional suicide or partially intentional suicide, preventing the completion of suicide [1-4], other authors has also referred to the behaviour as an antisuicide [5-7].

For the last two decades most researchers have agreed upon that there is a fundamental difference in intention between the act of self-harm and suicidal attempts [7-11]. While suicide is intented to end human life, the goal of self-harm is to regulate highly negative emotions, relieve pain or communicate mental suffering [12-19] The lack of consensus over the definition of self-harm has for a long period of time complicated studies, most of which focused on clinical populations. Self-harm was found in approximately 20-60% of adolescent patients receiving psychiatric treatments [16, 20-22]. Self-harm as an expression of extreme impulsivity was included in the symptomatology of borderline personality disorder (BPD ) in both the DSM- IV TR [23] and ICD -10 [24] classification systems. Although there is a correlation between BPD and D-SIB [25-27] further studies have shown that self-harm is not pathognomonic for BPD. There is a frequent occurrence of self-mutilation in various affective, anxiety, behavioural, and eating disorders [28-31]. Increased risk of developing self-injury occurs in autism spectrum disorders, schizophrenia [32, 33], psychoactive substance abuse and in post-traumatic stress disorder [34 -36]. Most of the researches around the subject have so far not confirmed a link between a specific psychiatric diagnosis and the associated behaviour of self-harm. On the other hand there have been several reports drawing attention to the fact that in self-injuring patients it is not possible to set a psychiatric diagnosis according to current diagnostic criteria [5, 7, 17, 27, 37-39]. Extended population studies have also raised the issue of self-harm increase within the non-clinical population, with its debut during the early stages of adolescence. The tendency to D-SIB in adolescents within the general population is between 3 to 23% [22, 37, 38, 40-46]. Regulating emotions by engaging in repeated self-mutilation despite harmful consequences leads researchers to the hypothesis that this is another disorder starting in adolescence period [14, 17–19, 22, 38–39]. The concept of intentional self-harm without suicidal intentions - Non-Suicidal Self- Injury (NSSI) was included as a separate psychiatric diagnosis in the DSM-5 classification system, yet still subject for "Terms and Conditions for further research", in which six groups (Group A,B,C,D,E,F) of criteria were proposed [47].

The essence of the disorder proposed in group A is a commitment for five or more days during the last year with intentional damage to the surface of the body, which causes bleeding, bruising or pain (cutting, burning, stabbing, hitting, excessive friction) with the assumption that the damage leads only to minor or moderate injury (without suicidal intent ).

Group B determines the presence of at least one of the expected effects of selfinjurious behaviour :1) releasing negative emotions and experiencing "relief ", 2) acting as the solution of interpersonal problems, 3) causing a positive state of mind.

Group C is associated with at least one of the following conditions: 1) interpersonal difficulties or negative feelings/thoughts such as depressed mood, anxiety, tension, anger, distress, negative self-esteem, which appear before the act of self-mutilation, 2) preoccupation with the intention of self-harm, which is difficult to control. 3) Frequent thinking about self-injuring, even if it is not done.

Group D is the intentional self-harming as a behaviour that is not socially sanctioned (such as body piercing, tattoo, part of religious or cultural rituals) and does not include scratching at scabs or biting nails. The disorder or its clinical consequences cause clinically significant distress or disruption in interpersonal and educational achievements or other important areas of functioning (Group E).

Group F – excluding criteria include psychotic episodes, delirium, intoxication or withdrawal syndrome, trichotillomania, skin picking, stereotypical self-injurious behaviour in autism spectrum disorders, intellectual disability and the Lesh-Nyhan disease.

Because of more and more teenagers are getting involved in NSSI extracting a separate disease entity becomes very important. Self-harm is not just a way to relieve mental pain, it is a special kind of experiment to induce a "nice feeling", reminiscent of the process of addiction. NSSI model was developed to expand the population studies and careful empirical assessment of the problem, which may be important in the development of adequate therapeutic and preventive strategies [47].

In Poland despite the fact that more and more teenagers engage themselves in auto-aggressive behaviour, few researches concerning the scale of this phenomenon have been done [21, 48]. NSSI has not been mentioned in clinical diagnosis before. Furthermore, the precise scale of repeated incidents of self-harm with no suicidal intentions is not known.

The undertaken research aimed at determining the frequency of deliberate selfinjurious behaviour (D-SIB) among the students of secondary schools and also the analysis of the frequency of repeated NSSI occurrence in accordance with DSM-5 criteria in reference to the age and sex in the studied population.

### Samples and methods

The research was conducted in 2013 in randomly chosen secondary schools: three middle schools, three high schools and two complexes of vocational schools. This research was preceded by informational meetings with principals, teachers and parents at these schools. The meetings were to explain the assumptions of the research program and to give detailed guidelines of how to conduct the surveys. The principals

pals, teachers, parents and students agreed to take part in these surveys. The surveys were anonymous.

#### The characteristics of the examined group

Among 2506 students aged 13-19, the results have been obtained for 2220 (88.6%) participants. The examined group included 1193 boys (mean age  $\pm$  SD:16.7  $\pm$  1.63) and 1027 girls (mean age  $\pm$  SD:16.8  $\pm$  1.65). The mean age ( $\pm$  SD) of the respondents was 16.7 $\pm$ 1.64 and did not differ much between the sexes of the participants. Table 1 shows the demographic characteristics of the examined group.

		Age (years)							
School	Sex	13	14	15	16	17	18	19	Total
		Ν	Ν	N	Ν	Ν	N	Ν	Ν
Middle N=589	female	27	97	93	22	25	0	0	264
	male	29	119	114	36	24	3	0	325
Vocational N=438	female	0	0	0	12	9	11	13	45
	male	0	0	0	105	111	88	89	393
High N=1193	female	0	0	0	192	174	188	173	727
	male	0	0	0	130	105	120	111	466
	total	56	216	207	497	448	410	386	2220

Table 1. The demographic analysis of the participants

#### Method

The data was collected via survey method according to the questionnaire prepared by the authors in compliance with the DSM-5 criteria [47] applicable as from May 2013, supplemented with self-harm inventory [35] (Annex 1). NSSI was defined in compliance with suggested DSM-5criteria, according to which the engagement in self-injury took place more than 5 days a year and resulted in a feeling of relief.

### Statistical analysis

The results of the research were analysed using the program STATISTICA 10.0 PL, StatSoft. The normality of the distribution was verified with the Lilliefors test based on Kolmogorov-Smirnov test and also with the Shapiro-Wilk test. The normality of the distribution of the analysed variables has not been ascertained. The Chi-square test (Chi<sup>2</sup>) was used to evaluate the differences between compared groups for the not connected qualitative attributes given in proportions. The significance level p<0.05 has been accepted to show that there are statistically significant differences or dependencies.

### Results

In the studied group 8.3 % of students engage in deliberate self-injurious behaviour. Figure 1 shows the trend of self-harm in the studied group.

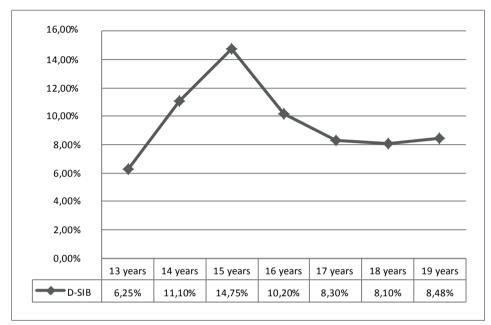


Figure 1. The D-SIB trend in studied group

Statistically significant differences between the frequency of D-SIB occurrence among girls (6.7%) and boys (9.7%), p=0.016 have been shown (Table 2). Among the types of schools the highest percentage of D-SIB (13.1%), similar in the group of boys (13.8%) and girls (13.9%), has been ascertained among the students of middle schools. However, the significant differences among both sexes have appeared in the group of high school students (boys -9.3%, girls -5.4%; p=0.019).

	Total		Ma	ale	Fen					
	N= 2220		N=1193		N=1027		p(Chi <sup>2</sup> )			
	n	%	n	%	n	%				
D-SIB	184	8.3	115	9.6*	69	6.7*	0.02			
NSSI	106	4.8	75	6.3*	31	3.0*	0.01			

Table 2. The frequency of self-injury in the studied group

D-SIB – Direct Self-Injurious Behaviour, NSSI-Non-Suicidal Self-Injury more than 5 days a year, \* – statistically significant difference between sexes p<0.05

The direct auto-aggression has been more often observed in female students in vocational schools (Table 3). Repeated self-injury was ascertained among students of all types of schools. In the studied group the percentage of people engaging in self-harming behaviour (more than 5 days a year) complying with the NSSI criteria according to DSM-5 was 4.8% (6.3% in the group of boys, 3.0% among girls; p=0.01) (Table 2).

		p(Chi <sup>2</sup> )		
	total	male	female	
D-SIB	13.1% 13.8%		13.9%	
NSSI	6.5%			
	V			
D-SIB	8.6%	8.2%	13.8%	
NSSI	5.7%	4.8%	9.3%	
D-SIB	6.8%	9.3%*	5.4%*	0.019
NSSI	3.6%	5.7%*	2.1%*	0.006

Table 3. The involvement in self-mutilation according to sex and type of school

D-SIB – Direct Self Injurious Behaviour, NSSI-Non-Suicidal Self-Injury more than 5 days a year, \* – statistically significant difference between sexes p<0.05

The detailed analysis of the age and sex has revealed differences in the NSSI profiles in the group of boys and girls. Significant differences of gender occurred in the age groups of 18 and 19-year-olds (Table 4). The most common reason of girls engaging in NSSI was loneliness (48%) and problems at school (40%). Boys, however, engaged in NSSI without a reason (73%).

Age (years)	13	14	15	16	17	18	19
NSSI	1.80%	5.50%	8.10%	4.70%	5.20%	5.40%	5.60%
male	3.60%	6.40%	9.60%	5.50%	5.70%	7.60%*	7.50%*
female	1.00%	4.10%	5.50%	3.70%	4.50%	3.10%*	4.30%*

Table 4. The occurrence of NSSI in the study group according to age and gender

NSSI-Non-Suicidal Self-Injury, \* - statically significant difference between sexes p (Chi<sup>2</sup>)< 0.05

The differences were statistically significant (figure 2). The majority of respondents (82% of girls and 74% of boys) revealed that as a result of self-injurious behaviour they experience relief. Twice as many female students said that they feel ashamed of NSSI and need help (Figure 3).

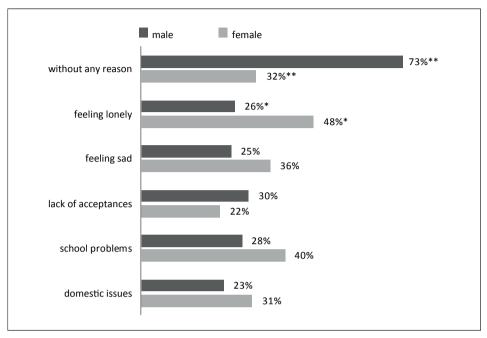
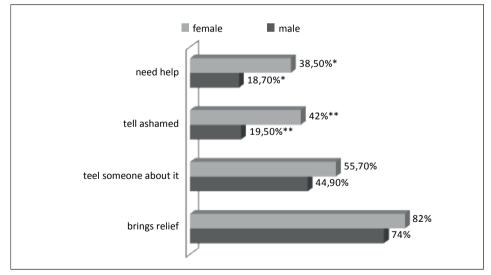


Figure 2. The reasons for involvement in NSSI in the studied population

NSSI-Non-Suicidal Self-Injury more than 5 days a year, \*-statistically significant difference between sexes \* p (Chi<sup>2</sup>)=0.007; \*\* p(Chi<sup>2</sup>)<0.001

Figure 3. The attitude of persons involved in NSSI towards self-harm



NSSI-Non-Suicidal Self-Injury more than 5 days a year, statistically significant difference between sexes: \* p(Chi<sup>2</sup>)=0.009; \*\* p (Chi<sup>2</sup>)=0.003

#### Discussion

The conducted research as well as the results from various centres in the world indicate that deliberated self-injury is a common behaviour among adolescents. Multicentre research conducted in 11 European countries as a part of the Saving and Empowering Young Lives in Europe project (SEYLE) has revelead that the frequency of D-SIB among school pupils aged 14-15 ranged from 17.1 % to 38.6% in particular countries, while the repeated D-SIB has been found in 7.8% of the examined group [49]. 14.4% of pupils of secondary schools in Łódź proved to perform deliberate and intentional self-cutting. Although the percentage of D-SIB in the studied population was 8.3%, self-cutting was most common among 15-years-old pupils (respectively D-SIB 14.75% and NSSI 8.1%). Diverse frequency of D-SIB (3%-38%) amongst teenagers in the world [22, 37, 38, 40-46, 49] may be caused by specific sociocultural aspects, the age of studied population and the type of school, which is confirmed by our research.

Our results as well as the literature of the subject [11, 12, 22, 49] indicate that D-SIB and NSSI concern both sexes. Although in middle schools the percentage of boys and girls engaging in self-injury was similar, amongst older youth the type of school determined the difference between sexes – in vocational schools more girls engaged in self-injury, whilst in high schools more boys engaged in self-injury. Loneliness was the most common cause of NSSI amongst girls. Boys, on the other hand, engaged in self-cutting without a reason. Most respondents with NSSI experienced the relief. Self-injury beginning in the early adolescence may be continued as NSSI as a form of emotional regulation [4, 12-15, 17, 19].

### Conclusions

Determining the criteria in DSM-5 for repeated NSSI not only may result in more precise estimation of the scale of the phenomenon, but also help to resolve whether it is a new kind of disorder starting in adolescence. Conducting clinical research in the area of NSSI seems to be crucial due to chronicity and prevalence as well as the fact that numerous repeated self-injuries that bring relief or cause positive state of mind may indicate a mechanism similar to an addiction syndrome. On the other hand, a set of unfavourable factors without suicidal intention or somatic complications of NSSI may pose a serious lethal risk.

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### Annex 1

## Questionnaire

This questionnaire is addressed to students of secondary schools. The questionnaire is anonymous. Please encircle the answer of choice:

15 0	monymous. I	lease chemene the unswer of choice.					
	Gender:	□ female □ male					
	age:	□ 12years □ 13years □ 14years □ 15years					
		□ 16years □ 17years □ 18years □ 19years					
	Currently stu	dying at: $\Box$ middle school $\Box$ vocational school $\Box$ high school					
1.	Choose between the following statements that most accurately describes your own personality in general (you may choose more than one answer in this question):						
	<ul><li>constant</li><li>vehemen</li><li>patience</li></ul>	esteem  sociability  calm feeling of guilt  perfectionism  restlessness ce  strife  dissatisfaction with himself dissatisfaction with their body  loneliness anxiety  courage  tension					
2.		tely describes your contact with your peers: d					
3.		tely describes your contact with your parents/caretaker: d					
4.		do you talk about your problems and emotions with?					
5.	occasion	o you miss out on school?  only when I am sick at home ally once per week more than once per week onth more than once a month					
6.	<ul><li>more than or</li><li>by mysel</li><li>reading</li></ul>	y do you spend most of your free time after school (you may choose he answer)? f at home  using the computer  watching TV listening to music  with friends g sports  dancing  playing instruments					

• with family members

- 7. Have you in the last year self-mutilated yourself (by cutting, hitting, rubbing, scorching his body)?
  - □ YES □ > 5 times per week □ > 5 times/ per month □ > 5 times per year □ Less than >5 times per year
  - 🛛 NO
- 8. How would you best describe the main reason for your self-mutilation?
  - $\Box$  no reason  $\Box$  when I feel lonely  $\Box$  when I feel sad
  - $\Box$  when I get stressed by school related things
  - □ when I don't get along well with my parents/ domestic issues
  - □ when I don't feel accepted by my peers
- 9. Does your self-mutilation cause you the sense of relief?
  □ YES □ NO
- 10. Do you consider yourself commonly feeling angry or tense 🛛 YES 🔍 NO
- 11. Do you consider yourself having difficulties expressing your emotions and/or letting others know what is on your mind?
  - □ YES □ NO
- 12. Do you feel that you are carrying anger or aggression within yourself?□ YES □ NO
- 13. Have you ever, in the act of feeling angry, destroyed, torn or broken anything?□ YES □ NO
- 15. Do you consider yourself being accepted/liked by your own peers?□ YES □ NO
- 16. Do you ever use any alcoholic substances?
  □ YES □ every day □ >2 times per week □ >2 times per month □ <2 times per month □ NO</li>
- 17. Do you smoke cigarettes? 🛛 YES 📮 NO
- Do you exercise any contact sport or other sports with an increased risk of injury? □ YES □ NO

20. Do you feel accepted by your parents/ Do you consider your parents are proud of you?

□ YES □ NO

21. If you have self-mutilated or caused yourself pain in other ways – did you tell anyone about it?

□ YES □ NO

- 22. Do you feel shame over your self-mutilation or other cases of feeling pain? □ YES □ NO
- 23. Do you feel that you need help by someone drawing attention to your problems? □ YES □ NO

Thank you for your participation