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Self-harm behavior and suicidal ideation among high school students. Gender differences and relationship with coping strategies

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Deliberate self-harm, suicide intents and suicidal ideation are suicide risk symptoms in adolescence. The knowledge of their prevalence and associated characteristics is needed to prevent and treat them properly. The aims of the present study are: a) to analyse the presence of deliberate self-harm and suicidal ideation among a general adolescent population according to sex, b) to investigate the link between these two symptoms, calculating the risk ratio (RR) of self-harming behavior among adolescents with suicidal ideation, and c) to analyze the coping strategies used by adolescents with presence/absence of these behaviors.

Participants are 1,171 Catalan high school students (518 boys and 653 girls) aged 12 to 16 years. Self-harm behavior was assessed by means of YSR and coping strategies by means of CRI-Youth.

Results indicate that the prevalence of self-harm behavior is 11.4% and the one for the suicidal ideation is 12.5%, percentages that are in accordance with the literature. No gender differences are found, but there is an increase with age in both types of risk behaviors. There is a significant link between deliberate self-harm and suicidal ideation. The RR indicates that the self-harming behavior is 10 times more likely to occur in the adolescents with suicidal ideation than in the adolescents without such ideation. The use of specific coping strategies differentiates between adolescents with presence/absence of these risk behaviors, especially in the case of girls. These findings may have important preventive value and

contribute to the implementation of more effective treatments.

Key words:
Self-harm behavior, suicidal ideation, coping strategies, adolescence, sex differences.

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Conducta autolesiva e ideación suicida en estudiantes de Enseñanza Secundaria Obligatoria. Diferencias de género y relación con estrategias de afrontamiento

Introducción. La conducta autolesiva y la ideación suicida constituyen síntomas de riesgo de suicidio en la adolescencia. Conocer su prevalencia y características asociadas es fundamental para prevenir y tratar estas conductas adecuadamente. Los objetivos de este trabajo son: a) analizar la presencia de conducta autolesiva y pensamiento suicida en población comunitaria adolescente, según sexo, b) analizar la asociación entre ideación suicida y conducta autolesiva, calculando el riesgo relativo (RR) de autolesión; c) analizar el tipo de estrategias de afrontamiento que ponen en marcha respectivamente los adolescentes con presencia y ausencia de dichas conductas.

Método. Participan 1.171 estudiantes de ESO (518 chicos y 653 chicas) de entre 12 y 16 años. La conducta autolesiva y la ideación suicida se analizaron mediante el YSR y las estrategias de afrontamiento mediante la adaptación española del CRI-Youth.

Resultados. La prevalencia de conducta autolesiva es del 11,4% y la del pensamiento suicida del 12,5%, porcentajes acordes con los encontrados en otros países No

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se han hallado diferencias de sexo, pero sí un incremento con la edad. Existe una importante asociación entre comportamiento autolesivo e ideación suicida; la probabilidad de autolesión en adolescentes con ideación suicida es más de diez veces superior que en adolescentes que no reportan dicho tipo de ideación. El uso de estrategias de afrontamiento específicas diferencia entre población con ausencia/presencia de dichas conductas, especialmente en las chicas.

Conclusiones. La asociación entre pensamiento autolítico, conducta autolesiva y uso de estrategias de afrontamiento puede tener importante valor preventivo y coadyuvar a la implementación de tratamientos más efectivos.

Palabras clave:

Conducta autolesiva, ideación suicida, estrategias de afrontamiento, adolescencia, diferencias de sexo.

INTRODUCTION

Adolescence takes its form from an evolutive stage having great emotional stability since the young must cope with many changes that may increase their stress level and affect present¹ and future^{2,3} psychological maladjustment. That is why it is important to identify the risk factors in order to implement prevention or intervention measures that contribute to improving mental health of the adolescent in his/her adult life. Some of the symptoms indicating psychic suffering are self-harm behavior, suicidal attempts and suicidal ideation.

Self-harm behavior is defined as the socially unacceptable and repetitive performance of cuts, blows and other forms of self-harm that cause mild or moderate physical harm.⁴ Self-harm behavior is found in both the general and psychiatric⁵ population and there are authors who propose considering it as a syndrome per se.⁶ Although self-harm behavior is conceptually different from suicide,⁷ multiple studies show a very close relationship between both,⁸ the self-harm behaviors being a clear risk factor for suicide attempts, since after self-harm, the risk of committing suicide ranges from 0.5 to 2% in the following year.⁹ Some investigators¹⁰ propose a *continuum* between self-harm behavior and suicide, since they share an essential element which is that of self-infliction of harm and they only differ in the seriousness of the harm caused.

Self-harm behaviors are an increasing phenomenon in adolescence¹¹ with significant incidence. Different reviews of community studies with adolescents worldwide find 13% prevalence of self-harm behaviors and 26% for suicidal thoughts.^{12,13} In a sample of North American schoolchildren with a mean age of 16 years, Muehlenkamp and Gutierrez¹⁴

found a percentage of 15.9% of self-harm behaviors in the last year and Laye-Gindhu and Schonert-Reichl,¹⁵ in Canadian schoolchildren between 13 and 18 years of age, reported 15%, also in regards to the last year. In the 2001 WHO report,¹⁶ it was stated that self-inflicted harm, including suicide, caused approximately 814,000 deaths in the year 2000 worldwide. In 2006, the WHO¹⁷ reported mortality by suicide among the young Spanish population at 3.9 per every 100,000 inhabitants. In regards to gender differences, the data are not unanimous, since, although some studies indicate that the percentages of girls who cause self-harm are greater than that of boys,^{15,18-21} other authors do not find significant differences.^{14,22-24} Age of the participants and self-harm method could be variable in regards to gender differences. In this sense, a study by Sho et al.²⁵ manifests that the percentage of boys and girls who inflicts self-harm with cutting objects is similar at 10-11 years, but girls obtain higher percentages than boys in the upper age groups. In regards to method, Laukkanen et al.²⁶ stress that while there are no differences of gender in most of the self-harm methods, girls use the cutting method more often than boys. What has been agreed is that completed suicide is more frequent in men and young adults than in women.¹⁸⁻²⁰ In regards to Spain, the most recent figures on suicide rate among 15 to 24-year-old young people are 7.44 boys per every 100,000 versus 1.81 girls. In Catalonia, these figures are 6.34 boys versus 1.83 girls per every 100,000.²⁷

In regards to age, self-harm behavior, and its different variants, are already detected in early adolescent age, even in childhood, this increasing until the middle and late adolescence. The Truth Hurts report²⁸ reveals that the mean age at which this behavior begins is at 12 years and that it can even be detected in younger ages. The Sho et al. study²⁵ with Japanese students in grades 5 to 12 (ages 10 to 17) shows percentages of self-harm behavior of 4.8% for the grades 5-6, 10.3% in grade 7-9, and 8.3% for grades 10-12. In the United States, Kessler et al.²⁰ studied the presence of suicidal planning and attempts over the lifetime with the large community population and determined that the most prevalent age for a first self-harm behavior was at about 16 years, a figure that agrees with that of Madge et al.¹⁸ in the European population.

References show a strong link between suicidal ideation and self-harm act. Along this line, Laye-Gindhu and Schonert-Reichl¹⁵ showed that among boys who had inflicted self-harm, a high percentage had at some time had suicidal ideation (83%), while in those who had never inflicted self-harm, this percentage, although high, decreased to 29%. In addition, it has been detected that adolescents with suicidal ideation have a higher risk of committing suicide.^{3,29} That is why investigators stress the importance of knowing the existence of suicidal thoughts among adolescents as a method of detecting self-harm actions that make it possible to initiate prevention strategies. Suicidal thoughts are also a

sign of emotional malaise *per se*, since in adolescents and young adults, it is frequently associated to psychological symptoms, especially depression and low self-esteem and anxious symptoms.³⁰

In regards to situations that generate stress, persons generally initiate a series of mechanisms that are called coping. One of the most classical and commonly accepted definition of the concept is that of Lazarus and Folkman³¹ who define coping as those cognitive and behavioral efforts to manage (reduce, minimize, dominate or tolerate), internal and external demands that are perceived as a burden or that exceed their resources. Moos³² classifies the coping strategies of approach to the problem (aimed at a direct transaction with the distressing source) and avoidance strategies (aimed at stabilizing the emotional state).

In adolescents, some coping strategies are more associated with mental health than others. In a complete review on stress coping in childhood and adolescents,³³ it has been established that the approach strategies (especially those of problem-solving, cognitive restructuring, and positive reevaluation) and those that focalize the problem (more "active" strategies in coping) are associated to less psychopathology. On the contrary, those that are based on withdrawal (cognitive and behavioral avoidance, resigned acceptance, emotional discharge, delusion base thoughts and guilty feelings or self-criticism) and those focused on emotion, are more associated to psychological symptoms. On their part, Ebata and Moos³⁴ manifested that adolescents with depression symptoms and those with behavior disorders used more avoidance strategies and that they also were the first to use fewer approach strategies.

In adolescents, deficit in coping strategies and low self-perception of capacity to manage stressful situations is associated with suicidal thoughts and suicidal attempts.³⁵ In an investigation carried out in a young adult prison population, Kirchner, Forns and Mohino³⁶ found that the prisoners who inflicted self-harm during imprisonment compared with those who did not tended to use avoidance strategies significantly more and used approach strategies to a significantly lower degree. Some authors have proposed that suicidal behavior may be a coping strategy in some adolescents against emotional malaise *per se*,^{4,7,37} since some boys and girls declare that they feel a rapid relief of tension after the self-harm episode.

Even though detection of self-harm behaviors and suicidal ideation begins in early adolescence, an essential piece of information for the implementation of early intervention programs, there are few studies, especially in the Spanish population, covering this age group, since most of the investigations focus on late adolescence. The generic object of this study is focused on analyzing self-harm - suicidal behaviors and suicidal ideation in community

adolescents starting secondary school. This general objective is broken down into three sub-objectives: 1) estimating the prevalence of secondary school students who report self-harm behaviors and suicidal thoughts, establishing differences based on gender and age. 2) studying the link between self-harm behaviors and suicidal ideation and analyzing the relative risk of self-harm in adolescents with suicidal ideation. 3) analyzing the link between suicidal behaviors and suicidal thoughts with the coping strategies used.

In regards to the first objective, it is sustained that the prevalence and distribution by genders and age of self-harm behavior and suicidal ideation in our population will be similar to that reported in the previously reviewed literature. With age, there will be an increase in the behaviors analyzed. In regards to the second objective, it is hypothesized that a positive association will be found between self-harm behavior and suicidal thoughts. In addition, those adolescents who have manifested having suicidal ideation will have a greater risk of committing self-harm acts than those adolescents who have not reported this type of ideation. Finally, in regards to the third objective, it is suspected that those adolescents who inflict self-harm and think about suicide will have a coping profile characterized by increased use of avoidance strategies.

METHODOLOGY

Participants

The population studied was made up of 1171 students from secondary school from public and private schools and institutions in Barcelona and its surroundings. A total of 518 (44.2%) out of the total participants were boys and 653 (55.8%) were girls. Their ages ranged from 12 to 16 years, mean age of the total population being 13.96 years (SD = 1.32), mean age of the boys 13.92 (SD = 1.33) and 14.00 that of the girls (SD = 1.31). Distribution by ages according to school courses was the following: 12 years = 213; 13 years = 322; 14 years = 257; 15 years = 279 and 16 years = 100.

Procedure

Stratified screening was made of the population (adolescence 12 to 16 years who were studying secondary school) and the subjects were obtained from public and private centers in Barcelona and surroundings according to availability. The school principals and psychopathological team were contacted and the project explained. After authorization by the parents of the students and of the Parent-Teacher Association, the sessions were programmed. Student participation was voluntary and the grade of motivation shown by them was high. None of them refused

to participate in the study. The anonymous character of the data collected was assured by providing a code for each case. The tests were administered collectively and counter-balanced.

Instruments

To detect those adolescents who inflicted self-harm or who had suicidal ideation, the Spanish version³⁸ of the Youth Self Report (YSR) designed by Achenbach³⁹ was used. The YSR evaluates adolescent psychopathology conceived as a bipolar dimension with two broad psychopathological dimensions, called broad band: internalizing and externalizing, once the most specific syndromes are grouped. Each question refers to the last 12 months and is evaluated on a 3-point Likert scale (0 = "it is not true," 1 = "somewhat true or sometimes true," 2 = "very true or it is frequently true"). Cronbach's alpha reliability coefficients of the Spanish version of the YSR³⁸ range from 0.83 to 0.91 (mean = 0.87) for the broad band and from 0.54 to 0.86 (mean = 0.69) for the narrow band. These values are very similar to those reported by Achenbach.³⁹ The YSR includes two questions directly related with self-harm-suicidal behavior ("I deliberately tried to harm myself or to commit suicide") and with suicidal ideation ("I think about committing suicide").

To evaluate the coping strategies, the Spanish adaptation⁴⁰ of the Coping Responses Inventory-Youth (CRI-Y) of Moos³² was used. This inventory is made up of 48 items with 4 response options scored on a Likert-like scale of 0 ("no, never") to 3 ("yes, almost always") distributed into 8 scales of 6 items each one. Four of them evaluate coping styles based on approach to the problem: Logical analysis, Positive reevaluation, Search for guidance and support and Problem solving. The four remaining scales evaluate problem avoidance strategies: Cognitive avoidance, Acceptance-resignation, Search for alternative reward and Emotional discharge. The reliability coefficients of this Spanish version are adequate for all the scale (Cronbach's alpha = 0.81), and are also acceptable for the two large types of coping strategies evaluated: approach (alpha = 0.77) and avoidance (alpha = 0.72).

Statistical analysis

The data were analyzed with the SPSS (16.0) statistical program. Percentages, means and standard deviations of the different variables analyzed were calculated. The χ^2 technique was used to determine associations between categorical variables. When the number of items was not appropriate to apply to this test, the Fisher's exact statistics and Monte Carlo correction were used. To establish the evolutive trends or curves, polynomial contrasts were used. To estimate

likelihood of occurrence of self-harm behaviors among studies with suicidal ideation, relative risk (RR) and its corresponding 95% confidence intervals were calculated. The non-parametric Mann-Whitney U test was used to establish differences between two continuous variables. The $p > 0.05$ values were established to consider significant differences in the different analysis carried out.

RESULTS

Prevalence of self-harm-suicide behavior and suicidal thoughts. Relationship with gender and age

A total of 11.4% of the participants answered affirmatively to the question on self-harm behaviors practiced in the last 12 months. Of this percentage, 8.5% answered that it is "somewhat certain" and 2.9% that it is "very true." In addition, 12.5% admitted having had suicidal ideation in the last 12 months, although in different grades: 10.2% answered that it is "somewhat certain" and 2.3% that it is "very true." There are no statistically significant differences based on gender or in reference to self-harm behavior [χ^2 (2, N = 1171) = 2.33, $p = 0.31$], or regarding suicidal ideation [χ^2 (2, N = 1171) = 3.17, $p = 0.21$]. Regarding age, at 12 years, the percentages for self-harm behavior or suicide attempts are 6% ("somewhat certain") and 1% ("very true"); at 13 years, the percentages are 7.5% and 3.1%, respectively; at 14 years 7.4% and 3.5%; at 15 years 10.8% and 3.6%. Finally, at 16 years, the percentage is 14% for the "somewhat certain" response and 3% for the "very true" response. The differences according to age have been compared with Fisher's exact statistics, applying the Monte Carlo correction. Although the differences in the percentage of participants who admit having carried out self-harm or suicide attempts are not significant (χ^2 (8, N = 1171) = 12.65, $p = 0.14$), a growing tendency to report this type of behaviors has been observed as the age of the subjects increases (polynomial contrast $F = 6,78$, $p = 0.009$).

Regarding suicidal ideation, percentage by age are the following: at 12 years 8.5 ("somewhat certain") and 0.5 ("very true"); at 13 years, the percentages are 7.1% and 3.1%, respectively, at 14 years 10.9% and 2.3%; at 15 years 11.8% and 2.5%. Finally, at 16 years, the percentage is 17% for the "somewhat certain" response and 3% for the "very true" response. The differences of percentages have been contrasted with Fisher's exact statistics using Monte Carlo correction. The results indicate differences in the significance limits [χ^2 (8, N = 1171) = 15.04, $p = 0.05$], with a tendency to increase with age.

In order to analyze this type of behavior in greater depth and to simplify the calculations, the value 0 ("it is not

true") was considered to indicate absence of these behaviors while values 1 and 2 ("somewhat certain" and "very true", respectively) indicated, although in different grade, their "presence." This strategy also made it possible to increase the number of subjects in each one of these two categories established, a fact that made it possible to optimize subsequent calculation. Table 1 shows the percentages of presence and absence of these behaviors according to gender and age. Although no significant differences are observed in regards to gender in either self-harm - suicidal behavior or in suicidal ideation, [χ^2 (1, N =1171) = 0.81, p = 0.20; χ^2 (1, N =1171) = 2.91, p = 0.09, respectively], in regards to age, a significant increase is observed in both behaviors [χ^2 (4, N = 1171) = 9.75, p = 0.05; χ^2 (4, N =1171) = 10.14, p = 0.04, respectively]. It should also be mentioned in regards to suicidal ideation that the level of likelihood is marginally significant in the differences between genders. An analysis has been made simultaneously contemplating gender and age in self-harm behavior and suicidal ideation. No significant differences were observed between boys and girls in any age group (p <0.05 in all the χ^2 contrasts) (table 1).

Self-harm behavior and suicidal thinking

The association between suicidal ideation and self-harm - suicidal behavior has been studied. The results (see table 2) indicate an association between both behaviors: 58% of the adolescents who had thought about committing suicide had also performed a suicidal act or suicide attempt at some time. These percentages do not significantly differ according to gender.

Relative risk (RR) of self-harm behavior has been calculated between those adolescents who have manifested suicidal ideation (at risk group) in relationship to those who have not manifested this type of ideation (non-risk group). The group with suicidal ideation had 12 times more likelihood of inflicting self-harm than the group who did not report this type of ideation. Calculation of RR for each gender indicates that the males in the at risk group had 10 times more likelihood of self-harm than those of the non-risk group. On their part, the girls of the risk group had 3 times more likelihood of self-harm than those of the non-risk group. The relationship between suicidal ideation and self-harm behavior or suicide attempts becomes clear (table 2).

Coping strategies, self-harm behavior and suicidal ideation

Table 3 shows the coping differences between those adolescents who have reported self-harm behaviors and suicidal ideation and those who have not. The results indicate

Table 1	Frequency and percentage of absence/presence of self-harm behavior and suicidal ideation according to gender and age			
	Self-harm behavior		Suicidal ideation	
	Absence	Presence	Absence	Presence
Gender (N = 1.171)				
Girls	571 (87.4%)	82 (12.6%)	562 (86.1%)	91 (13.9%)
Boys	466 (90%)	52 (10%)	463 (89.4%)	55 (10.6%)
Total	1037 (88.6%)	134 (11.4%)	1025 (87.5%)	146 (12.5%)
Age (N = 1.171)				
12 years	198 (93%)	15 (7%)	194 (91.1%)	19 (8.9%)
13 years	288 (89.4%)	34 (10.6%)	289 (89.8%)	33 (10.2%)
14 years	229 (89.1%)	28 (10.9%)	223 (86.8%)	34 (13.2%)
15 years	239 (85.7%)	40 (14.3%)	239 (85.7%)	40 (14.3%)
16 years	83 (83%)	17 (17%)	80 (80%)	20 (20%)

that adolescents of both genders who inflicted self-harm use the strategy of Emotional Discharge as a method of coping with their problems significantly more frequently. In addition, girls who inflict self-harm score significantly higher on the strategies of Logical Analysis, Cognitive Avoidance, Acceptance-Resignation and on all of the responses of Avoidance, they score significantly lower on the strategy of Problem-Solving than those who do not inflict self-harm.

In regards to suicidal ideation, the results indicate a coping pattern that is very similar to that observed in self-harm behavior. This is logical since most of the population analyzed is the same. The boys and girls who report suicidal ideation more frequently use Emotional Discharge as a way of coping with their problems and as a whole, make greater use of avoidance type strategies. Furthermore, girls who have suicidal thoughts report using Logical Analysis, Acceptance Resignation, Cognitive Avoidance in a greater degree and problem-solving in a lower degree than girls who do not report this ideation (table 3).

CONCLUSIONS

In regards to the first objective of this study, it is concluded that the percentage of adolescents manifesting self-harm behaviors and suicidal ideation is high (11.4 and 12.5%, respectively). These percentages are similar to those

Suicidal ideation	Self-harm behavior		Suicidal ideation
	Presence	Absence	X2 Contrast and relative risk (RR)
Boys (n = 518)			
Presence (n = 55)	29 (52.7%)	26 (47.3%)	χ^2 (1. N = 518) = 124.17, $\rho < 0.001$ RR = 10.61 (CI = 6.63-16.99)
Absence (n = 463)	23 (4.9%)	440 (95.1%)	
Girls (n = 653)			
Presence (n = 91)	56 (61.5%)	35 (38.5%)	χ^2 (1.N = 653)= 231.02, $\rho < 0.001$ RR = 13.30 (CI = 8.83-20.02)
Absence (n = 562)	26 (4.6%)	536 (95.4%)	
Total			
Presence (n = 146)	85 (58.2%)	61 (47.8%)	χ^2 (1. N = 1.171)= 360.13, $\rho < 0.001$ RR = 12.18 (CI = 8.97-16.54)
Absence (n = 1025)	49 (4.8%)	976 (95.2%)	

Coping CRI-Y	Self-harm behavior						Suicidal ideation					
	Boys			Girls			Boys			Girls		
	Presence	Absence	p	Presence	Absence	p	Presence	Absence	p	Presence	Absence	p
	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	
Logical analysis	10.5 (4.43)	9.48 (4.29)	0.24	11.4 (3.3)	9.99 (3.88)	0.001	10.31 (4.04)	9.39 (4.31)	0.24	11.56 (3.31)	9.91 (3.87)	0.001
Positive Reevaluation	9.4 (4.19)	9.4 (4.05)	0.84	8.75 (3.93)	9.12 (3.86)	0.58	8.72 (3.87)	9.13 (4.04)	0.84	8.66 (3.90)	9.15 (3.85)	0.58
Guidance Seeking	7.59 (4.4)	6.74 (4.18)	0.12	8.62 (3.99)	8.07 (4.34)	0.32	6.94 (4.38)	6.74 (4.20)	0.12	8.79 (4.17)	8.03 (4.35)	0.32
Problem Solution	8.8 (3.7)	9.14 (4.58)	0.41	8.52 (3.86)	9.56 (4.14)	0.03	8.61 (4.29)	9.17 (4.54)	0.41	8.48 (4.01)	9.54 (4.13)	0.03
Cognitive Avoidance	9.4 (3.8)	8.82 (4.15)	0.39	9.9 (4.3)	8.78 (3.9)	0.03	8.80 (3.94)	8.79 (4.12)	0.39	9.24 (4.25)	8.88 (3.93)	0.03
Acceptance-Resignation	8.6 (4.24)	7.62 (3.82)	0.15	9.1 (3.47)	7.49 (3.66)	<0.001	8.45 (4.20)	7.54 (3.81)	0.15	8.80 (3.64)	7.49 (3.63)	<0.001
Reward Seeking	7.7 (4.5)	6.65 (4.57)	0.09	7.05 (4.35)	6.43 (4.24)	0.45	6.98 (4.44)	6.68 (4.58)	0.09	6.80 (4.41)	6.50 (4.26)	0.45
Emotional Discharge	7.49 (3.9)	4.88 (3.77)	<0.001	10.06 (3.86)	6.45 (3.9)	<0.001	7.01 (3.87)	4.78 (3.79)	<0.001	9.93 (3.93)	6.39 (3.91)	<0.001
Total Approach	36.28 (11.36)	34.59 (12.59)	0.46	37.24 (10.23)	36.76 (11.19)	0.78	34.70 (10.95)	34.49 (12.64)	0.46	37.45 (10.37)	36.67 (11.24)	0.78
Total avoidance	33.07 (11.75)	28.02 (11.29)	0.006	35.73 (10.57)	29.32 (10.28)	<0.001	31.21 (10.83)	27.90 (11.26)	0.006	34.65 (11.56)	29.46 (10.24)	<0.001

of other studies, such as that of Evans et al.¹³ that detected 13% of self-harm in English adolescents, that of Ross and

Heath⁴¹ who found 13% of self-harm in Canadian adolescents and that of Laukkanen, et al.²⁶ who, with

Finnish adolescent between 13 and 18 years, found ratios of 10.2%. In regards to gender, our study has not shown differences between boys and girls, results that agree with those of other authors.^{14, 22, 24, 42} Cerutti et al.,²⁴ in a sample of Italian boys and girls, aged 13 to 22 years, also did not find gender differences in the total number of self-harms reported, although they did find differences in the methods used. Hilt et al.,²³ working with boys and girls between 11 and 13 years, did not find significant differences between genders. The percentages found by these authors are 6.8% in boys and 8.1% in girls. However, the data found in the literature are not consistent, since other authors find higher percentages of self-harm among the girls.^{13, 41} In the multinational study of Madge et al.¹⁸ performed jointly in European and Australian countries with a community population, 8.9% of the girls and 2.6% of the boys declared they had carried out this type of behavior in the previous year and 13.5% of the girls and 4.3% of the boys admitted having carried out some type of self-harm act at some time in their lives. In the Laye-Gindhu et al. study,¹⁵ also conducted in Canada, the percentages of boys and girls who admitted having inflicted self-harm were 17% and 8%, respectively. In a review by Hawton and Harris,¹⁹ focused on the gender differences in self-harm and suicidal behavior during the life cycle, they concluded that the boy-girl ratio was 8 to 1 between the 10 and 14 year old and 3 to 1 between the 15 to 19 year olds.

One possible explanation to the fact that no significant differences between genders were found in the present study population may be found in the generic formulation of the question regarding self-harm or suicidal behavior in which neither form of the harm nor the result is specified. As pointed out by Ross and Heath,⁴¹ there are different tendencies in relationship to gender in the means used by adolescents to inflict self-harm. Girls are more inclined to use cutting and boys to carrying out at risk behaviors. In a study performed with an adolescent community population by Muehlenkamp and Gutierrez,¹⁴ no differences were found for gender in the rates of self-harm and the authors offer a similar explanation. The different age blocks analyzed, the different methods to evaluate self-harm behaviors and the concept per se and extension granted to the term "self-harm" are factors that may also explain the lack of agreement of the data in the literature.

In regards to suicidal ideation, its presence is similar in our population (13% of the total) to that reported in other studies, for example that of Stewart et al.³⁰ who determined that 10% of the adolescents studied stated that had suicidal thoughts or the work of Laye-Gindhu and Schonert-Reichl¹⁵ that found 9% of adolescents with suicidal thoughts. In regards to gender differences, the data found are contradictory, since, although the difference is very little in the study of Stewart et al.,³⁰ it is significant in that of Laye-Gindhu and Schonert-Reichl.¹⁵

With age, as hypothesized, an increase is found both in self-harm behaviors and suicidal ideation. Self-harm behaviors increase from 7% to 12 years to 17% at 16 years and suicidal ideation from 8.9% to 12 years to 20% at 16 years. In the population analyzed, being 16-years-old seems to be an important point of change, this being an agreement with that reported by other authors.^{18, 20, 21} Although the data coincide, the fact that the present study has not analyzed older ages only makes it possible to state that 16 years of age is the most prevalent age in this type of at risk behaviors among secondary school students.

In relationship to the second objective of the study proposed, suicidal ideation and self-harm behavior maintain important relationships between them. A total of 58% of adolescents who admit having had suicidal ideation also report self-harm behaviors or suicide attempts. This percentage increases to 61.5% in girls. The relative risk of self-harm in the group of suicidal thoughts is about 10 times greater in relationship to the group that has not reported this type of thoughts. Relative risk according to gender is 10% for boys and 13% for girls. The relationship between suicidal ideation and self-harm behavior or suicide attempts is clear, as has been stressed by other authors.^{14, 15, 43, 44} This information may be of interest for the design of intervention plans. However, given the co-relational design of this study, it was possible to establish the intensity of the relationship between these two behaviors but not its directionality.

In regards to the coping profile, core axis of the third objective of the study, some differences were observed in regards to the use of specific coping strategies by adolescents with and without at risk behaviors. The differences are more obvious among girls than among boys. In the case of girls, those who have reported at risk behaviors use more avoidance type strategies. They are especially more resigned to negative events, avoid thinking about them and air their feelings more. In addition, they use direct problem-solving strategies to a lesser degree. Among boys with and without at risk behaviors analyzed, such differences are not observed in the use of coping, as is the case of the girls, although they use avoidance type to a greater degree. It has especially been observed that they tend to express their negative emotions in a greater degree. This more frequent use of avoidance type responses among the population with symptoms has been repeatedly stressed in the literature on coping in adolescents.³³ These results agree with the literature on the subject that shows deficits in coping of adolescents with suicidal behaviors⁴⁵ and a lower use of coping strategies in general,⁴⁶ as well as greater use of avoidance strategies.⁴⁷ In the young prison population, it has also been seen that an elevated use of avoidance strategies together with not very high use of coping strategies is a good predictor of self-harm behavior during imprisonment.³⁶

Compas et al.³³ proposed that the coping strategies against stress that are generally used by girls (focused on

emotion and less active) may maintain or increase psychological malaise. These previous data indicate the convenience of training adolescents, especially girls, in the use of more effective coping strategies based on approach to the problem, that substitute the avoidance type ones, more ineffective or which may even increase the psychological malaise. It would be especially convenient to carry out training in problem solving techniques, a strategy used little by adolescents with ideation and self-harm behavior. This type of psychological intervention could also contribute to decreasing one of the strategies used most by girls who inflict self-harm, which is that of Acceptance-Resignation. These programs could be initiated systematically at the beginning of Secondary Education through courses or speeches given by professionals of the school center per se (school psychologist or psychopedagogue) or by external professionals and would have a preventive and intervention function.

Limitations and strong points

Even though the present study contributes to increasing knowledge on the self-harm phenomenon and suicidal thoughts among the youth of our country, it has some limitations. On the one hand, although the population is extensive, the fact that the presence of the behavior to study represents a minority, it reduces the number of subjects in whom it has been possible to study differences in coping characteristics. Therefore, the data may not be very conclusive or may have low capacity to be made generalizable, or the type II error may have even been increased.

In regards to the detection instrument of subjects with self-harm and those who have suicidal ideation, the use of a non-specific instrument may be questionable since, although it is sufficiently inclusive for different grades of lesion and methods, it has low discrimination. It does not offer information on the severity or intentionality, aspects that the literature has revealed as important for the understanding of self-harm events. Although, on the one hand, this fact can be interpreted as a limitation of our study, on the other, it can be stated that the responses to the items involved in the self-harm behavior and suicidal ideation in the context of general psychopathology evaluated by the YSR may have provoked more spontaneous responses by the participants, especially by the younger adolescents. Furthermore, the results obtained are very similar to those of other works that have used more specific instruments with a greater number of items. Finally, this study has limitations characteristics of cross-sectional designs, which do not make it possible to determine the causality of the variables managed.

As strong points, it can be stated that there are few studies on self-harm behaviors or thoughts performed in the

Spanish community population, and even fewer in the younger-aged adolescent group, since most of the studies are focused on the older adolescent period. The fact that at risk behaviors have been detected at early ages is very important for its early intervention and implementation of preventive measures. This gives value to the data obtained, since it approaches us to a reality, which although we already know about it from other countries, has scarcely been studied in our country.

Clinical implications and perspectives for the future

The data obtained indicate the need to consider this type of at risk behavior, since its presence among adolescents of our community is high. If, in addition, we take into consideration that its presence may be a risk factor for psychopathology in the adult life, adequate detection by those responsible for community health, therapists and educators may be important in order to prevent future emotional problems. On the other hand, and in view of the results, it seems that adolescents who inflict self-harm, especially in the case of girls, use less adaptive coping strategies and than who do not inflict self-harm. Thus, possible psychological intervention could be aimed at providing these boys and girls with resources to manage their anxiety and make them capable of coping with conflict situations in more healthy ways. It would be interesting in the future to be able to study these behaviors more extensively and to extend the analysis to late adolescence (17 and 18 years) in order to observe if the tendencies that have been observed continue with age.

Studies with a longitudinal design would be the best to observe the evolution of these at risk behaviors.

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