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Three-year prevalence of self-harm behaviors among the reasons for emergency visits of children and adolescents

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ABSTRACT

Introduction. Self-harm in the paediatric population is an emerging problem that has been associated with disability and an increased risk of suicide. The objective of the study is to analyse the prevalence of self-harming behaviour as a reason for paediatric emergency consultations.

Materials and Methods. 122,985 paediatric emergency consultations during the years 2015-2017 were reviewed. Of these, 566 clinical episodes with a psychopathological problem as the main reason for consultation were analysed. Expert psychiatrists grouped them into Group CA (self-harming behaviour) and Group PS (other psychopathology). Clinical and sociodemographic variables were taken from the discharge reports and transferred to specific record sheets.

Results. During the period analysed, a progressive decrease in the age of patients attending the paediatrics emergency room for a psychopathological problem was observed (p<0.001). Of these, 20.5% consulted for self-harming behaviour. Group CA had more of psychiatric medical history, an older mean age and were mostly female (p<0.001). Among self-harming behaviour, the most frequent were medication overdose (38.8%) and cuts (24.1%). At discharge, this group had a higher percentage of diagnoses of affective disorders and possible personality disorders (p<0.001).

CONCLUSIONS

The prevalence of self-harm as the reason for consultation in emergency services is high in the paediatric population and adequate attention should be paid to it, especially for adolescent girls. To prevent the functional deterioration associated with these behaviours, implementing programmes for early detection and intervention and referral to specialised treatment should be considered.

Key Words: Non-suicidal self-harm, suicide, adolescence, paediatric emergency, early intervention

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PREVALENCIA A 3 AÑOS DE LAS CONDUCTAS AUTOLESIVAS ENTRE LOS MOTIVOS DE CONSULTA A URGENCIAS EN POBLACIÓN INFANTOJUVENIL

RESUMEN

Introducción: Las conductas autolesivas en población pediátrica son un problema emergente que se ha asociado a la discapacidad y un mayor riesgo de muerte por suicidio. El objetivo del estudio es analizar la prevalencia de las conductas autolesivas entre los motivos de consulta a urgencias pediátricas.

Material y método: Se analizaron 566 episodios clínicos cuyo principal motivo de consulta estaba relacionado con un problema de salud mental, entre las 122.985 consultas a urgencias de pediatría entre 2015-2017. Psiquiatras expertos los agruparon en el Grupo CA (conductas autolesivas) y

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Grupo PS (otra psicopatología). Variables clínicas y sociodemográficas se extrajeron de los informes de alta a partir de hojas de registro específicas.

Resultados: El Grupo CA incluyó el 20,5 % de las consultas a urgencias por algún problema de salud mental. Las conductas autolesivas más frecuentes fueron las sobreingestas medicamentosas (38,8 %) y los cortes (24,1 %). En relación al Grupo PS, el Grupo CA presentaba un porcentaje mayor de chicas, una edad media más alta y más antecedentes psiquiátricos ($p < 0,001$). Además, este grupo presentó un mayor porcentaje de diagnósticos al alta de trastornos afectivos y posibles trastornos de la personalidad ($p < 0,001$).

Conclusiones: La prevalencia de conductas autolesivas entre las consultas a urgencias pediátricas es alta. Se observan especialmente en chicas adolescentes y muestran una mayor complejidad clínica. La detección y atención adecuada de estas conductas con programas especializados puede ayudar a prevenir el deterioro del funcionamiento psicosocial y detectar precozmente el debut de trastornos psiquiátricos.

INTRODUCTION

Adolescence is the evolutionary period when the conditions of maximum vulnerability occur for the onset of mental disorders in adults[1, 2]. For this reason, early detection and intervention is important for this psychopathology in the early stages of development[3]. Among the problems associated with mental disorders, an increase in self-injurious behaviour has been observed in recent years, especially in adolescents[4, 5,6]. The presence of this is associated with deterioration in school and family functioning and a higher risk of death for young people between 15 and 24 years old. Thus, such behaviour has been considered a potential public health problem, and the need to develop effective treatments to address it has been highlighted[3, 7].

The term 'self-injurious behaviour' encompasses a spectrum of behaviour that includes self-injurious threats, self-harm without suicidal intention and suicide attempts [8]. Regarding the second, some authors consider this to be equivalent to suicidal behaviour, whereas others consider it not as suicidal conduct, but as an intention to ask for help when faced with a difficulty which causes inner discomfort that they cannot manage effectively [8, 9, 10]. In fact, the 5th Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) recognizes the relevance of this by proposing the specific category Non-suicidal self-injury (NSSI) in Annex 3, described as "self-directed damage to alleviate the internal discomfort associated with negative experiences, events and feelings, although without suicidal intention" [11].

Self-injurious behaviour in general is a multifactorial phenomenon that cannot be separated from the social context. Various authors have proposed a biologically determined vulnerability [12,13]. However, there is also evidence of a clear influence of environmental circumstances in these behaviours. Among these, is a description of the increased stress to which children and adolescents may have been exposed in a changing social context, which requires rapid adaptation and high-performance development [14, 15].

Therefore, self-injurious behaviour may be part of the clinical picture for mental disorders, such as personality disorders (PD), especially Borderline Personality Disorder (BPD), behavioural disorder, depression, anxiety, eating disorders (ED) and Post-traumatic Stress Disorder (PTSD) [16]. Alternatively, it may simply be the expression of a deficit in emotional regulation that is not part of any disorder. In any case, as recommended by the WHO Mental Health Action Plan [3], it is very important to make an early diagnosis and intervention during the early stages of development [17] to minimise the risk of developing psychopathologies of greater complexity and disability in the future.

Therefore, it is essential to improve knowledge about self-injurious behaviour in children and adolescents in our environment, to be able to design strategic plans for their intervention and respond adequately to real needs [18]. The main objective of this study is to analyse the appearance of these behaviours in the paediatric hospital emergency service. Also analysed are differences in the diagnostic approaches to discharge, based on whether there is self-injurious behaviour present.

METHOD

Participants

A sample was selected from the University Hospital Vall d'Hebron paediatric emergency database. Discharge reports (122,985) made between 2015 and 2017 were reviewed for the reason for consultation. As this reason may have been different between initial triage and that given by the specialist physician, the latter was chosen. Then, an initial screening was done by excluding those visits not related to mental health. This left 822 of the total 122,985 visits (0.7%) to the emergency room with the reason for consultation being related to mental health. Of these, those involving children of 6 years old or younger were excluded, as any relationship for psychiatric reasons may not have been clear; this left those involving patients between 7 and 18 years' old only. Visits by patients who visited again within the study period were not at first excluded.

Of the total number of visits selected, 566 (68.8%) were finally included, with the remaining 256 (31.2%) being eliminated for meeting the exclusion criteria described for the study.

Instruments

To record the discharge information, a record sheet was compiled that included all the study variables and their coding. Two groups of variables were recorded: sociodemographic and basic clinical ones. Specifically, gender, age at the time of consultation, personal psychiatric history, previous follow-up by the patient in psychiatric or psychological care services and diagnostic orientation at discharge were recorded. The variables of psychiatric history and previous specialist follow-up were recorded dichotomously (as present or absent). In the emergency discharge reports, both diagnostic categories and syndrome-type orientation (e.g. 'depressive-anxiety syndrome') and ICD-9 and ICD-10 categories were reflected. In an effort to homogenise the variable "diagnostic orientation at discharge", it was decided to group the diagnoses into the diagnostic groups described in the DSM-511 (Table 1).

The self-injurious behaviour on the record sheet included: (a) Drug overdose (SIM) with the aim of self-harm, with or without suicidal intent; (b) Superficial self-inflicted cuts to extremities or other part of the body, with or without suicidal purpose; (c) Self-inflicted blows; (d) Falling from a height with the aim of self-harm, with or without suicidal intent; (e) Threats to carry out self-harm; and (f) Anxiolysis, self-injurious behaviour, different from the previous ones, to try to ease psychological discomfort. Finally, "Re-offending" was defined as making more than 1 emergency room visit, due to self-harm, within the 3 years of the study.

Procedure

This retrospective study was approved by the Clinical Research Ethics Committee (CEIC) at the University Hospital Vall d'Hebron, Barcelona. The discharge reports of selected emergency department clinical episodes were reviewed by 3 psychiatrists (MF, VP, JARQ) with extensive experience in child and adolescent psychiatry. The information was reviewed and recorded systematically by two of these psychiatrists. If there was uncertainty or disagreement between them about the interpretation of the patient's history, the clinical information was reviewed by a third psychiatrist to reach consensus. If consensus was not possible, the records were treated as being lost and were not included in the analyses. Furthermore, if more than one-third of all the required information was not available (considering all the items compiled with an equal weighting) or the reason for the consultation was not recorded, the case was discarded and not included in subsequent analyses. Finally, the selected clinical episodes were divided into Group CA (reason for consultation: self-harm) or Group PS (reason for psychiatric consultation: not related to self-harm).

Table 1 Description of the diagnoses at discharge from the emergency room (by category and syndrome) included in each group of DSM-5 diagnoses (APA, 2013)

DSM-5 Group Disorder	Diagnosis at emergency room discharge
Neurodevelopmental	Attention deficit hyperactivity disorder (ADHD), autism spectrum disorder (ASD), pervasive developmental disorder (PDD), tics, intellectual disability (ID)
Psychotic	High Risk Mental States (HRMS), schizophrenia spectrum disorders and other psychotic disorders
Affective	Essentially unipolar depressive disorders (including anxiety-depressive syndromes, major depressive disorder, depression (MDD) and dysthymia) and the rest of bipolar and related disorders (including manic and hypomanic states)
Anxiety	Anxiety crisis with and without agoraphobia and generalised anxiety disorder (GAD)
Eating	Anorexia nervosa (AN), bulimia nervosa (BN) and binge eating disorder
Behavioural	Disruptive disorders, impulse control and behaviour disorders
* Personality (PD) Possible	Includes all personality disorders, but especially those included in cluster B of the DSM-5 (Borderline PD, Antisocial PD, Narcissistic PD and Histrionic PD)
Others	The rest of the guidelines that appear in the reports considered together are included in this category, due to their low presence in diagnoses at discharge from the emergency room

* Due to the features of this disorder and its low reliability for *de novo* diagnosis in the emergency room, this diagnosis is always labelled as 'possible'.

Data Analysis

To describe the sample, mean and standard deviation were used for continuous variables; range and median were used for ordinals; and frequency and percentage for categorical. Comparisons between different groups [CA Group vs PS Group; women vs men; consultations made each year] were carried out using χ^2, Student T, Mann Whitney U or ANOVAs depending on the features of the variables being compared. Self-injurious behaviour was created as a dichotomous variable, including cases in which the presence of some type of self-injury behaviour (SIM, cuts, blows, falls, threats or anxiolysis) had been recorded. The information on the study variables that could not be obtained from the emergency discharge report (in cases where less than a third of information was found to be lost) was considered as lost in the analyses. All analyses were repeated, removing the recurrent consultations made by patients during the 3 years reviewed. The p value was corrected by applying the Bonferroni correction 0.05/13 = 0.0038.

Table 2 Sociodemographic descriptions and type of self-injurious symptoms

	CA group (n = 116)		PS group (n = 450)			
	Mean	SD	Mean	SD	$t_{(564)}$	p
Age	15.31	2.09	14.00	3.21	4.20	<0.001[1]
	n	%	n	%	$\chi^2_{(1)}$	p
Gender*	90	77.6	222	49.3	29.76	<0.001[1]
Self-injurious behaviours						
SIM	45	38.8	---	---		
Cuts	28	24.1	---	---		
Blows	4	3.4	---	---		
Falls	5	4.3	---	---		
Threats	17	14.6	---	---		
Anxiolysis	14	12.1	---	---		

CA Group: Self-harm; PS Group: Other psychopathology; SIM: Drug Overdose; Cuts: self-inflicted cuts; Blows: self-inflicted blows; Threats: threats to carry out self-injurious behaviour; Anxiolysis: self-injurious behaviour different from the previous ones, to calm psychological discomfort; *only the percentage of women is shown; [1]: significant after the Bonferroni correction.

RESULTS

Sample description

55.1% (n = 312) of the selected sample were women, with the mean age for the entire sample being 14.26 years (3.06). The girls were significantly older than the boys [14.50 (2.74) vs 13.96 (3.40); $t_{(564)} = 2.10$; $p = 0.04$). A significant and progressive decrease in the age of the patients who consulted the paediatric emergency department was observed throughout the years of the study [2015: 15.85 (1.88) vs 2016: 14.73 (3.08) vs. 2017: 12.02 (3.06); $F_{(2,563)} = 90.63$; $p < 0.001$]. When comparing the gender of the participants included in the different years, no significant differences were observed ($\chi^2_{(2)} = 0.60$; $p > 0.10$) .

Analysis of self-injurious behaviour

Of the total 566 medical records included for analysis, 116 (20.5%) gave some of the clinical conditions considered as self-injurious behaviour (Group CA) as a reason for consultation. The CA Group patient age was significantly older than that of the PS Group [CA Group 15.31 (2.09) vs. PS Group 14.00 (3.21); $t_{(564)} = 4.20$; $p < 0.001$]. More women were observed in the CA Group [CA: 90 (77.6%) vs PS: 222 (49.3%); $\chi^2_{(1)} = 29.76$; $p < 0.001$]. The most frequent self-injurious behaviours observed in paediatric emergencies were SIM (45; 38.8%), cuts (28; 24.1%) and verbal threats of self-injurious behaviour (17; 14.6%), see Table 2.

Of the 566 paediatric emergency visits made for psychiatric reasons, 106 (18.7%) were recurrences observed in the 3 years reviewed. Despite observing a higher percentage of repeat visits in the PS Group (79; 74.5%) than in the AC (27; 25.5%), this difference was not statistically significant ($\chi^2_{(1)} = 1.98$; $p = 0.16$). The repeat visits to the emergency room were removed from the total and the previous analyses repeated, but no significantly different results were found from those shown above (age, gender and frequency of different self-injurious visits).

Table 3 shows the frequency of patients who were being followed up or who had a personal psychiatric history at the time of the paediatric emergency visit. The frequency of the main diagnostic groups established for the study at the time of discharge is also shown. Differences between the study groups (CA and PS) were analysed. A significantly higher percentage of patients who were undergoing follow-up for mental health treatment at the time of making the emergency visit were found in Group CA [Group CA: n = 77 (67.0%) vs Group PS: n = 138 (30.9%); $\chi^2_{(1)} = 50.17$; $p < 0.001$], There was also a higher frequency of patients with a personal psychiatric history at the time of emergency consultation in the CA Group [n = 83 (72.2%)] than the PS [n = 161 (36.0%)]; $\chi^2_{(1)} = 48.67$; $p < 0.001$].

As in the previous variables, when analysing the differences between groups in relation to the diagnostic orientation at discharge from the paediatric emergency room, a lower percentage of cases without diagnosis was observed in the CA Group compared to the PS Group [15 (13%) vs 135 (30.2%); $\chi^2_{(1)}$ =13.76; $p < 0.001$]. In addition, the CA group had a significantly higher percentage of affective disorders diagnosed [31 (27.0%) vs 19 (4.3%); $\chi^2_{(1)}$ =35.53; $p < 0.001$] compared with the PS group. However, a higher diagnosis of anxiety disorders was observed in the PS Group compared to CA [191 (42.9%) vs 30 (26.1%); $\chi^2_{(1)}$ =10.62; $p = 0.001$], see Table 3. After removing the repeat consultations from the analysis, the results found were not significantly different from those shown in Table 3.

Table 3 Comparison of variables regarding medical history prior to consultation and diagnostic guidance at discharge between groups

	CA group (n = 116)		PS group (n = 450)			
	n	%	n	%	$\chi^2_{(1)}$	p
Follow-up	77	67.0	138	30.9	50.17	<0.001[1]
History	83	72.2	161	36.0	48.67	<0.001[1]
Disorder diagnosed at discharge						
No psychiatric diagnosis	15	13.0	135	30.2	13.76	<0.001[1]
Neurodevelopment	5	4.3	28	6.3	0.61	0.44
Psychotic	5	4.3	11	2.5	1.18	0.28
Affective	31	27.0	19	4.3	58.18	<0.001[1]
Anxiety	30	26.1	191	42.9	10.62	0.001[1]
Eating	1	0.9	5	1.1	---	---
Behavioural	12	10.4	33	7.4	1.16	0.28
Personality (possible)	16	13.9	7	1.6	35.53	<0.001[1]
Others	0	0.0	18	4.0	---	---

Follow-up: prior specialised follow-up; History: personal psychiatric history; [1]: significant after the Bonferroni correction.

DISCUSSION

A study was performed in a tertiary hospital over 3 consecutive years (2015-2017), whose main objective was to analyse the prevalence of self-injurious behaviour in the reasons for attending a paediatric emergency department. The intention was also to compare the clinical features of patients according to the reason for their consultation (self-injurious behaviour vs. general psychiatric reasons). The results indicated that approximately 1% of the total number of paediatric emergency visits made during the 3 years were for psychiatric reasons; and over 20% of these consultations were related to self-injurious behaviour. The patients who were attended for this type of behaviour for other psychiatric reasons had different clinical profiles.

No increase for visits to paediatric emergency rooms for a psychiatric problem was observed in this study during the 3 years analysed. This result contrasted with evidence describing a progressive increase in the number of psychiatric emergencies in the paediatric population [4, 5, 19], as well as for hospitalisations [20]. It is likely that these results are conditioned by the hospital where the paediatric emergencies are located, due to it not offering total or partial psychiatric hospitalisation treatment. Thus, the sample has limitations regarding its representativeness in the general population. However, a clear and progressive decrease was observed in the age of patients attending the emergency room for psychiatric problems as their main reason for being there. This confirms results published by other centres and highlights the growing importance of child and adolescent mental health, in order to avoid the functional difficulties that these disorders can cause at increasingly younger ages [21].

Of all the analysed paediatric emergency visits for psychiatric reasons, 20.5% were related to some type of behaviour, gesture or verbalisation related to self-harm. This percentage is similar to that described by other researchers in populations with similar features and geographic areas [22], as well as for studies conducted in other geographic areas [4, 5]. The self-injurious symptoms most frequently recorded in visits to paediatric emergencies were drug overdose (SIM), cuts

and threats of self-injurious behaviour. It could be argued that behind the SIM and threats of self-harm there could generally be attributed a suicidal motivation, while cuts may be self-injurious without suicidal intention. These behaviours often suggest maladaptive mechanisms for managing emotional distress, either in relation to the adolescent's immaturity or in the context of psychopathology [8, 9, 10]. However, in some cases non-suicidal self-harm has been associated with greater risk of suicidal behaviour, especially if repeated [23]. In general, all these behaviours deserve the attention of the clinician because they are an increasingly frequent phenomenon in the adolescent population and have been associated with deterioration in psychosocial functioning in both the present and future [24].

Significant differences were observed in age and gender when comparing the features of patients who attended the paediatric emergency room, for any of the reasons related to self-injury, with those who had other psychiatric problems. In the self-harm group, the average age was higher, and within the range described by other studies [22]. Gender differences were also observed, with a higher incidence of problems related to self-harm among females, which also coincided with current literature [22, 25]. Also, the group of patients who consulted for self-harm had more of a history of psychiatric problems, and a greater number were under specialist follow-up care before attending the emergency room. Furthermore, a significantly higher percentage of them were discharged from the emergency department with some type of psychiatric diagnostic orientation, when compared to those who consulted for another reason,. These results are in line with previously published studies [16, 25], reinforcing the idea of self-injurious behaviour as an indicator of clinical severity [26].

The most frequent diagnoses made in the CA Group patients, compared with those attending for other reasons, were affective disorders and those with possible PD. Depressive disorders are more frequently related to suicidal behaviour at different stages of life [25,27]. However, it should be noted that the diagnosis of a PD is more likely to be proposed for minors who consult for symptoms related to self-harm. This data should not be surprising if the most recent evidence is taken into account, which regards self-injurious behaviour as a non-adaptive mechanism for managing emotional dysfunction, typical of Borderline Personality Disorder (BPD), since BPD is the PD with the highest clinical prevalence; its diagnosis is fully accepted in adolescence and its early treatment is one of the main factors for a good prognosis [28, 29]. All of this probably helps the clinician to consider PD among the possible diagnoses, especially for minors who injure themselves. Also, in a similar sense to the available evidence, anxiety-related disorders were the most prevalent diagnoses in those who came to the emergency room for a psychiatric reason not related to self-harm [4].

The results of this descriptive study should be considered with its limitations; the main one being the lack of information on clinical and sociodemographic variables. By basing the study on discharge reports and therefore recording only part of the case information, no extra information was recorded to better understand the main results. However, the data included in the study allow us to achieve the main objective of recognising the problem, and presenting the reality shown in clinical practice; while obtaining an overall vision of the importance of psychopathological disorders in general and self-harm in particular. Another limitation is that the information included in the study is taken from information recorded by other professionals at the paediatric emergency visit, who may show their own bias in the interpretation of this information in the reports. Also, the instruments used lack proven statistical reliability and psychometric validity. To minimise this problem, however, case information was not included if it was insufficient, its interpretation was uncertain or if there was disagreement about it. Another problem was that the number of cases included in the analysis was small; however, the main findings were backed by findings described in studies with larger samples, even taking into account that neither precision nor effect size measures were applied to the sample. Finally, another limitation may be the definition of self-injurious behaviour. In this study, the different types of behaviours were grouped together: suicidal behaviour and ideation and non-suicidal self-injurious behaviour. This is because the distinction between these groups is complex and there is often no clear consensus, especially in the child-adolescent population [8]. For example, recent studies have already applied similar criteria to minimise the risk of underdiagnosing the general problem of self-harm, by including self-injurious, suicidal and non-suicidal behaviour and ideation in the analysis [19].

The descriptive results of this work are in line with other studies and highlight the growing importance of mental disorders as a reason for visiting a paediatric emergency room. These disorders manifest at an earlier age, with a significant percentage of consultations being related to self-destructive behaviour, especially in girls. It is also important to highlight the importance of new diagnoses, such as non-suicidal self-harm, without it being considered as part of any disorder, and possible PD. The high prevalence of these diagnostic conditions at an early age is in conflict with the lack of structured therapeutic programmes, especially considering that these difficulties have been shown to cause serious limitations, affecting functioning in adult life. Therefore, in line with health plans in Europe, it is essential that decision-making in health policy prioritises early diagnosis and intervention to minimise associated disability.

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