



Journal of Nursing

Revista de Enfermagem

UFPE On Line

ISSN: 1981-8963

ORIGINAL ARTICLE

POISONINGS LINKED TO SUICIDE ATTEMPTS AND SUICIDE IN CHILDREN AND ADOLESCENTS

INTOXICAÇÕES ASSOCIADAS ÀS TENTATIVAS DE SUICÍDIO E SUICÍDIO EM CRIANÇAS E ADOLESCENTES

ENVENENAMIENTOS RELACIONADOS CON INTENTOS DE SUICIDIO Y SUICIDIO EN NIÑOS Y ADOLESCENTES

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ABSTRACT

Objective: analyzing the epidemiological profile of children and adolescents diagnosed with suicide attempt and suicide by poisoning. **Method:** a descriptive exploratory study with retrospective analysis of epidemiological forms of Poison Control Center Maringa/PR, between 2006 and 2010. The variables were coded and categorized numerically. Data were compiled and processed in spreadsheet Microsoft Office Excel® (version 2010), and the analysis performed by simple descriptive statistics. The research project was approved by the Research Ethics Committee, CAAE No 0173.0.093.000-11. **Results:** there were analyzed 122 cases, being predominantly females (84,4%); age group 10-14 years old (95%), having residence (97,5%) as location and the drug (77%) as agent. **Conclusion:** there is the need for social support in primary care and schools, to preventing this event and further guidance regarding the control of toxic agents in the household. **Descriptors:** Poisoning; Child Behavior; Suicide Attempted; Suicide; Epidemiology.

RESUMO

Objetivo: analisar o perfil epidemiológico de crianças e adolescentes com diagnóstico de tentativa de suicídio e suicídio por intoxicação. **Método:** estudo descritivo exploratório com análise retrospectiva de fichas epidemiológicas do Centro de Controle de Intoxicações de Maringá/PR, entre 2006 e 2010. As variáveis foram codificadas numericamente e categorizadas. Os dados foram compilados e tratados em planilha eletrônica do Microsoft Office Excel® (versão 2010), e a análise realizada por meio de estatística descritiva simples. O projeto de pesquisa foi aprovado pelo Comitê de Ética em Pesquisa, CAAE nº 0173.0.093.000-11. **Resultados:** foram analisados 122 casos, sendo predominante o sexo feminino (84,4%); faixa etária de 10 a 14 anos (95%), a residência (97,5%) como local e o medicamento (77%) como agente. **Conclusão:** há necessidade de estabelecer rede de apoio social na atenção primária e escolas, para prevenção desse evento e maior orientação quanto ao controle de agentes tóxicos no domicílio. **Descritores:** Intoxicação; Comportamento Infantil; Tentativa de Suicídio; Suicídio; Epidemiologia.

RESUMEN

Objetivo: analizar el perfil epidemiológico de los niños y adolescentes con diagnóstico de intento de suicidio y el suicidio por envenenamiento. **Método:** estudio descriptivo exploratorio con análisis retrospectivo de las formas epidemiológicas del Centro de Control de Envenenamientos Maringa/ PR, entre 2006 y 2010. Las variables fueron codificadas y clasificadas numéricamente. Los datos fueron recopilados y procesados en una hoja de cálculo de Microsoft Office Excel® (versión 2010), y el análisis realizado por las estadísticas descriptivas simples. El proyecto de investigación fue aprobado por el Comité de Ética en Investigación, CAAE No 0173.0.093.000-11. **Resultados:** se analizaron 122 casos, siendo mayor proporción de mujeres (84,4%); grupo de edad de 10-14 años (95%), la residencia (97,5%) como la ubicación y la droga (77%) como agente. **Conclusión:** existe la necesidad de apoyo social en la atención primaria y las escuelas para prevenir este evento y más orientación con respecto al control de los agentes tóxicos en el hogar. **Descriptores:** Envenenamiento; Comportamiento del Niño; Intento de suicidio; Suicidio; Epidemiología.

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INTRODUCTION

Suicide has become a public health problem worldwide and it is essential to recognizing the variables involved in this phenomenon to thus better understand this reality. It is estimated that a death from suicide occurs every 35 seconds, and the number of suicide attempts are even greater: for one suicide death there are at least 25 suicide attempts. Due to the stigma and fear of rejection, cases of suicide attempts are underreported.^{1,2}

Statistical data reveal that the self-extinction rates among teenagers and the elderly are the ones that tend to increase, and that suicide rates and suicide attempts during adolescence - 10 to 19 years old³, increased from 2,6 to 12,9 per 100 thousand inhabitants, which characterizes suicide as a second or third leading cause of death among teenagers in many countries and an emerging public health problem.

The hanging and use of firearms are the most violent methods, and often fatal, to suicide in all ages, but the use of toxic agents, characterized as a method for lower lethality, because victims are more likely to be met with life in hospitals, has increased and indicated new parameters for suicidal behavior.¹

In Brazil, poisoning in children up to nine years old accounted for 37,5% of reported cases and the main causes of intoxication were drugs (35,2%), the household cleaning products (18,4%) and chemicals industrial (7,8%).⁴ The high incidence of poisoning in children can be justified by the characteristics of child development, because, according to the evolution in the life cycle, they become more curious front of the external environment.

The high percentage of poisoning in children can be a result of the lifestyle of some families, in particular those that make use of self-medication and has low adherence to preventive measures of accidents in the home. Another factor, not least, refers to the use and the erroneous guard medicines and cleaning supplies. This practice enables access to easily violation packaging and contributes to the increase in the number of unintentional poisoning and suicide attempts.^{5,6}

Suicide attempts by poisoning injuries are of great social impact and contribute to rising juvenile mortality rates.³ Low consistency of reliable data on the subject gives to the various segments of civil society, and especially government agencies, arguments

for not face it. As a result, prevention and control of suicide programs are not given priority in many countries, including Brazil.^{7,8}

It should be noted, however, that there is a complex interaction of factors that can lead children and teenagers to suicide attempt and suicide, especially intoxication, given the ease of access to toxic agents. In this context, it is important to recognize the characteristics of children and adolescents who experience this kind of event, to establish prevention strategies and targeted and effective control, therefore, the present study aims to:

- Determining the epidemiological profile of children and adolescents diagnosed with poisoning suicide attempt and suicide.

METHOD

This is a descriptive, cross-sectional, based on documentary analysis of secondary data obtained from the Poison Control Center of Maringa Regional University Hospital, Paraná - Brazil, which constitutes an advisory body to information procedures in emergencies toxicological to health professionals and also to the lay population.

The Poison Control Center of Maringa Regional University Hospital carries out monitoring activities and event notifications to the National Health Surveillance Agency, within the National Network of Information and Toxicological Care Centers; with receiving unsolicited notifications of health professionals, and active case finding, through auditing of hospital records and medical records of the units of Maringa Regional University Hospital.

As data source we used the Notification Form and Service Center of Poison Control the Regional University Hospital of Maringa, called Toxicological Occurrence Form. It is an instrument to record cases previously diagnosed by clinical or laboratory criteria, containing patient data (sex and age); the toxicological accident (place of occurrence, type of agent, the poisoning reason, hospital sector, length of stay and outcome), which is filled under the responsibility of trainees and professionals working in own Poison Control Center.

In order to operationalizing the research, the data were accessed records from central database, inclusive of every toxicology case records of children and adolescents, aged zero to 14 years old, regardless of gender, and intoxication by various agents toxic in the period from 2006 to 2010. To investigate cases, were included in a pre-coded spreadsheet, the data of occurrence of chips

with toxicological circumstance of poisoning diagnosed as suicide attempt, resulting from spontaneous reporting of health professionals or active search. Suicide attempts records were found from the age of seven.

The variables were coded numerically and categorized as follows: sex of investigated; age (seven to nine years and 10-14 years old); the place of occurrence (residence and external environment - public roads, work and school environment); the type of agent (medicine, agricultural use pesticide, rat poison, medicine + another substance, or other agent, including industrial chemical, household cleaning, plant and veterinary product); the reason of intoxication (family conflicts, dissolution of romantic relationships); the duration of hospital stay (<24 hours, two to four days and five days and more) and the hospital sector (care unit to the emergency room, ward and intensive care unit); and the clinical outcome of the case (hospital discharge and death).

Data were compiled and processed in spreadsheet Microsoft Office Excel® (version 2010), and the analysis was performed using simple descriptive statistics. The results were presented in tables, in absolute and relative frequencies, and compared with the literature.

The ethical and legal aspects were respected and the study protocol was approved by the Ethics Committee on Research Involving Human Beings of the State

University of Maringa, COPEP/EMU under the Protocol 224/2011.

RESULTS

Between the years 2006 to 2010 were reported 122 cases of suicide and attempted suicide among children and adolescents with ages ranging from seven to 14 years old. This corresponds to an annual average of approximately 24 cases.

We found a higher frequency of cases at earlier ages in males: proportion of one case in less than 10 years old to five in ages between 10 and 14 years old for males and 34 for females. In terms of age, there was a predominance of cases between 10 and 14 years old (95%).

The prevailing environment in suicide attempts and suicide was the residence of the children and adolescents (97,5%), and the drug was toxic agent involved in most cases (77%), of which 27,9% were associated with other agents. The industrial chemical agent was responsible for the attempted suicide of three teenagers of 14 years old (two females and one male) and also by the suicide of a 13 year old, together added (3,3%) of notifications.

Table 1. Distribution of suicide and suicide attempts in children and adolescents reported in the Poison Control Center of Maringa - PR, between 2006-2010.

Variables	Gender					
	Male		Female		Total	
	n	%	n	%	n=122	%
Age (in years)						
7 - 9 (children)	2	11,1	1	1	3	2,5
10 - 14 (adolescents)	16	88,9	103	95,2	119	97,5
Place of occurrence (n=121)*						
At home	17	94,5	101	98	118	97,5
Extra-home environment	1	5,5	2	2	3	2,5
Causal Agent						
Medicine	13	72,2	75	72,1	88	72,1
Agricultural use pesticide	1	5,6	7	6,7	8	6,6
Rodenticide	1	5,6	7	6,7	8	6,6
Medicine + another agent**	1	5,6	5	4,8	6	4,9
Industrial chemical	1	5,6	3	2,9	4	3,3
Sanitary	1	5,6	3	2,9	4	3,3
Plant	-	-	2	1,9	2	1,6
Veterinary product	-	-	2	1,9	2	1,6

Note: *In a toxicological report this item was not filled; **Association with rodenticide, drug abuse and agricultural use pesticide.

As regards the level of complexity of health care, 77% of children and adolescents remained in the health service in clinical

observation or hospitalized at over 12 hours. In Table 2, there was also such that 93,6% remained hospitalized for four days.

Table 2. Relationship between industry and duration of hospitalization due to suicide attempts in children and adolescents reported in the Poison Control Center of Maringa - PR, between 2006-2010.

Inpatient sector	Stay (in days)							
	Until 1		2 - 4		5 and more		Total	
	n	%	n	%	n	%	n	%
Emergency unit / Emergency Room	59	92,2	8	36,4	-	-	67	71,3
ICU	-	-	10	45,4	6	75	16	17,0
Nursing room	5	7,8	4	18,2	2	25	11	11,7
Total	64	100	22	100	8	100	94	100

Because of the clinical severity, 71,3% of children and adolescents remained in the emergency room care units and 17% required care in the intensive care unit - ICU. Regarding the outcome of the cases, 99,2% of children and adolescents patients improved and were discharged from hospital, but one died by suicide (0,8%).

There were found as main factors of suicide attempts, family conflicts (42,6%), standing out as the main factor among children, and the dissolution of romantic relationships (17,2%). In 26,2% of the toxicological occurrences of tokens this item was not specified because it was not reported to the health professional, including the reason for the death by suicide.

DISCUSSION

The occurrence of suicides and suicide attempts at early ages implies a serious challenge to public health policies and social protection, and should be considered warning sign of serious social problems, since the early stages of life should not occur any case of act voluntary or self-harm that could result in unintentional death.⁷

Suicide attempts are part of suicidal behavior, and can be defined as intentional self-harm acts of which do not result in death, encompassing attitudes and behaviors varied, from more serious acts without resulting in death, to self-aggressions not need care in health services , making it difficult to carry out studies that address this issue.⁹

Most cases investigated in this study happened in the first phase of adolescence, between 10 and 14 years old. ³ Pre-adolescence is a time of passage from childhood to adolescence, with the discovery of sexuality and greater exposure to violence and the drug phenomenon. At this stage of life, the family continues to playing a significant role in the lives of their children, influencing their ideas about quality of life, avoiding risk behaviors and the commitment of their health.⁹

Suicide attempts in children less than ten years old is the finding that merits further development. Suicidal ideation is common in school age; suicide attempts, however, are rare in children and the incidence of suicide deaths was insignificant up to 10 years old. Thus, cognitive immaturity, coupled with inaccessibility to lethal methods can be one of the reasons for low occurrence of the condition in children. However, suicide and suicide attempts increase with age, becoming more common in late adolescence and, after that age, begins a descent, reaching the maximum expression at 22 years old.^{10,11}

With regard to the attempted suicide during childhood, one should not confuse it with domestic accident because the child may also despair in the face of life's difficulties and demonstrate the wish to die.¹² Often this desire is seen as "kid stuff", because the means are less effective than those used by teenagers and adults, so the gesture inspires disinterest. Children and adolescents with suicidal ideation have two main characteristics: the sadness and insecurity that comes from a sense of helplessness and hopelessness.^{11, 13}

Suicide attempts are more common among children and adolescents female condition as pointed out in the literature.¹⁴ In research with US young girls it pointed to a growing trend of suicide attempts at earlier ages, with an increase in 67% in suicide rates among those aged between 10 and 14.¹⁴ These data are similar to what was found in the study group, which focused 95,2% of cases of suicide attempts among females, aged 10 to 14 years old.

The behavior for the suicide attempt is usually characterized by low intentionality and the impulsiveness of the act, so the method used is directly related to its availability and ease of access.^{1,15} As shown in this study, the self-poisoning was the most used method in suicide and suicide attempts. Therefore, it was observed that most (72,1%) of suicide attempts were related to ingestion of medicines stored in the household.

This finding confirms research conducted in Maringa - PR, who observed households with amount of drugs in domestic stocks above 50%.¹⁶ The stock of medicines is a common practice in Brazilian families, called "pill culture", which intensifies the medicalization phenomenon favors the practice of self-medication and misuse of drugs, and facilitates the occurrence of poisoning by accidental or intentional ingestion.^{17,18}

The WHO argues that, although medicines are of therapeutic use most cost-effective, but their inappropriate use has health and economic consequences. National studies have shown that home out of the medication favors self-medication and access as a means of attempts and suicides.^{16,19} A measure that could change this situation is the fractionation of drugs. The draft law 7029/2006 is to ensure the requirement in the sale of fractional medicines; however, it is still pending before the Federal Chamber.²⁰

In cases where the drug was associated with other agents of greater toxicity - rat poison and pesticides for agricultural use, and drug abuse, can be considered a priori higher clinical and social gravity.²¹ The use of multiple agents is related to higher suicidal intent, since most people are aware that drugs do not mix with other chemicals.²² The preparation of suicide will be more complex if the child or adolescent has access to more lethal methods.

It is important to remember, however, that in this study, the high clinical instability caused by poisoning, caused a considerable percentage of children and adolescents they needed admission to the emergency room care units and, with the increased risk of death, some cases were placed in the intensive care unit. The need for continued assistance is due to the high gravity inherent potential agents of toxicity, as well as the amount ingested and the significant hemodynamic weakness of the intoxicated patient.²³

With the clinical management and treatment, the patient may progress to full recovery, return to previous health conditions without any sequel. However, the toxicity of the agent and the possible complications arising from intoxication may favor the emergence of sequelae or progress to a fatal outcome.²⁴

The occurrence of death directly related to this event makes clear that one should not neglect the attempted suicide in children and adolescents and the importance of the study performed. Suicide, understood as a multidimensional disorder, is a complex act, which can be defined as the act of killing

oneself deliberately different from suicide attempt, in which the intended action, in most cases, is not death.¹

The family and interpersonal dynamics plays an important role in the genesis of suicidal behavior among children and adolescents. There is a significant association of this behavior to alcohol and other drugs of abuse, aggression, unstable relationships between family members of children and adolescents.²² The psychological, physical and sexual was described as a striking factor for the development of suicidal behavior in children and teenagers but children commit suicide with triggers: discussion with parents, school problems, loss of loved ones and significant changes in the family.^{13,22}

Study on the profile cases of attempted suicide in a general hospital showed that 61% of subjects reported family conflicts as the main reason for suicide attempts.²⁴ This result is similar to that found in the present study, in which the most important reasons for suicide attempts related to the imbalance caused by troubled family relationships, domestic violence and the dissolution of romantic relationships.

It is worth noting that none of these factors alone has sufficient strength for a person to develop suicidal behaviors. However, the combination of several factors can generate a pain considered unbearable, to the point of death be the only solution to their problems. Thus, it follows that the suicide process results from a complex interplay of socio-cultural factors, traumatic experiences, psychiatric history and genetic vulnerability.¹³ This finding could be confirmed in this study, noting that in 31 cases of suicide attempts and suicide had incompleteness in toxicology case record on the real reasons of the suicide attempt of these children and adolescents. Often the reason is omitted by the family, which is a very difficult to discuss issues and family conflicts.

Whereas one death by suicide affects on average the lives of six others,¹¹ the increase in suicidal behavior has generated high demand for health services and the nurse as a professional for the care, you need to refrain from biased and discriminatory attitudes. Only by knowing the various factors involved, the nurse may meet the biological and social needs of more humane way, in order to alleviate the psychological distress present in these cases.²⁵⁻⁷

CONCLUSION

In the survey prevailed females (84,4%) at the age group of 10-14 years old (95%). The most frequent place of occurrence was at home (97,5%), mainly by the use of medicine without association with other substances (77%) and due to family conflicts (42,6%) followed by dissolution of romantic relationships (17,2%). As for the clinical severity of intoxication, this meant that n (71,3%) remained in the emergency care units, of which n (17%) required intensive care, with 1 (0,8%) case that progressed to death. This result serves as a warning for ease of access to agents for suicide and suicide attempts in the home environment, which, in most cases, lead clinical conditions that require professional attention and may accrue the mortality rate among children and adolescents.

When considering that the suicide attempt and suicide are a form of escape from family and emotional problems experienced by children and adolescents, it is important to invest in social support networks in primary care and in schools, to prevent the occurrence of this event. Moreover, it is necessary to expand the guidance of adults responsible for these children and adolescents, as care of the storage of toxic agents and search management strategies of intra-family and relationship problems.

It is recognized that, due to taboos related to suicide attempt and suicide data found here may be underreported, which dates back to the need for planning and implementation of national strategies to discuss the matter and propose improvements in the public health system, with development of activities to promote health and prevent damage as well as full lines of care in all levels of care.

It is worth noting a limitation of this study, the case of missing data, with underreporting of information, making the assessment of suicide attempts and suicide, favoring failure to identify the active ingredient of the agent used and the reason that triggered the attempt to take the own life and can hinder the analysis of the accuracy of this event. Also, here was considered only the population of the specified location.

It is suggested that other studies deepen the understanding of suicide attempts and suicide among children and adolescents throughout the country, identifying differences and consistencies of epidemiological characteristics of this event in the different geographical areas of the country.

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Submission: 2014/11/13

Accepted: 2014/11/16

Publishing: 2015/02/01

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