ORIGINAL ARTICLE

POTENTIALITY OF A SENTINEL EVENT FOR EPIDEMIOLOGICAL SURVEILLANCE OF DRUG ABUSE

POTENCIALIDADE DE UM EVENTO SENTINELA PARA VIGILÂNCIA EPIDEMIOLÓGICA DO ABUSO DE DROGAS

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ABSTRACT

Objective: Discussing the hospital event potential sentinel hospitalization of youth diagnosed with side effects of drug use, for surveillance of the use of drugs of abuse. Method: This is a descriptive study using the recommended research model for sentinel events, with analysis of multiple cases from hospital records and records of toxicological occurrences of an information center and Toxicology – CIAT, and home interviews with family of young people. The research project was approved by the Research Ethics Committee, COPEP nº 042/2011. Results: The cases were ten young intoxicated by drugs of abuse, served in a unit of attention to the emergency room and recorded at CIAT. Conclusion: The operationalization of sentinel event pointed out the social gravity of the cases investigated, allowed to measure risk factors, failures in social and family dynamics, where inadequate public policies and disabled contribute to the initiation and continuation of use of drugs of abuse. Descriptors: Sentinel Surveillance; Youth; Abuse Of Drugs.

RESUMO

Objetivo: discutir sobre a potencialidade do evento sentinel internação hospitalar de jovens com diagnóstico de efeitos secundários do uso de drogas, para vigilância epidemiológica do uso de drogas de abuso. Método: estudo descritivo-exploratório, utilizando o modelo de investigação preconizado para os eventos sentinelas, com análise de casos múltiplos a partir dos prontuários hospitalares e das fichas de ocorrências toxicológicas de um centro de informação e assistência toxicológica - CIAT, e entrevistas domiciliares com familiares dos jovens. O projeto de pesquisa foi aprovado pelo Comitê de Ética em Pesquisa, COPEP nº 042/2011. Resultados: os casos foram dez jovens intoxicados por drogas de abuso, atendidos em uma unidade de atenção às urgências e registrados no CIAT. Conclusão: a operacionalização do evento sentinel apontou a gravidade social dos casos investigados, permitiu medir fatores de risco, falhas na dinâmica social e familiar, onde políticas públicas inadequadas e deficientes contribuem para a iniciacão e continuidade do uso de drogas de abuso. Descriptores: Vigilância De Evento Sentinela; Juventude; Abuso De Drogas.

RESUMEN

Objetivo: discusión del caso del hospital evento potencial hospitalización del juventud diagnosticado con efectos secundarios del consumo de drogas, para la vigilancia del uso de las drogas de abuso. Método: se trata de un estudio descriptivo mediante el modelo de investigación recomendado para eventos centinela, con el análisis de varios casos de los registros hospitalarios y los registros de ocurrencias toxicológicas de un centro de información y Toxicología – CIAT, y entrevistas en casa con la familia de los jóvenes. El proyecto de investigación fue aprobado por el Comité Ético de Investigación, COPEP nº 042/2011. Resultados: los casos fueron de diez jovens intoxicados por drogas de abuso, que se sirvieron en una unidad de atención a urgencias y grabado en el CIAT. Conclusión: la puesta en marcha del evento centinela señaló la gravedad social de los casos investigados, se admiten para medir los factores de riesgo, fallas en la dinámica social y familiar, donde las políticas públicas inadecuadas y discapacitadas contribuyen a la iniciación y continuación del uso de las drogas de abuso. Descriptores: Vigilancia Centinela; Juventud; Abuso De Drogas.
INTRODUCTION

The relationship between proven drug and social problems and health, especially for young people, who see them as a source of interest and attraction, characterized the event as a serious public health problem, and the discussion of public policies for the prevention and care users should be accessible to all of society. The use of drug promotes user impact, putting him in a situation of social vulnerability and increased susceptibility to physical and mental health diseases, generates family crises, unemployment, violence, hospitalizations and premature deaths.1-3

This phenomenon although emerging is the subject of a significant number of research with a view to building evidence for action and public policy in health is usually assessed through surveys, and samples for large regions or capital, without considering the differential of municipalities with lower population strata. These studies, “estimates” have proven insufficient for the reorientation of actions at the local level because local data are needed to characterize the risk profile and vulnerable groups and to support intervention programs.1,4,5

There is no effective surveillance process for anesthetic measurement of the event, generating underreporting and discontinuous and outdated data for policy interventions for prevention and care. The lack of information affects the validity of the measure, because if there are many unknown results, the findings may not show the actual situation.5

Epidemiological surveillance is understood as the continuous and systematic collection, analysis and interpretation of data on events that affect the population, followed by the rapid spread of the data analyzed those responsible for prevention and control activities. It is developed from local health systems, in order to expedite the process of identification and control of adverse health events or risk factors by means of passive and active monitoring processes. Active surveillance of cases and the use of sentinel events are examples of epidemiological surveillance of active processes.4,7

The concept of avoidable deaths, or sentinel events, was proposed by Rutstein et al, in 19766, considering that these conditions could be improved by effective health actions, if constituiendo-clearcut, indices of quality of health care for immediate use. Several authors have proposed these indicators to evaluate the effectiveness of health systems, a form of “emergency monitoring”.8

Sentinel event applies to the detection of preventable disease, disability or unexpected death, the occurrence of which serves as a warning sign that the quality of treatment or prevention must be questioned. So every time it detects such event the surveillance system should be fired for that research to determine how to prevent similar events in the future, and indicated measures can be quickly taken.8

The advantages of using this technique are the lowest cost, with reduced data collection for a universe of cases, the condition of forcing a clear definition of the objectives of health services and their ability to detect events in the population not covered by services of health.9 Monitoring of specific sentinel event is not only to monitor the rate at which specific conditions to assess the stability or change in health levels of a population, is also the study of the proportion of disease in a specific cut, geographic area or subgroup population, to estimate a trend in the population.9

Whereas health event as a manifestation of disease or an occurrence that presents potential to cause disease, one can elect sentinel events in order to evaluate specific aspects of the health care process, the use of complementary examinations, access to services or the occurrence of death for non-violent without medical care.

It was thought at an event “sentinel” for epidemiological surveillance of the phenomenon, drug of abuse, in a local health system, seeking reliability to obtain similar results when the measurement is performed repeatedly using the same extent and validity when the study remains valid for other means or conditions.10,17-8

Was defined by the authors sentinel event, hospitalization youth diagnosed with side effects of using the drug of abuse, understanding that hospitalization for toxicological accidents, medical complications and secondary diseases to drug use functions as greater indicator of severity cases that should have been accessed by public policies through health promotion and disease prevention devices, or treatment and social reintegration of confirmed cases.11 The hospital was considered young sentinel event in living conditions, the health care and the prevention of complications and secondary diseases to the use of drugs of abuse.17-8

In this context, the aim of this paper is to discuss the event’s potential sentinel hospital young people diagnosed with side effects of drug use, for epidemiological surveillance of the use of drugs of abuse.
METHOD

This is an exploratory-descriptive study, using the recommended research model for sentinel events, with analysis of multiple cases. 8,9,12

The investigated cases originate from a municipality in the southern region of Brazil, with young people aged 10 to 24 years old 13, intoxicated by drugs of abuse, attended the attention unit to health emergencies in a teaching hospital and registered in a center Toxicological Information and assistance - CIAT, in a period of six months.

For the selection of sentinel events were defined as side effects of drug use: acute or chronic clinical complications, such as acute poisoning/overdose, withdrawal syndrome, liver disease; psychiatric comorbidities and mental disorders caused by use of drugs; and medical complications arising from the social context of drug use - many trauma and injury caused by violence. 14-5,18

In delimited period were registered as admitted to the CIAT, 68 young people. Sixteen (23,5%) had the group of drug abuse as the main agent of intoxication, and according to the criteria for the selection sentinel event, 10 cases were investigated.

Data collection was performed through records and interviews with the young family, preferably the mother, after hospital discharge and a maximum period of three months after the event occurred. It was built a field journal for each visit made in order to qualify impressions of the living conditions of each family.

The epidemiological research roadmap was completed in three stages: the epidemiological form of Toxicological CIAT occurrence were compiled personal data and toxicology case; the hospital records were collected information about the signs and symptoms during hospitalization, treatment performed, the clinical course and outcome of the case; and home interview, socio economic conditions of the young and their families, family history of drug use were investigated, relations with public services, and the description and evaluation of care in service of health investigated for the event.

For data analysis, an analysis matrix to study multiple causes (underlying cause and associated) was built, following the method of "Root cause analysis": direct or immediate determinants underlying or contributing determinants root or basic event also called "causes of the causes" second scheme described in Figure 1. 12,16

<table>
<thead>
<tr>
<th>Stages</th>
<th>Objectives</th>
<th>Questions of the researches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem or unwanted event</td>
<td>Defining the event</td>
<td>What happened?</td>
</tr>
<tr>
<td>Proximal cause-direct</td>
<td>Identifying the proximal cause</td>
<td>Why this occurred?</td>
</tr>
<tr>
<td>Underlying cause-contributory</td>
<td>Identifying the underlying causes</td>
<td>Why continue to occur?</td>
</tr>
<tr>
<td>Root cause - cause of causes, initiator, basic</td>
<td>Identifying the root causes</td>
<td>Why this occurs?</td>
</tr>
</tbody>
</table>

Figure 1. Stages in the analysis of Sentinel events.

The result of the investigations was discussed in three stages: (1) The first approach or risk factors for initiation of the use of drugs of abuse - Why the young initiated the use of drugs of abuse?; (2) The second approach or risk factors for the continued use of drugs of abuse - Why he continued the use of drugs of abuse?; and (3) The third approach or the determination of the gaps in areas and sectors involved in the occurrence of sentinel. 4,6,17,18

The research project was submitted to the Ethics Committee for Research Involving Human Subjects (COPEP) the State University of Maringa, with a favorable opinion no. 042/2011, of obeying all legal ethical requirements estabelecidades by Resolution CNS 466/12.

RESULTS AND DISCUSSION

 Sentinel events investigated

The age of the young investigated varied from 11 to 23 years with six young people aged 20-23 years. The three young women investigated all were already mothers, and began to have children between the ages of 15 and 17 years old. One such young, at 23, had five children. (Figure 2)

Schooling ranged from four to eleven years of study, but only two were still studying and had schooling compatible with age. The others had already left school and the distance that had between age and schooling ranged from 3-9 years old. (Figure 2)

The main drugs of abuse that was used alcohol, crack, marijuana, ecstasy, thinner,
glue, white skirt (hallucinogen), with the pattern of use the association of various drugs. Most medical diagnosis established to hospitalization were due to violence - trauma by traffic accident, suicide attempt by chemical agent, head trauma/eat to clarify, and injury caused by firearms (?). In only one case was the diagnosis result from the therapeutic use of drug used for the treatment of abstinence. The average occupancy of hospital beds was 4,1 days, and all cases were discharged from hospital. (Figure 2)

<table>
<thead>
<tr>
<th>Case</th>
<th>Gender</th>
<th>Age (years)</th>
<th>Schooling (years)</th>
<th>Toxic agent</th>
<th>Length of hospitalization</th>
<th>Main diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M</td>
<td>21</td>
<td>8</td>
<td>Alcohol</td>
<td>24 hours</td>
<td>Clavicular fractures and shoulder on the right</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>20</td>
<td>11</td>
<td>Crack/ Marijuana</td>
<td>12 hours</td>
<td>Attempted suicide using medicines</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>15</td>
<td>6</td>
<td>Crack/ Marijuana</td>
<td>3 days</td>
<td>Trauma due to violence</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>20</td>
<td>5</td>
<td>Alcohol / Crack/ Marijuana</td>
<td>12 hours</td>
<td>Poli-trauma</td>
</tr>
<tr>
<td>5</td>
<td>F</td>
<td>23</td>
<td>10</td>
<td>Alcohol / Crack/ Marijuana</td>
<td>7 days</td>
<td>Adverse reaction to medication</td>
</tr>
<tr>
<td>6</td>
<td>F</td>
<td>20</td>
<td>7</td>
<td>Marijuana</td>
<td>5 days</td>
<td>Attempted suicide using medicines</td>
</tr>
<tr>
<td>7</td>
<td>M</td>
<td>11</td>
<td>5</td>
<td>Ecstasy</td>
<td>3 days</td>
<td>Coma</td>
</tr>
<tr>
<td>8</td>
<td>M</td>
<td>19</td>
<td>8</td>
<td>Alcohol / Crack/ Marijuana / Thinner/ Glue</td>
<td>8 days</td>
<td>Rectal injury by firearm wound</td>
</tr>
<tr>
<td>9</td>
<td>M</td>
<td>14</td>
<td>4</td>
<td>Glue / Crack/ Marijuana</td>
<td>3 days</td>
<td>Trauma due to violence</td>
</tr>
<tr>
<td>10</td>
<td>M</td>
<td>20</td>
<td>13</td>
<td>Petticoat</td>
<td>5 days</td>
<td>Coma to clarify</td>
</tr>
</tbody>
</table>

**Figure 2.** Socio-demographic aspects of Sentinel events.

Regarding the socioeconomic aspects of the families at home, it was found that lived an average of 4,8 residents, and in seven families were the residences themselves. The number of people working in each family ranged from one to three, and there was a variation of one and a half to seven minimum wages as family income, and a family did not report the income.

Most families were only using the care network of the Unified Health System - SUS, and only used private health insurance; from that who used SUS, seven reported that they had already used some mutual aid service for drug users. The Psychosocial Care Center for Alcohol and Other Drugs - CAPS/AD was cited by three families.

Terms of social relations, four families facing difficult situations with young users of drug did not promote any kind of leisure with its members. Eight families reported following a religion, however, only one member was practicing.

♦ The potentiality of the Sentinel Event

Although aware that any data collection is free from defects or difficulties in its use, this research was concerned with answered these two questions: 4,5

- The sentinel event data show the preventability of the severity of cases of poisoning and comorbidity of drug abuse?
- Local data and small areas may reflect the risk differentials that are subject populations and support loco regional action points?

Considering potential as the possibility of holding or the ability to become, for testing the potential of the proposed sentinel event information collected from epidemiological records, hospitalization records and home visits have been carefully explored and analyzed with ethical rigor.

The sentinel events research methodology gave up from the following steps: definition of a technical group responsible for research; active search and screening of cases for investigation; epidemiological investigation of cases - data gathering and analysis, with individual study of each case of hospitalization of young people diagnosed with side effects from drug abuse by retrospective approach; and preventability analysis of the events, identifying the determinants; possibilities and strategies, with the data analyzed to prevention and care interventions in addressing the drug abuse. 7,8,11

The application of avoidable criteria are not limited to therapeutic measures taken against the identified cases, but the factors: family, such as refusal to seek the necessary assistance or follow the guidance of health professionals by cultural and religious issues, or lack of recognition of the problem; professionals when, for lack of training or improper training, occurs negligence of health professionals; institutional, in which political and administrative problems contributed to the avoidable event; social, related to unfavorable socioeconomic conditions; and
intersectoral: where lack of social equipment has contributed to the occurrence of the event.\(^5\),\(^1\)\(^1\)

Following the matrix analysis of sentinel events, it was possible to approach the basic and underlying causes of the event and the approach to the factors involved in the initiation and continuation of drug use, with reference to the family respondent and the analysis of service document health.\(^1\)\(^2\),\(^1\)\(^6\)

It was the early initiation of drug use and several risk factors for the start and for the continued use of drugs of abuse: addictive behavior, compromises and violence within the family; influence of groups of friends, considered "bad company"; discrimination at school, in the neighborhood and in the family; inadequate health presence in assistance to families at risk; lack of health services for appropriate treatment of minor mental disorders triggering drug use.\(^1\)\(^2\),\(^1\)\(^6\)-\(^7\)

In all cases met at least three complications as structuring the lives of young people: combined use of various drugs of abuse; truancy or expulsion from school; early pregnancy and high number of children to age; "Leakage" as in the home and at least one episode of homelessness; involvement in crimes and violent acts. All households claimed "lack of support" of health services and identified the lack of health care policies to the young teenager.\(^1\)\(^2\),\(^1\)\(^6\)

National studies have focused their attention on the socioeconomic determinants of the phenomenon, of unquestionable importance, little is charging health systems, despite the effectiveness of actions directed to this group coordinated by health have been proven in different context, even in vulnerable populations social, allowing categorize them as "avoidable".\(^3\),\(^1\)\(^1\),\(^1\)\(^6\)

The use of drugs of abuse is considered to be little influenced by the intervention of health services, since it relates more directly linked to other social aspects factors; however, the analysis proposed here, if carried out continuously and systematically, can streamline approach in understanding the use of drug phenomenon at the local level and serve as a counterpoint to the evaluation of other health problems more susceptible to intervention.\(^1\)\(^1\),\(^1\)\(^7\)-\(^8\)

Much of the abuse of drug users comes into contact with the health system only due to complications from its consumption, which were already known long ago. When consumption becomes compulsive, can cause social, physical and or psychological problems, with damage to the mental, physical or social.\(^1\)\(^4\)

Commonalities and differences were found regarding the relationship young/drug abuse and its consequences - type of family, socioeconomic conditions, health care modality, family and social relationships, living with drug abuse in the family, influence of drugs in daily family life and the responsibility and the limits imposed by the family - but all the families we observed that had a history of risk for the use of drugs of abuse in the family, school, social environment and form of health care.\(^1\)\(^7\)-\(^8\)

Based on the recognition of risk factors for the onset and continuation of drug use among young people studied, elaborated a synthesis model of the underlying and root causes, listing: family background, culture/lifestyle, education, religion, health care, social assistance, economy and public safety. (Figure 1)
It was possible, with the research directed to the trajectory of the event, identifying the critical points of the process and the structure of health care, in addition to process visibility, allowing criticism of the performance of public policies. The interface between education policy, Public Security, Social Welfare, Economics and Health, inadequate and deficient, seems to determine the occurrence of the use of drugs of abuse in the cases investigated. The absence of social support to improve the young user's living conditions and their families - understood as employment, household stability and availability of appropriate treatment network - and disability access and link to health services, poor access those people most in need, aggravate this situation.17 It is necessary that strict public policies are assumed to control the use of drugs of abuse, and investment of resources in prevention, promotion and treatment for drug addicts.19

The operationalization of sentinel event pointed risk factors in several areas, involving various public policy responses. It was possible to look for explanations located mainly in relation to the combination of factors, which form a complex trigger important for the abuse of drugs such as family contexts denial of drug use situation, people living with drug abuse for a while that do not see any more the reversal of the situation; use of health services - lack of knowledge of families on mental health services, use of health services in an inappropriate manner and lack of connection with services or health teams; adverse economic factors, combined with a lack of political social assistance; disability inclusive public security policy and drug supply reduction.

Most of the underlying causes mentioned by the families related to the absence or scarcity of public policies to support families in psychosocial risk and support for changes in habits and way of life harmful to health must be implemented. The interface between education policy, Public Security, Social Welfare, Economics and Health, inadequate and deficient, seems to determine the occurrence of the use of drugs of abuse in the cases investigated.

The use of sentinel event yielded a lot of information from a small number of cases, allowing include issues that principle would be discovered by traditional analysis and contribute to the definition of priorities for preventive actions the use of drugs of abuse. Allowed us to analyze the damage the use of drugs of abuse in families, determine aspects of living conditions, local and regional inequities exist, and health inspection service of the population investigated and understand the risk profile of the vulnerability of the same against the use of drugs of abuse and point out inappropriate actions in local health systems or lack of appropriate action to prevent it, with reorientation of actions at the local level.4,5

Small areas of studies can be used to validate indirect estimates in samples for large regions or capital, central to a more complex understanding of the phenomenon.3,5 With the operationalization of this sentinel event, it was possible to look for explanations located mainly in regarding the association of
factors, which form a complex trigger important for the abuse of the drug. (Figure 2)

According to the Policy for Integral Attention to Alcohol and Other Drug Users, is the network of health professionals, family, government and non-government constantly interacting, each with its specific core action, and giving support to each other, which creates access opportunities, welcomes forwards, prevents, treats, and rebuild stocks, creating effective fighting alternatives to drug use.¹¹

With the criteria reliability and validity of the sentinel event, the lowest cost of the research process, with reduced data collection for a universe of cases, and its ability to detect events in the population not covered by health services, the hospitalization event selection of youth diagnosed with side effects of drug use as a sentinel event to monitor the damage from the use of drugs of abuse in youth was adequate.⁹,¹⁰

The validity of a measure relates to their suitability to what we might call “commonly accepted meaning of a particular concept,” so that the judgments made seem reasonable. When the young person is hospitalized for any clinical or surgical complications and its associated diagnosis using drug abuse can really find what is to be measured: the history, risk factors and failures in social and family dynamics. Presented reliability, expressed by the fact that possibly the result would be the same if measured by different assessment teams.

**FINAL REMARKS**

Epidemiological research presented here does not follow the traditional patterns, for its less pragmatic and its more qualitative approach. Selecting the hospital as a sentinel event to monitor the damage from the use of drugs of abuse in youth was adequate.

When the young man is hospitalized for any clinical or surgical complications and has diagnosis associated with use of drugs of abuse, it can measure the background, the risk factors and failures in social and family dynamics by severity of cases. The operationalization of sentinel event pointed out the social gravity of the cases investigated, allowed to measure risk factors and gaps in social and family dynamics, and where inadequate public policies and disabled contribute to the initiation and continuation of use of drugs of abuse.

This sentinel event took severe cases of use of drugs of abuse, and concluded that most patients accept treatment because of clinical problems, although the approach has not been precocious. Risk factors were found in several areas, involving interface of various public policy responses -. Education, Public Security, Social Welfare, Economics and Health Partnership prevention surveillance-care is recommended for all cases.

One should not forget that the concept of “sentinel event” requires research each occurrence regarded as preventable in the individual or collective level, proposing that the relevant measures. Its application to the harmful use of drugs of abuse cannot be restricted to individual attention, since the activities are organized in population bases and caused by economic and political factors.

Should imply that the network services to expand its coverage in the higher incidence of areas, and socioeconomic conditioning of health problems is real, it is also the responsibility of health systems are more accessible where risks are higher. Finally, the surveillance procedure through this event clarified the involvement of many service categories that are inefficient and are important for discussion of measures to minimize the problem studied in the future.

**REFERENCES**

5. Hartz ZMA, Champagne F, Leal MC, Contandriopoulos AP. Mortalidade infantil “evitável” em duas cidades do Nordeste do
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