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ORIGINAL ARTICLE

Social isolation due to COVID-19 - Epidemiology of accidents in childhood and adolescence

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Abstract

Introduction: An important issue to be discussed by researchers, managers and other members of the crisis committees to face the pandemic are the repercussions of social detachment, such as domestic accidents with child and adolescent victims. **Objectives:** To describe domestic accidents in childhood and adolescence during the period of social isolation in the city of São Paulo-SP, regarding the characteristics of individuals, the event and the evolution of the case. **Methods:** Cross-sectional, descriptive study, based on data on hospitalizations for external causes, accidents and violence in the city of São Paulo. Data were collected in the hospital information system and the violence and accident information system. The period used for the study was from January to May 2020. **Results:** 4,169 accidents were registered among children and adolescents living in the city of São Paulo, and consequently, resulting in the diagnosis of injury, trauma and head injury. Among the victims, predominantly male and the main type of accident was falls. **Conclusion:** Given the above, the severity of COVID-19 in Brazil, in the city of São Paulo and in the world, and the need for efforts to reduce the speed of virus transmission at the population level and to reduce the incidence of the disease, so far, social detachment is part of the set of measures necessary to achieve these goals, permanent health education for parents, family members and society is necessary to prevent domestic accidents.

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INTRODUCTION

The Covid - 19 epidemic in Brazil is already one of the most impacting public health issues in the reality of our country and in the modern world, due to the multiple consequences and tensions that affect our society. Although the focus is on protecting users and the community, the epidemic scenario in Brazil has abruptly interfered in the educational process, demanding an emergency remodeling, attention and agile dialogue between educators, managers and the society[1].

This complex scenario poses additional challenges to epidemiological surveillance, international relations and public policy programming, especially through measures that reduce inequalities in access to healthcare systems and structural conditions for self-care[2].

Faced with the pandemic that transforms everyone's lives in political, economic, cultural and social aspects around the world, and in the face of urgent need for change, new ways of thinking/doing must be put into practice[3]. The challenges were posed in education through new ordinances that opened the way for courses - basic, technical and higher education, to use remote technologies, never used before, as a teaching methodology[3].

In this scenario of children and adolescents staying at home, an issue that has been little discussed by researchers, managers and other members of the crisis committees to face the pandemic are the repercussions of social distance, such as domestic accidents with child victims and teenagers[4].

Accidents in childhood and adolescence are a public health problem[5]. The Brazilian Public Healthcare System (SUS) spent R $ 89,288,190.48 in 2019 on hospitalizations for external causes[6].

External causes are important as a cause of early death and various disabilities among children, adolescents and young adults[7].

Domestic accidents are complex, unintended and mostly accruing from preventable situations. In addition to causing social, economic and emotional costs, they are also responsible for sequelae and fatal events that, in the long run, affect the family and society, harming children and adolescents[4].

According to Filócomo[8], an important measure was to disseminate the concept adopted by the scientific community, that accidents are predictable and preventable, strengthening researchers in the knowledge of risk and protective factors present in accidents[8].

Quality information regarding accidents cannot be seen simply as a technical issue, but rather as a tool for coherent decision-making concerning public health, since detailed analysis can assist in the improvement of health policies[9]. In addition, such information may contribute to identifying the need for training of medical professionals in pre- and intra-hospital care[9].

In this sense, the present study aims to describe domestic accidents in children and adolescents during the period of social isolation in the city of São Paulo, regarding the characteristics of individuals, the event and the evolution of the case.

METHODS

This is a descriptive and cross-sectional study, based on data from hospital admissions due to external causes, accidents and violence in the city of São Paulo/SP.

We collected the data from the Violence and Accident Information System (falls and other accidents), and in the Hospital Information System (external causes) from the city of São Paulo[5,10].

The study population consisted of the total number of children and adolescents who suffered accidents in the city of São Paulo, from January to May 2020. We collected the data from the forms of notification of violence and accidents and the authorization for hospitalization. Once errors were found in the codification of the International Statistical Classification of Diseases and Problems Related to Health - Tenth Revision (ICD-10), either in the issue of Hospitalization Authorizations (AIH-SUS), or in the medical records, as well as the non-registration of primary diagnosis (nature of the injury) and secondary (type of external cause that caused the injury), according to chapters XIX and XX of the ICD-10, the definition of external causes of the World Health Organization was considered for the definition of cases[10], seeking descriptions both in the AIH-SUS and in the forms of notification of violence and accidents, which corresponded to chapter XX of ICD-10.

The variables analyzed were:

a) Pertaining to the individual: sex (male; female; not informed); age range: 0 to 4 years; 5 to 9 years; 10 to 14 years; 15 to 19 years old, type of accident, month of accident, disability (physical, mental, visual).

b) Diagnosis of the injury: affected body segment (head; neck; chest; abdomen, back, spine or pelvis; upper limbs; lower limbs; multiple segments; unspecified) and treatment performed;

For tabulation and data analysis, we used the statistical program Statistical Package for the Social Sciences (SPSS), version 21, using descriptive statistics, presented in absolute and relative frequencies. For the numerical variables, we calculated the measures of central tendency and dispersion.

This study does not require approval from the Ethics and Research Committee of the University of Santo Amaro, as it is a survey of a public domain database, according to the Resolution from the National Health Council (CNS-466/12).

RESULTS

During the year 2020, there were 4,619 accidents among children and adolescents in the city of São Paulo.

Accident victims: 62.0% were males and 38.0% were females.

As shown in Table 1, accidents occur predominantly with males. The main type of accident was falls (83.0%).

Regarding race/skin color; 43.5% were black; 24.5% were white, other data ignored.

Data on the month of the accident: January (20.6%); February (18.7%); March (14.0%); April (5.0%) and May (0.02%).

Mental deficiency 0.10 and 0.12 motor deficiency of the victim were reported, the remaining data were ignored.

Regarding the age group: 0 to 4 years (48.5%); 5 to 9 years (22.0%); 10 to 14 years (15.3%), 15 to 19 years (14.2%).

About the accident site: 48.0% at home; 2.6% at school and day care; 2.6% on public roads and the remaining data was not present.

As shown in Table 2, the main diagnosis was trauma (49.7%).

Among the diagnoses and the affected body part, we describe: the blunt trauma was predominant in the wrist and hand; the most frequent fractures were on the foot and the distal proximity of the tibia. The types of trauma and injuries were the head and among sprains, the ankle was predominant.

Data on the evolution of the case: 3.4% hospitalization; 0.04% death in care; 87.9% immediate hospital discharge, the other data were not informed.

Table 1. Type of accident among children and adolescents living in the city of São Paulo, according to the sex of the victim.

Type of accident	Females	F (%)	Males	F (%)	Total	F (%)
Falls	1478	84.3	2356	82.2	3834	83.0
Drowning	1	0.1	4	0.1	5	0.1
Blunt weapon	4	0.2	8	0.3	12	0.3
Firearm	1	0.1	2	0.1	3	0.1
Electrical shock	1	0.1	2	0.1	3	0.1
Burns	32	1.8	47	1.6	79	1.7
Suffocation	1	0.1	2	0.1	3	0.1
Ignored	236	13.5	444	15.5	680	14.7
Total	**1754**	**100.0**	**2865**	**100.0**	**4619**	**100.0**

Table 2. Diagnosis of injury in children and adolescents victims of accidents, São Paulo, 2020.

Diagnosis	N	F (%)
Blunt trauma	565	12.2
Fractures	235	5.1
Trauma	2296	49.7
Wounds	1074	23.3
Sprains	126	2.7
Others	323	7.0
Total	**4619**	**100.0**

DISCUSSION

In the present study, 4,619 accidents occurred among children and adolescents living in the city of São Paulo, accidental falls corresponded to 83.0% of accidents. Falls are widely discussed in the literature. As contributions of the present study to medicine in the teaching area, the aim is to raise the awareness of those involved in the training of doctors, about the importance of contemplating didactic content that addresses themes related to accidents and violence, especially accidents due to falls, because these are preventable[10].

In this study, the most affected age group was 0 to 4 years of age (48.5%), followed by 5 to 9 years of age (22.0%), as the child develops, his interest in exploring new situations, new skills and different interactions with the environment emerge, favoring the occurrence of accidents due to inexperience and inability to predict and avoid dangerous situations. It is important that everyone involved in childcare have knowledge about the most prevalent accidents in childhood, first aid and ways of prevention[11].

We believe that accidents are a public health problem. The victim's residence has been pointed out, nationally and internationally, as the most prevalent place of accidents, including accidents due to falls[11,12]. The data found in this study corroborated with the literature, 48.0% of accidents occurred at the victim's home. A limitation of this study was not being able to assess whether, at the time of the accident, the children and adolescents had the supervision of their parents or a responsible adult.

In the present study, children and adolescents who were victims of accidents were predominantly males (81.0%); this finding is consistent with the literature[13].

The data on accidents involving children and adolescents were falls. Fall accidents were the most prevalent when compared to the victim's gender; 84.3% females and 82.2% males. The risk factors for the occurrence of falls in the domestic environment are multifactorial. It is not just the victim's age or gender, the type of housing, space, floor, type and size of furniture, which influenced the incidence and pattern of unintentional domestic injuries[14].

Scientific investigations on the subject, accidents in childhood and adolescence, state the direct relationship between the economic profile of families living in areas of socio-environmental vulnerability and the occurrence of domestic accidents[14,15]. In this study, the month of January, (20.6%) had the highest occurrence of accidents; vacation periods in Brazil and in the city of São Paulo, both in public and private schools. Currently, women and men work for the income of their families, which leads us to reflect about the reality, that possibly children and adolescents are without supervision by responsible adults, or the families' lack knowledge about accident prevention.

In March of 2020, the World Health Organization (WHO) declared that the new corona virus (Sars-cov-2), which causes Covid-19 disease, went from the stage of an epidemic to that of a pandemic[16]. Thus, the WHO suggested that all countries should adopt the social isolation protocol as the main measure to be taken to contain the expansion of the pandemic[16].

In this study, we assessed the occurrence of accidents in childhood and adolescence, being higher in January (20.6%), which reflects the issue of social isolation, since January is a period of school holidays, as previously mentioned, when the children are at home and not always supervised by an adult, or the parents and/or guardians of the children and adolescents who are victims of accidents, returning to the home office, probably had no attention focused on care, or had no knowledge on accident prevention. In addition, to reflect that in the period of the pandemic to which we find ourselves, between the months of April (5.0%) and May (0.02%), accident cases probably did not reach the healthcare services, or the professionals facing the epidemic did not report the accidents.

Analyzing data completeness of this research, it is possible to diagnose some gaps in the quality of the information, which can result in the imprecision and/or bias in the characterization of accident cases involving children and adolescents in the city of São Paulo, reflecting the need of constant qualification of professionals for the diagnosis and notification of cases, in addition to raising awareness concerning the importance of completing the INF. Therefore, it is up to the healthcare agencies to invest in activities that guide and qualify professionals for the correct INF completion, clarifying the real contributions concerning coping and preventing accidents, in addition to protecting and caring for the victim and his/her family[17].

Regarding race/skin color of the victims, 43.5% were black. Blacks (blacks and browns) predominated in all types of accidents, confirming the statistics found in Brazil[18]. According to Mascarenhas et al[18], the black population has the highest mortality rates due to external causes. Although a social group is not defined by race or skin color relationships, ethnic differences are associated with social inequalities and condition the way of living and dying of population groups. Ethnicity itself is not a risk factor, but the adverse social insertion of a racial/ethnic group is what constitutes a characteristic of vulnerability[19].

In addition to the most obvious factors, there is a reduction in the quality and quantity of the necessary information, as well as the quality of filling in the variables in the notification forms for violence and accidents. Also noted, accidents are more frequent among children and adolescents with motor and mental disabilities[16], in this study it was not possible to assess whether the victims had any type of disability, the children and adolescents with some type of disability were notified; 0.10 mental disability and 0.12 motor disability of the victim, the remaining data were ignored. Due to the number of ignored cases for this variable that were not filled in by healthcare professionals who provided the care, there are few articles and data in the literature that report accidents in childhood and adolescence, and these victims have some type of disability, be it physical, auditory, mental or visual.

In order to better deal with accidents involving victims such as children and adolescents, health programs and services must be integrated, multidisciplinary, engaged, allowing the necessary resources to be available, facilitating access to support and protection networks. The approach should emphasize the training of families, community groups to deal with accidents in childhood and adolescence, not only as an isolated episode, but also due to their cultural, social and family characteristics[20].

As already mentioned in this study, in the sample analyzed, the main trauma mechanisms were accidental falls (83.0%).

Among these accidents, the most prevalent diagnoses were trauma (49.7%), injuries (23.3%), bruises (12.2%), fractures (5.1%). Regarding the diagnosis of trauma and injuries, the most affected body region was the head, among the bruises the most affected body region were the wrist and hands, in relation to fractures, especially the foot and the distal tibia.

A hypothesis for the predominance of accidents in children aged 0 to 4 years (48.5%) found in the survey would be to start standing alone, which would cause falls with consequent trauma. Another hypothesis would be the occurrence of mistreatment, which could be confirmed by the analysis of the medical records of patients, which would transcend the limits and the object of this study[22].

A study carried out by Silveira[22] reported on a high number of children victims of head trauma caused by fall accidents, corroborating the findings of this study.[22]

In their study, Guizzo et al[21] mentions that orthopedic trauma was very prevalent in the sample studied, children and adolescents, victims of accidents, which showed the most injured areas: upper and lower limbs[21].

In this sense, epidemiological studies characterizing the profile of the victims, as well as the characteristics of the trauma, are fundamental to support public policies and educational actions, adapting them to local peculiarities[21].

Among the individuals studied, they suffered fractures resulting from a fall, most of them located in the lower limbs. Other investigations also mention that both fractures and other injuries resulting from falls are more common in the lower limbs[23]. Prevention measures must be implemented, as guidance for accident prevention, and should be made available to reduce such risks[23].

Although the presence or absence of the family member at the time of the accident was not identified in this study, it is important to note that family members often overestimate the children's abilities, with accidents occurring, mainly due to falls, in relation to the nature of the injury, we found higher frequency of less serious injuries, such as bruises and sprains. As for the affected part of the body, the most frequent were

the upper and lower limbs, followed by the head/face, an order of injuries also reported in the study by Zimmerman et al[24], on accidents with children and adolescents according to VIVA 2009[24].

Most victims were discharged in the first 24 hours, which was consistent with the literature[21,25]. There were two deaths recorded in this series. These data reinforce the importance of the Violence and Accident Surveillance System as a tool for recording the many cases of accidents that are not included in the SIH hospitalizations nor in SIM mortality data[25].

The data presented here reflect the daily reality of emergency services and awaken new perspectives on the problem of care for accident victims. The greatest contribution of the modality of surveillance of external causes in sentinel services is the availability of data in a timely manner, so that its analysis and interpretation provide the basis for decision making[18].

A limitation of the present study is the records, with the risk of information bias due to the large number of underreporting of important data[22], such as hospitalizations, length of stay and the outcome of the case. The importance of developing new actions, preventive and care practices is emphasized, in view of the constant increase in the number of accidents, in particular, accidents caused by falls, as a triggering factor for the risk of orthopedic trauma[25]. We believe that these actions have a direct impact on improving quality of life, due to adequate situational health planning[25].

CONCLUSION

Accidents among children and adolescents among the population of São Paulo, falls were the most prevalent (83.0%), occurring predominantly in individuals aged 0 to 4 years and males, in the home environment, with the main diagnosis being trauma and head injury.

In view of the impossibility of immediate control of the pandemic, experiences around the world point to the need to control the speed of the progression through measures of social physical isolation. Therefore, children, adolescents and family members in social isolation, this study aimed to elucidate accidents and their prevention.

The literature points to the scope and magnitude of child accidents, with the need for preventive actions involving healthcare professionals, pediatricians, pediatric residents, children, family, community and the society in general, in order to warn of the risks and to the need to adopt safe behavior in relation to the home environment and the child's development stage.

Prevention is the most effective way to reduce the high accident rates in childhood. Furthermore, it allows capturing data about less serious events, but which knowledge is fundamental for the planning of public policies prevent diseases and promote health.

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