Deaths from external causes in Cuiabá, 0 a 24 years: Profile of victims and families according to intentionality

Óbitos por causas externas em Cuiabá, 0 a 24 anos: perfil das vítimas e famílias segundo a intencionalidade

Christine Baccarat de Godoy Martins[I]
Maria Helena Prado de Mello Jorge[II]

[I] Master's Degree Program in Nursing, School of Nursing, Federal University of Mato Grosso. Cuiabá, MT, Brazil.

[II] Department of Epidemiology, School of Public Health, University of São Paulo – USP. São Paulo, SP, Brazil.

Corresponding author: Christine Baccarat de Godoy Martins. Rua Fortaleza, 70, Jardim Paulista, 78065-350 Cuiabá, MT, Brazil. E-mail: leocris2001@terra.com.br

Abstract

In view of the importance of knowing the circumstances associated with external causes (accidents and violence), this study analyzes the profile of the victims and their families as to the intentionality of the event (intentional or accidental). Cross-sectional study, which population comprise children, adolescents, and young people (age 0 to 24) who lived in Cuiabá, MT, and died from external causes in 2009. The data, processed by the Epi-Info software, were taken from the Declarations of Death and interviews with the families of the victims. The nonparametric chi-square test showed statistically significant differences between accidental and intentional deaths by sex and the type of accident or violence, the occurrence of the previous event external cause, parental education, family type, income, responsible for supporting the house, mother's age and caregiver. Among the victims, male participation (88.7 %) stands out compared to female (11.3 %). 50.0% of the deaths of females were accidental and 50.0% intentional; 68.2% of the deaths of males were intentional, 29.1% accidental and 2.7% from undetermined intent. Among the intentional deaths, 72.5% of the victims had already suffered violence. As the degree of instruction of the parents increases, intentional deaths decrease. The proportion of reconstituted/fragmented families is higher for fatal accidents. Intentional causes increase as family income decreases and the age of the parents increases. The agglomeration of people in the homes is higher for intentional deaths. Analizing the profiles of families and victims as to the intentionality of the event allows directing local prevention and control policies.

Keywords: External causes. Mortality. Epidemiologic factors. Intention.

Resumo

Diante da necessidade de conhecer as circunstâncias associadas às causas externas (acidentes e violências), o estudo analisa o perfil das vítimas e famílias de acordo com a intencionalidade do evento (acidental ou intencional). Estudo seccional, cuja população foi composta por crianças, adolescentes e jovens (0 a 24 anos de idade), residentes em Cuiabá, MT, que faleceram por causa externa em 2009. Os dados, processados pelo EpiInfo, foram obtidos nas Declarações de Óbito e por entrevista com as famílias das vítimas. O teste não paramétrico de qui-quadrado evidenciou diferenças estatisticamente significantes entre os óbitos acidentais e intencionais segundo o sexo e o tipo de acidente ou violência, a ocorrência de evento anterior de causa externa, escolaridade dos pais, tipo de família, renda, responsável pelo sustento da casa, idade da mãe e cuidador. Não foi encontrada associação entre a intencionalidade do evento e a situação ocupacional dos pais, idade do pai, número de pessoas residentes no domicílio, com que a vítima residia, tipo e local de moradia. Entre as vítimas, destaca-se a participação masculina (88,7%) em relação à feminina (11,3%). No sexo feminino, 50,0% dos óbitos foram acidentais e 50,0% intencionais. No sexo masculino, 68,2% foram intencionais, 29,1% acidentais e 2,7% de intenção indeterminada. Entre os óbitos intencionais, 72,5% das vítimas já haviam sofrido violência. À medida que aumenta o grau de instrução dos pais, há redução dos óbitos intencionais. A proporção de famílias reconstituídas/fragmentadas é maior entre os acidentes. A causa intencional aumenta à medida que diminui a renda familiar e aumenta a idade dos pais. A aglomeração de pessoas no domicílio é maior entre as mortes intencionais. Analisar o perfil das vítimas e famílias segundo a intencionalidade do evento possibilita direcionar as políticas locais de prevenção e controle destes agravos.

Palavras-chave: Causas externas. Mortalidade. Fatores epidemiológicos. Intenção.

Introduction

Accidents and violence, known as external causes (accidental and intentional causes), are one of the most important themes currently and they have become one of the most serious public health problems worldwide[1].

Recognized by the Pan American Health Organization (PAHO) as a serious problem, external causes put a burden on health services, as this is the sector where victims converge, adding pressure to emergency services, specialized care, physical rehabilitation and social work[2].

In the group of children, adolescents and young adults (aged between zero and 24 years), accidents and violence rank in the first places as causes of mortality[3-4]. In the case of children, this is due to their immaturity, curiosity and intense growth and development[5]; in the case of adolescents, due to marginalization, exposure to drugs and other events[2].

In 2009, the rate of mortality by external causes in Brazil was 71.3 per 100,000 inhabitants, including all age groups, with the following coefficients: 12.6 in the 0-to-9-year age group; 15.0 in the 10-to-14-year age group; 79.8 in the 15-to-19-year age group; 118.0 in the 20-to-24-year age group; 102.6 in the 25-to-29-year age group; and 87.4 in the 30-to-39-year age group[6].

Among the 884,665 hospitalizations due to external causes taking place in the *Sistema Único de Saúde* (SUS – Unified Health System) in 2009, 6,102 occurred in children age less than one year; 31,113 in those aged between one and four years; 53,188 in those aged between five and nine years; 124,455 in those aged between ten and 19 years; and 184,357 in those aged between 20 and 29 years, and the main causes were falls, transport accidents, intoxication and assault[6].

In view of the high rates of mortality by external causes and their impact, especially on the younger age group (between zero and 24 years) and the importance

of identifying the circumstances and risk factors associated with these causes, apart from the lack of studies on mortality by such causes in the state of Mato Grosso, particularly in the capital city of Cuiabá, it is essential to improve the monitoring of the occurrence of these events in this city.

In this sense, the present study aimed to analyze the profile of victims and families according to the intent of the event (accidental or intentional) in cases of death from external causes in children, adolescents and young adults living in Cuiabá. The analysis of the profile of victims and families based on the intent of events enables local prevention and control policies to be directed and victims to be cared for.

Methods

A cross-sectional study with a quantitative analysis was performed with a population comprised of children, adolescents and young adults aged between zero and 24 years, living in Cuiabá, the capital city of the state of Mato Grosso, in Mid-Western Brazil, who died due to external causes between January 1st and December 31st, 2009. Deaths whose primary cause were external were studied, regardless of the event (accident or violence) having occurred in the previous year, considering the date of death as inclusion, rather than the date of the accident/violent act.

Data on the profile of victims and the circumstances of events were directly obtained from Death Certificates (DC) made available by the City of Cuiabá Birth and Death Surveillance Management Office. The following variables were studied according to the Death Certificate: 1) concerning the victim: date of death, age at the time of death and sex; name, parents' names and address were also collected to enable the home visit; 2) concerning the event: classification of the external cause according to chapter XX of the International Classification of Diseases – ICD10 (accidents – V01 to X59, intentional self-harm – X60 to X84, assault – X85 to Y09, event of undetermined intent – Y10 to Y34, legal intervention – Y35 to Y36), type of accident or violent act (classification within each sub-group) and brief description of the event (circumstances of death).

Data on the profile of victims were obtained with interviews, the moment when the following variables were collected: 1) victim's variables: biological ties to parents (yes or no), accidents/violent acts prior to the fatal event, period of time between the previous event and fatal event, number of previous events; 2) socioeconomic variables: parents' employment status, type of family (nuclear, reconstituted, fragmented), household income, head of the household; concerning the victim's parents: age and level of education; 3) environmental variables: density (number of residents in the household), individuals who lived with the victim, type of home (built with hollow tiles, wood or other material); place of residence (urban or rural area); 4) victim's caregiver's variables: who cared for the victim during the day and at night.

A closed instrument, previously designed and tested, was used in both moments of data collection.

Contact with families was made only at the moment of the home visit, nearly one year after the victims' death. There was no previous contact, considering the importance of personal contact when dealing with death, and also because Death Certificates did not include the victims' telephone number, only their address. The approach was to use the parents' names, rather than that of the child or adolescent who had died, aiming to avoid immediate negative feelings. First, the researcher introduced herself and presented the study proposal, without mentioning the victim's name. Subsequently, parents/legal guardians were asked whether any deaths by accident or violence had occurred to family members aged from zero to 24 years, in 2009. Upon confirmation of the victim's name and age, families were then invited to participate in the research by signing an Informed Consent Form. All families

located accepted to participate in the study.

All data obtained were processed with the EpiInfo software, with a quantitative analysis. Bivariate analyses were performed between the outcome (accidental or intentional death) and factors of this study (data collected on the interview with the families), aiming to verify the association between these variables and the intention of the fatal event, using the chi-square non-parametric test, with a significance level of 5% ($p < 0.05$). Thus, the independent variables were those related to the profile of families and the dependent variable was the intent of death (accident or violence).

Stratifications and an exhaustive verification of inconsistencies were performed through cross validation of data to control for confounding variables.

The present study was authorized by the City of Cuiabá Birth and Death Surveillance Management Office to enable access to Death Certificates. The research project was submitted to the Research Ethics Committee of the Júlio Miller University Hospital of the Federal University of Mato Grosso and approved on October 25th, 2010, under protocol 929/CEP-HUJM/2010.

Results

A total of 124 cases of 131 potentially eligible deaths were studied, thus representing 94.7% of all deaths from external causes exclusively among children, adolescents and young adults aged between zero and 24 years, in the city of Cuiabá, in 2009. The loss of seven cases occurred due to addresses not being located or to locations with difficult and dangerous access. Of all 124 deaths studied, 66.1% were due to intentional causes (82 cases), 31.5% due to accidental causes (39 cases), and 2.4% due to events of undetermined intent (3 cases) (Table 1).

The chi-square non-parametric test revealed statistically significant differences between accidental and intentional deaths according to: sex and type of accident or violence, the occurrence of previous events of external cause, parents' level of education, type of family, household income, head of the household, and mother's and caregiver's age. There was no association between the intent of events and parents' employment status, father's age, number of residents in the household, individuals

Table 1 – Distribution of deaths from 0 to 24 years by external causes, investigated on a household survey, according to intention and victim sex. Cuiabá, 2009.

***Tabela 1** - Distribuição dos óbitos de 0 a 24 anos por causas externas, investigados em inquérito domiciliar, segundo a intencionalidade e sexo da vítima. Cuiabá, 2009.*

INTENT OF THE EVENT	SEX OF THE VICTIM				TOTAL	
	Male		Female			
	Nº	%	Nº	%	Nº	%
Accidental	32	29.1	7	50.0	39	31.5
Transport accidents	19	17.3	3	21.4	22	17.7
Other accidents	13	11.8	4	28.6	17	13.7
Intentional	75	68.2	7	50.0	82	66.1
Self-harm	6	5.4	1	7.1	7	5.6
Assault	67	60.9	6	42.9	73	58.9
Legal intervention	2	1.8	-	-	2	1.6
Undetermined intent	3	2.7	-	-	3	2.4
TOTAL	**110**	**88.7**	**14**	**11.3**	**124**	**100.0**

who lived with the victim, type of home, and place of residence.

When the intent in each age group was analyzed according to sex, accidental causes were found to be more frequent until the age of 14 years among girls (2 cases between zero and four years, 1 case between five and nine years, 1 case between ten and 14 years, 2 cases between 15 and 19 years, and 1 cases between 20 and 24 years) (Chart 1). Intentional causes among girls were more relevant in the 15-to-19--year age group (5 cases of assault and 1 case of intentional self-harm). Among boys, there was a higher proportion of accidents in the 20-to-24-year age group (15 cases), followed by the 15-to-19-year age group (11 cases); the remaining cases were distributed among the younger-than-1-year age group (2 cases), 1-to-4-year age group (2 cases), 5-to-9-year age group (1 case) and 10-to-14-year age group (1 case). Assaults among boys were more frequent in the 20-to-24-year age group (43 cases) and 15-to-19-year age group (23 cases), followed by the 10-to-14-year age group (1 case).

The presence of male deaths by undetermined intent should be emphasized (3 cases – one in the 10-to-14-year age group, one in the 15-to-19-year age group and one in the 20-to-24-year age group), as should those by legal intervention (2 cases – one in the 15-to-19-year age group and one in the 20-to-24-year age group). In these cases, the interviews with the families did not provide any further details than what was found in the Death Certificates.

When the distribution of deaths according to sex, the intent of causes, sub-group of causes, circumstance of deaths and victims' age was analyzed, the participation of males stood out with 88.7% (110 deaths), when compared to females (11.3% - 14 deaths) (p = 0.0001). Furthermore, the distribution according to intent should be emphasized, as there were 50.0% of accidental deaths and 50.0% of intentional deaths among females, unlike the 68.2% of deaths from intentional causes found among males (p = 0.0000). The distribution of sub-groups of causes is also different according to sex. Among girls, the accidental causes were comprised of transport accidents, drowning, aspiration of milk, and accidental firearm discharge, while intentional causes were self-harm by medication and assault by firearm. Among boys, transport accidents predominated as cause of accidental deaths, followed by drowning, aspiration of milk and falls. Hanging predominated among self-harm cases in males, while assault by firearm discharge corresponded to 80.6% of deaths by assault (Chart 1).

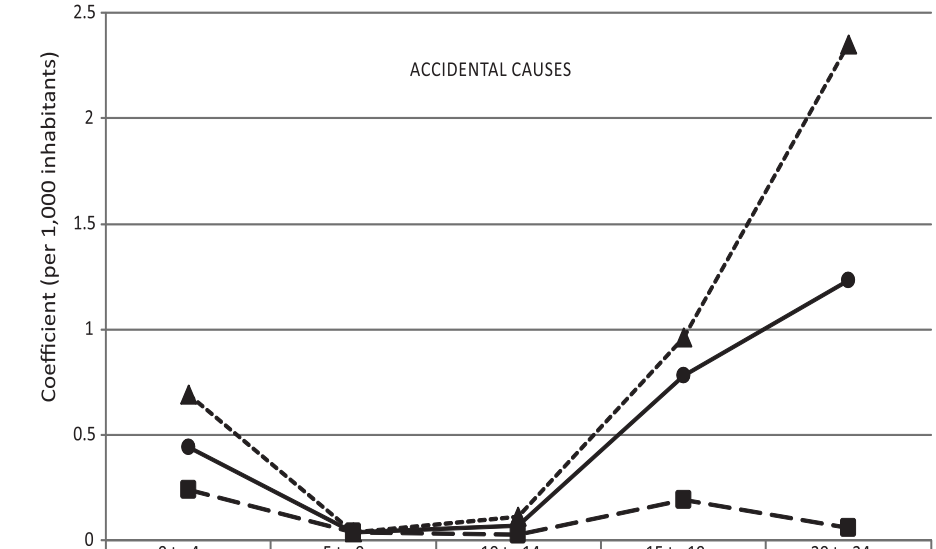
When the coefficient of mortality by accidental and intentional causes was calculated (Figure 1), males were at a higher risk. In the case of accidental causes, the highest coefficients were found among those younger than four years and in the more advanced age groups (15-to-19-year age group for girls and 20-to-24-year age group for boys). In the case of intentional causes, a significant increase occurred after the age of 14 years among males.

According to family reports, the victims were biological children, although it should be emphasized that the p-value for intent of event was not significant.

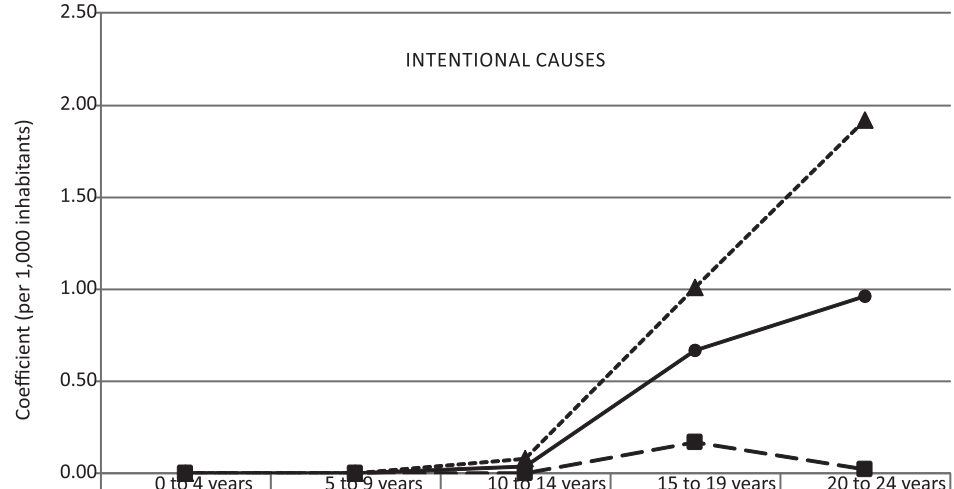
The analysis of previous occurrences of external causes according to intent of deaths showed that only 15.4% had suffered previous accidents among all deaths by accidental causes. In contrast, of all deaths by intentional causes, 72.5% of victims had already suffered violence (p = 0.0000). Among victims of previous events (n = 58 intentional cases and n = 6 accidental cases), the period of time between the previous event and the fatal event was shorter than six months in the case of victims of accidental causes (66.7%) and between six months and one year in the case of victims of intentional causes (67.2%), with a highly significant p-value (0.0001). The number of previous events was usually only one event for victims of accidental causes (83.3%). Of all intentional cases, 41.4% had suffered one previous event, 50.0% had suffered two

Chart 1 - Distribution of deaths from 0 to 24 years by external causes, investigated on a household survey, according to the sex of the victim, because of intentionality, subgroup of causes, circumstances of death and age of the victim, Cuiabá, 2009.
Quadro 1 *– Distribuição dos óbitos de 0 a 24 anos por causas externas, investigados em inquérito domiciliar, segundo o sexo da vítima, intencionalidade da causa, subgrupo de causas, circunstância do óbito e idade da vítima, Cuiabá, 2009.*

Sex of the victim	External cause	N	Sub-group of causes	Circumstances of death	N	Age group of victim (in years)
FEMALE 14 deaths 11.3%	Accidental (7 = 50.0%)	7	Transport accidents (3 = 42.9%)	Pedestrian (33.3%)	1	10 to 14
				Vehicle driver (66.6%)	2	15 to 19
						20 to 24
			Drowning (1 = 14.3%)	In a river (100.0%)	1	15 to 19
			Respiratory risk (2 = 28.6%)	Aspiration of milk (100.0%)	2	< 1
			Inanimate mechanical force (1 = 14.3%)	Accidental firearm discharge (100.0%)	1	5 to 9
	Intentional (7 = 50.0%)	7	Self-harm (1 = 14.3%)	With medication (100.0%)	1	15 to 19
			Assault (6 = 85.7%)	With firearm (100.0%)	6	(5) 15 to 19
						(1) 20 to 24
	Sub-total	14				
MALE 110 deaths 88.7%	Accidental (32 = 29.1%)	32	Transport accident (19 = 59.4%)	Pedestrian (5.3%)	1	15 to 19
				Cyclist (10.5%)	2	10 to 14
						15 to 19
				Motorcyclist (47.4%)	9	(2) 15 to 19
						(7) 20 to 24
				Vehicle driver (26.3%)	5	(3) 15 to 19
						(2) 20 to 24
				Farming vehicle driver (10.5%)	2	15 to 19
						20 to 24
			Drowning (9 = 28.1%)	In swimming pool (11.1%)	1	1 to 4
				In a lagoon (22.2%)	2	1 to 4
						5 to 9
				In a river (66.7%)	6	(1) 15 to 19
						(5) 20 to 24
			Respiratory risk (2 = 6.2%)	Aspiration of milk (100.0%)	2	< 1
			Fall (2 = 6.2%)	Fall from scaffold (100.0%)	2	15 to 19
	Intentional (75 = 68.2%)	75	Self-harm (6 = 8.0%)	Hanging (100.0%)	6	(6) 20 to 24
			Assault (67 = 89.3%)	With firearm (80.6%)	54	(21) 15 to 19
						(33) 20 to 24
				Cutting weapon (11.9%)	8	15 to 19
						(7) 20 to 24
				Hanging (1.5%)	1	10 to 14
				Body strength (3.0%)	2	15 to 19
						20 to 24
				Unspecified (3.0%)	2	20 to 24
			Legal intervention (2 = 2.7%)	Shooting with the police	2	15 to 19
						20 to 24
	Undetermined intent (3 = 2.7%)	3	Firearm victim at home (suicide or homicide or accident)		3	10 to 14 (1) 15 to 19 (1) 20 to 24
	Sub-total	110				
TOTAL		124				



	0 to 4 years	5 to 9 years	10 to 14 years	15 to 19 years	20 to 24 years
Male	0.69	0.04	0.11	0.96	2.35
Fem	0.24	0.04	0.03	0.19	0.06
Total	0.44	0.04	0.07	0.78	1.23



	0 to 4 years	5 to 9 years	10 to 14 years	15 to 19 years	20 to 24 years
Male	0.00	0.00	0.08	1.01	1.92
Fem	0.00	0.00	0.00	0.17	0.02
Total	0.00	0.00	0.04	0.67	0.96

Figure 1 – Mortality rate due to accidents or intentional, from 0 to 24 years, investigated in a household survey, by age group and sex, Cuiabá, 2009.
***Figura 1** – Coeficiente de mortalidade por causas acidentais e intencionais, de 0 a 24 anos, investigados em inquérito domiciliar, segundo faixa etária e sexo, Cuiabá, 2009.*

events and 8.6% had suffered three events before the fatal assault.

When the level of education of victims' parents according to intent of deaths was analyzed, it was observed that the higher this level, the lower the number of intentional deaths (by assault and self-harm), with a significant p-value (0.003 for mothers and 0.001 for fathers). Among all mothers with incomplete primary education, 18.2% had

victims of accidents, 76.6% of assault or self-harm, 2.6% of legal intervention, and 2.6% of undetermined intent. In contrast, among mothers who had completed primary school, the proportion of deaths from accidental causes increased to 53.3% and those from intentional causes decreased to 44.2%, in addition to 2.3% of deaths caused by undetermined intent. When the level of education rose to incomplete and complete secondary school, accidental causes totaled 100%.

Likewise, the level of education of fathers seems to be associated with the intent of deaths, because, among those with an incomplete primary school level, the proportion of intentional causes was high (80.2%), followed by accidental causes (17.3%) and legal intervention (2.5%). Among fathers who had completed primary school, the proportion of intentional causes decreased to 34.9% and accidental causes predominated (60.5%).

With regard to the employment status of parents, the p-value (0.3036 for mothers and 0.2095 for fathers) did not enable researchers to conclude whether there was an association between this variable and the intent of the event. The majority of mothers and fathers worked outside the home (89.7% of mothers whose victims died of accidental causes and 91.2% of those whose victims died of intentional causes; 100% of fathers whose victims died of accidental causes and 82.5% of those whose victims died of intentional causes). It should be emphasized that 50.0% of fathers did not work outside the home among the victims of legal intervention and that 100% of fathers did not have an active employment status among the victims of undetermined intent.

There was a possible association between the intent of the event and the type of family and household income, as the proportion of reconstituted and fragmented families was higher among accidental causes (p = 0.0000), just as intentional causes increased with the reduction in household income (p = 0.0000). With regard to the head of the household, the proportion of households where the mother is responsible was higher among intentional causes (p = 0.0162) (Table 2).

When the parents' age is analyzed according to the intent of the event (Table 2), intentional causes were found to increase with the increase in their age. However, the p-value was significant only for the mothers' age (0.0174), where the deaths of children/adolescents by accidents predominated among younger mothers (20 to 34 years).

There were no statistically significant associations between the number of residents in the home and the intent of the event (p = 0.089). However, there was a higher number of residents among cases of death by intentional causes, legal intervention and undetermined intent. The majority of victims of accidental causes (51.3%) lived at home with three other people, 25.6% with two people, and 23.1% with four people. Among intentional victims, 26.2% lived with two people, 22.5% with five people, 20.0% with three people, 17.5% with four people, and 13.7% with one person. Among the victims of legal interventions, 100% lived with five people. Finally, among cases of undetermined intent, 66.7% lived with five people and 33.3% with four people.

The analysis of individuals who lived with a victim and intent of the event showed that the majority of them lived with their parents (94.9% of accidental cases and 51.2% of intentional cases), without a significant statistical association. There were no associations between the intent of the event and type of home (p = 0.1390). The majority of victims (100% of accidental and 87.5% of intentional victims) lived in hollow tile homes. Some individuals lived in wooden houses (12.5% of intentional cases, 66.7% of undetermined intent cases, and 100% of legal intervention cases). Concerning the place of residence, the majority lived in the suburbs of the urban area (66.7% of victims of accidents, 82.5% of assault or self-harm, and 100% of legal

Table 2 - Distribution of deaths from 0 to 24 years by external causes, investigated on a household survey, according to the type of family / income / responsible for the upkeep of the house / parents'age and the intentionality of the event. Cuiabá, 2009.

Tabela 2 *- Distribuição dos óbitos de 0 a 24 anos por causas externas, investigados no inquérito domiciliar, segundo o tipo de família/ renda / responsável pelo sustento da casa / idade dos pais e a intencionalidade do evento. Cuiabá, 2009.*

Type of family	INTENT OF THE EVENT								p-value
	Accidental		Intentional		Undetermined intent		Total		
	Nº	%	Nº	%	Nº	%	Nº	%	
Nuclear	35	89.7	22	26.9	-	-	57	46.0	
Reconstituted	3	7.7	41	50.0	3	100.0	47	37.9	
Fragmented	1	2.6	19	23.1	-	-	20	16.1	
TOTAL	39	100.0	82	100.0	3	100.0	124	100.0	0.0000

Household income	INTENT OF THE EVENT								p-value
	Accidental		Intentional		Undetermined intent		Total		
	Nº	%	Nº	%	Nº	%	Nº	%	
<1MW	4	10.3	-	-	1	33.3	5	4.0	
1 to 2 MW	12	30.8	71	86.6	2	66.7	85	68.6	
3 to 4 MW	23	58.9	11	13.4	-	-	34	27.4	
TOTAL	39	100.0	82	100.0	3	100.0	124	100.0	0.0000

Head of the household	INTENT OF THE EVENT								p-value
	Accidental		Intentional		Undetermined intent		Total		
	Nº	%	Nº	%	Nº	%	Nº	%	
Father	4	10.3	15	18.2	-	-	19	15.3	
Mother	2	5.1	26	31.7	-	-	28	22.6	
Father and mother	33	84.6	34	41.6	-	-	67	54.0	
Other	-	-	7	8.5	3	100.0	10	8.1	
TOTAL	39	100.0	82	100.0	3	100.0	124	100.0	0.0162

Age of the mother's victim (in years)	INTENT OF THE EVENT								p-value
	Accidental		Intentional		Undetermined intent		Total		
	Nº	%	Nº	%	Nº	%	Nº	%	
20 to 24	6	15.4	-	-	-	-	6	4.8	
25 to 29	4	10.2	3	3.7	-	-	7	5.6	
30 to 34	4	10.2	21	25.6	-	-	25	20.2	
35 to 39	11	28.2	13	15.9	-	-	24	19.4	
40 to 44	14	36.0	43	52.4	1	33.3	58	46.8	
45 and more	-	-	2	2.4	2	66.6	4	3.2	
TOTAL	39	100.0	82	100.0	3	100.0	124	100.0	0.0174

Age of the victim's father (in years)	INTENT OF THE EVENT								p-value
	Accidental		Intentional		Undetermined intent		Total		
	Nº	%	Nº	%	Nº	%	Nº	%	
20 to 24	2	5.1	-	-	1	33.3	3	2.4	
25 to 29	5	12.8	3	3.7	-	-	8	6.5	
30 to 34	5	12.8	7	8.5	-	-	12	9.7	
35 to 39	8	20.5	23	28.0	1	33.3	32	25.8	
40 to 44	9	23.1	25	30.5	-	-	34	27.4	
45 and more	10	25.7	24	29.3	1	33.3	35	28.2	
TOTAL	39	100.0	82	100.0	3	100.0	124	100.0	0.3862

intervention or undetermined intent) (p = 0.1540).

With regard to caregivers, researchers analyzed who cared for victims during the day and at night, according to the intent of event. However, this information was only analyzed for those younger than 15 years, as older individuals were considered to be independent. Of all victims of accidental cases aged less than 15 years, 74.4% stayed alone during the day, 10.3% were cared by the mother, 10.4% by the brother/grandmother/babysitter/neighbor, and 5.1% stayed in a day care center full-time. Among victims of intentional cases, 96.2% stayed alone during the day and only 2.5% were cared by the mother or neighbor (1.2%). Additionally, victims also stayed alone during the day among cases of legal intervention (100.0%) and undetermined intent (100%) (p = 0.0030).

At night (p = 0.0001), those who died by accident stayed with their parents (69.2%) or only the mother (30.8%) or stepfather (2.6%). Mothers were also responsible for their children at night among those who died of intentional causes (78.7%), followed by fathers (16.2%) and stepfathers (3.7%). Finally, among victims of legal intervention, mothers were reported to be the caregivers (100%), while the parents (66.7%) and stepmother (33.3%) cared for victims of undetermined intent.

Discussion

Corroborating the present findings, the predominance of intentional causes (assault) among deaths from external causes was found in other studies[1,3-4,7]. The predominance of deaths from intentional causes among those from external causes, especially in adolescents and young adults, is a phenomenon that has been well investigated and studied in recent decades, based on the fact that violence is a highly complex problem in this age group, often associated with urban misery, social inequalities, unemployment, drug use and trafficking, access to firearms, family instability, lack of perspective of social ascent and lack of leisure options, among innumerable other factors[8].

The highest proportion of deaths from intentional causes in the group studied reveals the direct impact on years of potential life lost (YPLL), according to which the loss of young adults as a result of violence has repercussions not only on a shorter life span[9], but also on the loss of an economically active population, being reflected in the family, social and economic contexts. In this sense, prioritizing discussions and strategies in the public political agendas, in different governmental spheres and in a multi-dimensional way, appears to be essential.

Special attention should be paid to events of undetermined intent. Although there has been much progress towards the quality of information about mortality, thus reducing the number of deaths from ill-defined causes[10], to determine the exact cause becomes vital, aiming to direct prevention and care policies and strategies, especially with regard to external causes. Under these circumstances, investigations with autopsies and the correct completion of Death Certificates are recommended as key measures[11].

The greater male involvement, with statistically significant differences according to intent/type of external cause and sex (mainly with regard to homicides), is pointed out by many authors as a cultural and gender issue, as violence is a form of conflict resolution among men, a socially acceptable behavior since the beginning of humankind[12-13]. A very young age and the use of firearms are results that corroborate other studies[14-15] and reflect the challenging behavior of adolescents and young adults from different cultures, where participating in fights and owning firearms is a common form of interpersonal violence among males[13]. Additionally, some studies point to this behavior resulting from family and social factors, such as disturbing parental relationships, domestic violence, alcohol and drug use, low income, social isolation,

and intellectual deficit, among others[16].

Considering the severity of injuries caused by firearms with a high mortality, whose proportion is nearly ten deaths per 100 hospitalizations, and their higher costs when compared to other types of assault[15], apart from the victims' years of life lost, the need to broaden the discussion on this theme in an inter-sectoral way stands out, including issues such as disarmament, penalization and impunity, as young adults are not only characterized as victims, but also as aggressors.

The proportion of accidental deaths involving motorcycles among males stood out in the present study. Studies show that, since the 1980s, deaths caused by transport accidents are the most frequent in terms of overall mortality in Brazil and that, currently, motorcyclists are the second most frequent type of victim in traffic, with high hospitalization rates[17]. Among the victims, male adolescents and young adults are reported as the most susceptible ones, due to their high-risk behavior resulting from their lack of maturity, challenging behavior, and combination of alcohol/drugs and driving, leading to speeding, high-risk maneuvers and lack of use of safety equipment[18]. Additionally, the following factors should be considered: the increase in the number of vehicles, unplanned urbanization, poor road and vehicle conditions, lack of inspection, the impunity of offenders and, mainly, the lack of traffic safety culture, among others[19].

Considering the fact that traffic accidents result in different types of costs (health system, vehicle damages, loss of productivity due to sequelae and deaths, and family and social impact)[18], it is necessary to reflect on the importance of prevention, using strategies that integrate the education, transport, safety, health and social work sectors, among others, in addition to involving the civil society with traffic awareness and education.

The presence of a higher proportion of previous events among intentional cases, with statistically significant differences when compared to accidental cases, could be associated with the adolescents/young adults own involvement with situations of vulnerability that ended up exposing them to repeated violent acts until the fatal outcome occurred. In Brazil, drug trafficking, which usually selects young adults for both work and consumption, has been pointed out as the main context of homicides[15], where rivalries and the settling of accounts among gangs lead to repeated and often tragic acts of violence[20]. Additionally, it should be emphasized that homicides often result from other more subjective forms of violence, such as social discrimination and exclusion, which expose adolescents and young adults to repeated violent acts, which end up causing their early death[21].

With regard to accidents, although less frequent, repetition has been evidenced by some authors that associate it with socio-environmental factors, such as adolescent mothers, single caregivers, and caregivers with mental disorders[22]. In this sense, authors emphasize this repeated relation of traumatic events during childhood again[23]. During adolescence, the presence of previous accidents is associated with the risk behavior found in this stage of life, when disrespect for traffic laws, reckless maneuvers with motorcycles, aversion to the use of safety equipment such as helmets, and the practice of dangerous sports end up leading to the frequent occurrence of accidental events[24].

The statistically significant association between the parents' level of education and intentional deaths observed in the present study is corroborated by a study conducted with adolescents aged between ten and 19 years, victims of homicide, and their families. This study also evidenced the low level of education of parents as an associated factor[21] that aggravates the situation of vulnerability, as this low level is closely associated with low income, which ends up causing young adults to become offenders as an alternate way of social ascent.

It should be emphasized that 50% of parents in the present study were not

included in the job market (with regard to intentional deaths), further contributing to the low household income and poor socioeconomic conditions, which, according to several authors, trigger young adults in these conditions to become involved with illicit activities and, consequently, with homicides[20].

With regard to the statistically significant association between violence and income/head of the household and the fact that assaults increase with the reduction in income and mothers being the head of the household in the majority of intentional cases, several authors point to poor living conditions (social exclusion and inequalities, poverty and stress) as social factors associated with violent behavior[25]. It should be emphasized that low income is not an isolated factor, but rather that the entire socioeconomic context, represented by the lack of access to health, education, housing and safety, and biological mechanisms (genetic and neurophysiological) translate into violent behavior[25-26], thus indicating that not only low income can explain the occurrence of violence.

In this sense, family make-up is also recognized as an implication[27-28], which corroborates the findings of this study in which the majority of families are reconstituted or fragmented, especially in cases of assault, with statistically significant differences between type of family and intent. Scholars argue that parents play a key role in the development of children's social skills[29], as they have observed that crime, in addition to alcohol and drug use during adolescence, is associated with low maternal attachment, absent parents or even permissive parents[25]. According to the authors, family disintegration increases the chances of violent behavior, as this disintegration increases feelings of frustration, insecurity, tension and conflict. A study showed that adolescents who live with their mother or father exclusively, or those who experience conjugal violence, are more likely to be involved in violent situations[30] and that attachment to parents significantly reduces violent and illicit behavior[31].

The fact that accidents occur more frequently among victims whose mothers are younger, with statistically significant differences, can indicate the inexperience of parents and the resulting lack of protection and supervision, as childhood accidents are closely associated with family behavior and lifestyle[5]. At the same time, the predominance of older parents among the victims of assault is in agreement with the older age of victims, most of which are adolescents and young adults, a characteristic present in deaths from assault[32].

The fact that the majority of victims live with their own parents corroborates a study on the vulnerability of families of victims of homicide, in which half of murdered young adults also lived with their families[21]. In this context, reflecting on family relationships should be emphasized, as living with one's family does not exactly translate into a good quality of the relationship between adolescents/young adults and their parents. A study shows that the role of parents is key to enable family organization to reduce the exposure of children to situations of vulnerability, because, based on positive examples and healthy relationships, children and adolescents can develop social skills that keep them away from risks[33]. Likewise, children whose parents are negligent or who experience crimes and conflicts tend to reproduce this behavior[29].

In contrast with the finding of victims living with their parents, this study revealed that the majority of victims of both accidental and intentional causes stayed alone during the day, with a significant p-value, thus showing the need for full--time care and attention, aiming to know and follow one's children's activities. This may explain why many parents are not aware of their children's illicit activities[21]. It is known that the parents' need to work and adolescents' lack of activities pose a risk, when peer pressure stresses their lack of interest in school and lures them into

immediate compensations resulting from crime and drug addiction[33].

In this sense, it is essential that programs be implemented, aiming at children and adolescents, so that they can spend their time in a productive way, and that these programs be attractive to young adults, so they can stay away from the streets where they are exposed to innumerable dangers and vulnerabilities.

The higher number of residents in households, observed in cases of death from assault, somewhat complements what was exposed above, as a great number of children, added to the impossibility of parents spending time with them during the day and their difficulty in providing their children with conditions that can protect them from violence and risks[25], end up directly contributing to fatal situations, as found in the present study.

Another possibility of this study was that of analyzing the agreement between the data recorded in Death Certificates and those obtained from the families. All information found in these certificates agreed with the family reports.

Conclusion

The present study characterized deaths from accidents/violence in the age group from zero to 24 years, using a household survey, which brings a new perspective to the study of external causes in an age group considered to be at risk. However, it should be emphasized that the present study included only deaths, i.e. the most serious cases of accident and violence in the zero-to-24-year age group exclusively. Additionally, because this was a cross-sectional study, the characteristics observed here can be changed throughout time, as interventions and strategies are implemented. Thus, the data here shown and discussed must be analyzed in the perspective of these limitations.

The epidemiological characteristics of fatal external causes in the city of Cuiabá are similar to the Brazilian reality, where the majority of victims are young males who have suffered assault by firearms, thus having a negative impact on this country's productive force, apart from creating new costs to the health sector, contributing to the increase in years of potential life lost, and penalizing families. Even non-fatal cases place a burden on victims' care, recovery and rehabilitation, affecting socioeconomic productivity.

The present study revealed the importance of a broad discussion on violence, especially with regard to deaths by firearms, so that all sectors are included. The aim is to develop policies that can lead to a reduction in social exclusion, an increase in the level of education and professional qualification of the population, fight against drug and alcohol use, promotion of peace, recovery of family relationships, and alternative conflict resolution strategies, in addition to the formation of human resources to identify and adequately intervene in situations of risk and vulnerability.

To achieve this, it is essential to implement joint actions among different sectors such as health, education, the legal and penal system, and social work. There must be prevention actions and care services on an individual, family, social and cultural level to change the unfortunate reality observed in this study.

Despite the complexity of the phenomenon of external causes, joint actions between professionals from different sectors and society can translate into better quality of life, preventing the previously described deaths.

Finally, it is also suggested that studies should be performed to make a more in-depth analysis of the factors associated with these events, based on their multi-causality.

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