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A Ten-year Investigation of Children Death Due to Non-accidental Injuries in Tehran

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ABSTRACT

Background: Child maltreatment covers a widespread spectrum of behaviours displayed to children. It refers to any neglect, omission, commission, sexual abuse, physical intentional injuries, etc. on children less than eighteen years old. These irresponsible behaviours might lead to different awful, even irreparable outcomes that would have a negative effect on the children's future. The primary goal of this study was to investigate non-accidental, physical abuse and injuries on children less than fourteen years old which ultimately led to their death.

Methods: This study covers the duration of ten years, from 2008 to 2017, consisting of autopsy reports of all non-accidental child deaths recorded in the forensic medicine dissection hall in Tehran province of Iran. A questionnaire which contained all the information required for our study including: gender of victims, age of victims, perpetrators, mechanism of injury/death, autopsy (cause of death), etc. of each year was designed. Autopsy reports of all children below fourteen years old that were referred to the Tehran province forensic medicine dissection hall in Iran were studied.

Results: There were a total of eighty-six deaths recorded; which resulted from child abuse under fourteen years old. Of this eighty-six, forty-four (51.2%) were boys while forty-two (48.8%) were girls. Most of the victims (thirty (34.9%)) were between the ages of 1-3 years old. The Mean age of victims was 3.65 ± 3.5 ; with the Median age of 2.00. Most [thirty-eight (44.2%)] of the victims' deaths were caused by their biological fathers. A large amount [forty-three (50%)] of the deaths were caused by smothering [twenty-three (26.7%)] and beating [twenty (23.3%)] respectively. The most prevalent causes of death were smothering [twenty-three (26.7%)], and Abdominal visceral perforation [twenty (23.3%)]. Fatal child abuses rate had variation during the ten-year-study but it was constant in 2008 and 2017 [seven (8.1%), respectively].

Conclusion: It was observed that the main perpetrators of fatal child abuse were parents especially child's biological fathers; it therefore demonstrated the necessity of finding the underlying causes of these behaviours in parents. All children who have incompetent protector should be supported by governmental welfare organizations or should be adopted by volunteer parents.

Key words: Death, Children, Non accidental, Injury

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INTRODUCTION

Child maltreatment covers a widespread spectrum of behaviours displayed to children. It refers to any neglect, omission, commission, sexual abuse, physical intentional injuries, etc., on children below eighteen years. These irresponsible behaviours might lead to different awful,

even irreparable outcomes that would be detrimental to the children's future. Physical injuries on the victims might ultimately lead to death [1-4]. The irreparable consequences include antisocial behaviours in future, violent and criminal acts in adolescents, being irresponsible parents, etc., and these consequences are categorized into social and psychological sciences [3-5]. The primary goal of this study was to investigate non-accidental, physical abuse and injuries on children less than fourteen years old which ultimately led to their death. In order to achieve this objective, we studied all autopsy files of non-accidental deaths resulting from child abuse on children below fourteen-years old from Tehran autopsy hall in Iran. As a rule, every unnatural death in any city of Iran is referred to the Tehran autopsy hall; thus, no non accidental death case was left out. Accordingly, this study was carried out to examine autopsy files of all child deaths due to non-accidental injuries that were referred to Tehran autopsy hall from 2008 to 2017 in order to find the most common causes of deaths due to physical child abuse.

METHODS

Study design

In this retrospective cross-sectional study which covered ten years, from 2008 to 2017, autopsy reports of all non-accidental child deaths referred to Tehran forensic medicine dissection hall of Iran, were studied.

Data collection

A questionnaire which contained all the information required for our study including: gender of victims, age of victims, perpetrators, mechanism of fatal injuries, autopsy (cause of death), etc. for each year, was designed. The data from the autopsy files of all non-accidental Child deaths from Tehran province of Iran was extracted to

complete our questionnaire. All deceased victims' identity was kept confidential. Finally, death numbers, Perpetrator, gender, age; mechanism and autopsy (cause of death) (by toxicologic, histopathologic and clinical studies) was investigated. The Code of ethical approval is IR.LMO.REC.1396.42.

Inclusion and exclusion criteria

The inclusion criteria for this study included: all death of children less than fourteen years old resulting from non-accidental injuries that were referred to the Tehran province autopsy hall from the period of 2008 to 2017. On the other hand, the exclusion criteria included: insufficient data on the nature of non-accidental death in children, occurrence of an underlying disease in the deceased and death due to shooting, strangling or stabbing as they are often regarded as classical homicide than fatal child abuse. However, from the ninety-three fatal child abuse autopsy files gathered, a total of eighty-six files were included in our study as our sample size.

Statistical analysis

All data were coded and analysed with SPSS software version 24. Descriptive statistics, chi-square test and univariate analysis of variance were also used. Significance level was recorded as $P < 0.05$.

RESULTS

Characteristics of children deaths due to non-accidental injuries

Upon applying the inclusion and exclusion criteria, a total of eighty-six case files from 2008 to 2017 were employed in our study.

Overview of Characteristics of Children deaths due to Non-accidental injuries have been shown in Table 1.

Table 1: Characteristics of fatal child abuse

Variables	Number	Percent (%)
Number	86	100
Sex		
Boy	44	51.2
Girl	42	48.8
Age-Groups		
Below 1 year	18	20.9
1-3 years	30	34.9
3-6 years	18	20.9
6-9 years	11	12.8
9-12 years	8	9.3
12-14 years	1	1.2
Perpetrator		
Biological mother	27	31.4

Biological father	38	44.2
Stepmother	3	3.5
Stepfather	5	5.8
Stranger	13	15.1
Autopsy cause of Death		
Smothering	23	26.7
Intra cranial hemorrhage	17	19.7
Burning	4	4.7
Abdominal visceral perforation	20	23.3
Internal hemorrhage	3	3.5
Multiple trauma	19	22.1
Mechanism of Trauma		
Abdominal Visceral Perforation	31	36
Throwing	7	8.1
Burning	4	4.7
Beating	20	23.3
Smothering	23	26.7
Shaking	1	1.2

Sex

Among all eighty-six cases, there were forty-four (51.2%) boys and forty-two (48.8%) girls; Thus, from the study, incidence of non-accidental death in children below fourteen years old had no statistically significant difference between two gender (P=0.12).

Age-groups

From the study, deceased children of varying age groups were recorded. A total of eighteen (20.9%) were under 1 year; thirty (34.9%) were between the ages of 1 to 3 years; eighteen (20.9%) were between the ages of 3 to 6 years; eleven (12.8%) were between the ages of 6 to 9 years; eight (9.3%) were between the ages of 9 to 12 years and one (1.2%) was between the ages of 12 to 14 years. Thus, on the whole, most of the victims fall under the age group of 1 to 3 years with the mean and median ages recorded at 2.58 and 2.00 respectively.

Victims' age-group has been shown in Figure 1.

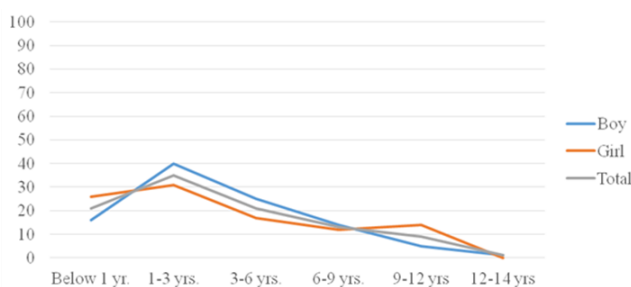


Figure 1: Victim (deceased children) age-group

Perpetrator

Our study revealed that perpetrators of these crimes included: biological mothers, biological fathers, stepmothers, stepfathers and strangers (all of which were males) and their rate of involvement, from our sample size, was recorded at twenty-seven (31.4%), thirty-eight (44.2%), three (3.5%), five (5.8%) and thirteen (15.1%) respectively for each perpetrator.

Among the victims, twelve (27%) boys and fifteen (36%) girls were killed by their biological mothers, twenty-three (52%) boys and fifteen (36%) girls were killed by their biological fathers, two (5%) boys and one (2%) girls were killed by their stepmothers, five (11%) boys and no girl were killed by their stepfathers, two (5%) boys and eleven (26%) girls were killed by strangers. In total, males (65%) have the highest rate of involvement and it was observed that a good number (44%) were victims' biological father.

Perpetrators' percent have been shown in Figure 2.

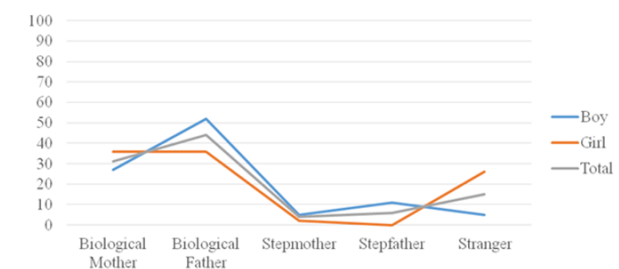


Figure 2: Perpetrators of crimes

Mechanism of fatal intentional injury

Different mechanisms were used to perpetrate these crimes that led to the death of the victims. These mechanisms included throwing [seven (8.1%)], impact [thirty-one (36%)], burning [four (4.7%)], beating [Twenty (23.3%)], smothering [twenty-three (26.7%)] and shaking (in cases of neonates) [one (1.2%)]. Therefore, of all the mechanisms, the most common mechanisms of fatal intentional injury were impact and smothering, respectively.

Autopsy (cause of death)

From our study, the autopsy statistics revealed that twenty-three (26.7%) events resulted from smothering, seventeen (19.7%) events resulted from Intra cranial haemorrhage, four (4.7%) events resulted from burning, twenty (23.3%) events resulted from abdominal visceral perforation, three (3.5%) event resulted from internal haemorrhage, and nineteen (22.1%) events resulted from multiple traumas. Thus, the most common causes of death were smothering and abdominal visceral perforation, respectively.

Autopsy causes of children deaths have been shown in Figure 3.

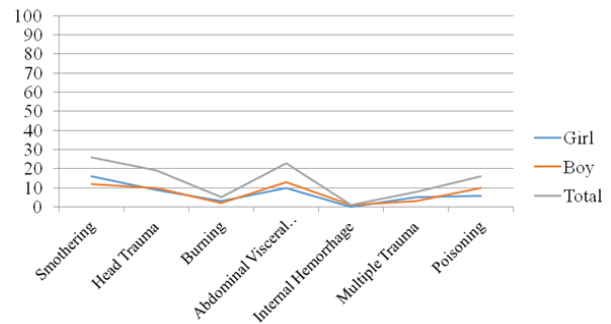


Figure 3: Autopsy causes of children deaths

Number of children’s deaths due to non-accidental injuries each year

Among all the deaths due to non-accidental injuries from 2008 to 2017, there were seven, fourteen, eleven, ten, eight, nine, seven, three, ten and seven cases each year, respectively. While, there were fluctuations between the two points of spectrum, the numbers of deaths were constant at the beginning and at the end of the ten-year study.

You can see numbers of fatal child abuse each year in Table 2.

Table 2: Fatal child abuse frequencies each year

Year	Number	Percent (%)
2008	7	8.10%
2009	14	16.30%
2010	11	12.80%
2011	10	11.60%
2012	8	9.30%
2013	9	10.50%
2014	7	8.10%
2015	3	3.50%
2016	10	11.60%
2017	7	8.10%

DISCUSSION

From our study, a total of ninety-three non-accidental injuries leading to death among children over the period of ten years were found. After applying the inclusion and exclusion criteria, cases of deaths due to shooting, strangling, stabbing, categorized as homicides, were omitted and thus eighty six cases were finally analyzed for the study. Our findings showed that death numbers due to non-accidental injuries among children had no statistical significant difference between boys and girls and this result was consistent with the studies performed in South Africa 2004 [1] and Turkey 1995-2000 [2]. However, it was in contrast with studies conducted in England 2005-2009 [3], South Africa 2014 [4], Germany [5], Finland [6] and Turkey 1996-2006 [7], Chicago 1995-2005 [8], and Turkey 2016 [9]. Our study showed

that most of the victims were between the ages of 1-3 years (Median age: 2.00) which was similar to studies performed in South Africa 2014 [4], Federal fiscal year (FFY) 2015 [10], Nashville, Tennessee 2001 [11]; while it was in conflict with studies conducted in England 2005-2009 [3], South Africa 2004 [1], Turkey 1995-2000 [2] Finland [6], Chicago 1995-2005 [8], Turkey 2016 [9], USA 2016 [10], and Ohio 2007 [12]. Furthermore, from our investigation, biological fathers were observed to be the most perpetrators of these crimes and this was consistent with other studies performed in England 2005-2009 [3] but it was in contrast with studies conducted in Turkey 1995-2000 [2], Finland [6], Turkey 2016 [9], Federal fiscal year (FFY) 2015 [10], Japan 2008-2009 [13], Austria and Finland 1995-2005 [14], and Ohio 2007 [15]. The frequently used mechanism for

fatal child abuse in our study were observed to be manual (just by perpetrator's hand); this include smothering and beating, respectively. This was consistent with other studies performed in South Africa 2014 [4], Turkey 1996-2006 [7], USA 2016 [10], Europe [16] but it was in contrast with studies conducted in South Africa 2004 [1], Finland [6], Japan 2008-2009 [2]. The most common cause of death in our study was smothering which was consistent with other studies performed in Turkey 1995-2000 [2], South Africa 2014 [4], Turkey 1996-2006 [7] but it was in contrast with studies conducted in South Africa 2004 [1], England 2005-2009 [3], Finland [6], Ohio 2007 [11], and Japan 2008-2009 [12]. While, there were fluctuations between the two points of spectrum but the numbers of deaths were constant at the beginning and at the end of the ten-year study, this result was in contrast with data in England 2005-2009 [3], and Texas [17].

CONCLUSION

In the present study autopsy was a useful and an invaluable tool for the determination of prevalent causes of fatal child abuse. Childhood is an important part of an individual's life and thus it is obligatory for parents/guardian to give the necessary attention to their children/wards' trainings in order to prevent terrible outcomes like antisocial behaviour, juvenile delinquency and criminal behaviour in future. It was observed that the main perpetrators of fatal child abuse were parents especially child's biological fathers; it therefore demonstrated the necessity of finding the underlying causes of these behaviours in parents and the need to inform child support organizations. It was also observed that children between the ages of 1-3 years old were the main victims; thus, all children who have incompetent protector should be supported by governmental welfare organizations or should be adopted by volunteer parents.

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CONFLICT OF INTEREST

The authors declared no potential conflicts of interests.

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