RESEARCH PAPER

Interpersonal Violence Against Children and Adolescents: A Forensic Study From Greece

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Objective: To investigate differences in victimization of minors after allegations of domestic violence and community violence. **Methods:** This retrospective study was conducted by reviewing the archive of clinical examinations after allegations for interpersonal violence against minors that were performed at the Department of Forensic Medicine and Toxicology of our Medical School from 2012 to 2016. **Results:** 216 cases of allegations for victimization of minors' were referred to our department, representing 8.8% of all clinical forensic examinations. Boys community violence victims were affected mainly on the head, whilst girls mainly on the genital area. Upper limbs were the predominant site of injuries on domestic violence victims of both sexes. **Conclusions:** Adolescents were in greater danger of sustaining injuries than younger children. Upper limb injuries may prove to be a useful screening tool for domestic violence in school-age children and adolescents, while trunk injuries may indicate domestic violence in preschool children.

Keywords: *Child abuse, Clinical forensic examination, Community violence, Domestic violence, Greece, Minors' victimization.*

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World Health Organization (WHO) defines violence as the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community that either results in or has a high likelihood of resulting in injury, death, psychological harm, mal-development or deprivation [1]. Whilst the definition provided by the WHO about child abuse/ maltreatment includes mostly victimization by a parent or caregiver [1,2], minors may be also victimized in the community context by strangers or acquaintances (youth violence) [3].

According to a systematic analysis, 40-60% of boys and girls, aged between 2-14 years, have experienced physical abuse by a parent, another family member or caregiver, and approximately half of boys and girls, aged between 8-11 years, have experienced physical violence by a classmate [4]. Despite the amount of the existing literature on child abuse, very few studies have been published concerning the injuries in such cases. In Greece, studies concerning domestic abuse of children are extremely rare [5,6], whilst studies concerning minors' victimization in the community context are practically non-existent.

One of the main goals of the forensic clinical examination of injured minors is to evaluate whether injures are accidental or intentional [7-9]. Aim of this study was to investigate differences in minors' victimization in domestic (DV) and community violence (CV) incidents in Greek population, with emphasis on anatomic injury location, in an attempt to investigate its usefulness as a screening tool for identifying the perpetrators' relation to the victim.

METHODS

The archives of the Department of Forensic Medicine and Toxicology of Medical School of National and Kapodistrian University of Athens (NKUA) were reviewed concerning clinical examinations for non-lethal injuries conducted from 2012 to 2016, and cases of minors' victimization were included in our study. Allegations originated from areas that cover approximately one tenth of the Greek population. All data were collected anonymously, and the study was approved by the Ethics Committee of our Medical School (NKUA).

Allegations were categorized into two groups: *i*) domestic violence cases, subjected to Greek Law about Domestic Violence (GLDV), and *ii*) community violence

cases, subjected to the Greek Penal Code (GPC). Variables recorded for every case included victims' and perpetrators' demographic characteristics, clinician's examination findings before the forensic clinical exami-nation, mechanism of injuries (*a*) physical violence (when just a body part acted as a blunt force instrument), (*b*) use of a blunt force object only, (*c*) combination of a and b; (*d*) sharp force instrument; (*e*) sexual abuse; and (*f*) firearm injuries), type of injuries (*a*) external injuries affecting only soft tissue (*e.g*. bruises); (*b*) internal injuries (*e.g*. fractures); and (*c*) evidence of sexual abuse), affected body region (head, neck, trunk, upper and lower limbs), and characterization of injuries according to GLDV [10] and GPC [11].

Statistical analysis: Data are presented as proportions. Categorical data were analyzed using Pearson chi-square test. Data analyses were performed using the Statistical package for social sciences software (SPSS version 25.0, SPSS Inc. Chicago, Illinois). A $P<0.05$ was considered statistically significant.

RESULTS

Two hundred and sixteen cases of minors' victimization were referred to our department, representing approximately 8.8% of all clinical examinations [community violence (CV): 8.5%, domestic violence (DV): 9.4%]. Victimization of boys was less frequent in the domestic context ($P=0.01$) and concerned mainly adolescents (**Table I**). Victimization in the domestic context was more frequent for school-age boys ($P=0.01$). Most DV cases (91.0%) concerned allegations against a parent, whilst 6.4% concerned a grandparent and 2.6% a sibling. In 68.3% of the total cases, victims knew the perpetrator(s). There were no allegations for intimate partner violence in the adolescent age group, neither any allegation for physical violence by teachers.

In 48.5% of CV allegations, the perpetrators were strangers. Girls knew the perpetrator(s) more frequently than boys (81.4% vs 58.8% for boys). Allegations against females were more frequent in DV allegations ($P=0.016$ for boys, and 0.032 for girls), whilst allegations against males were more frequent in CV allegations ($P=0.001$). A clinician examined 77 victims (35.6%) before the forensic examination. DV victims were less frequently examined by a clinician than CV victims (DV: 21.8%, CV: 43.5%, $P=0.001$).

In 43 cases (19.9%), a single injury was assessed during the examination (CV: 18.8%, DV: 21.8%), whilst 144 victims (66.7%) sustained multiple injuries (CV: 55.1%, DV: 48.7%). Sexual assaults against girls comprised 52.8% of the CV and 25.0% of the DV cases, whilst allegations of sexual abuse in boys were rare (CV: 2.3%, DV: 11.8%). Signs of sexual abuse were more frequent in allegations about sexual victimization in the community context (CV: 33.3%, DV: 20.0%, $P=0.01$). In most boys' victimization, the perpetrator employed only physical force (CV: 68.2%, DV: 61.4%). Sharp force instruments were used by perpetrators only in CV (boys: 7.2%, girls: 3.8%). CV victims were more likely to sustain internal injuries, compared to DV victims (CV: 15.2%, DV: 3.8%, $P=0.04$). Anatomical distribution of injuries is depicted in **Table II** and **Web Table I**. Injuries inflicted in DV were more likely to be characterized as simple injuries ($P=0.01$)

DISCUSSION

According to our study, CV cases concern more frequently boys, especially adolescents, and DV affects equally both sexes. DV frequency was at comparable levels with a Netherlands study, whilst CV cases were significantly less [12]. This finding may suggest that CV,

Table I Demographic Characteristics of Victims and Perpetrators in Children With Interpersonal Violence (*N*=216)

	Community violence		*Domestic violence*	
	Boys (n=85)	*Girls (n=53)*	*Boys (n=34)*	*Girls (n=44)*
Victim's nationality				
Greek	76 (89.4)	42 (79.2)	29 (85.3)	39 (88.6)
Other	9 (10.6)	11 (20.8)	5 (14.7)	5 (11.4)
Victim's age				
Infant (<1 y)	0	0	1 (2.9)	1 (2.3)
Preschool age (1-5 y)	3 (3.5)	4 (7.6)	4 (11.8)	9 (20.4)
School age (6-12 y)	15 (17.7)	19 (35.8)	22 (64.7)	15 (34.1)
Adolescent (13-17 y)	67 (78.8)	30 (56.6)	7 (20.6)	19 (43.2)
Age (y)[a]	14.1 (3.6)	12.6 (3.5)	9.2 (3.9)	10.4 (5.1)
Perpetrator's sex				
Male	65 (76.5)	46 (86.8)	23 (65.6)	30 (68.2)
Male and female	0	2 (3.8)	0	0
Unknown	13 (15.3)	0	2 (7.9)[b]	3 (6.8)[b]
Perpetrator's sex				
Under 17 y	28 (32.9)	7 (13.2)	1 (2.9)	0
Over 18 y	30 (35.3)	22 (41.5)	33 (97.1)	44 (100)
Unknown	27 (31.8)	24 (45.3)	0	0
Perpetrator's nationality				
Greek	40 (47.1)	31 (58.5)	27 (79.4)	38 (86.4)
Other	5 (5.8)	10 (18.9)	4 (11.8)	3 (6.8)
Unknown	40 (47.1)	12 (22.6)	2 (8.8)	3 (6.8)

Data is presented as No. (%) except [a]mean (SD). [b]five allegations about domestic violence were against the parent but there was no information whether it was the father or the mother.

Table II Body Region Injured in Children With Interpersonal Violence (*N*=216)

	Community violence		*Domestic violence*		*P value*	*P value*
	Boys (n=85)	*Girls (n=53)*	*Boys (n=34)*	*Girls (n=44)*	*(for boys)*	*(for girls)*
None	10 (11.8)	16 (30.2)	10 (29.4)	13 (29.5)	0.02	0.05
Head	53 (62.3)	8 (15.1)	10 (29.4)	8 (18.2)	0.001	0.68
Face	52 (61.2)	8 (15.1)	9 (26.5)	7 (15.9)	0.001	0.91
Cranium	8 (9.4)	1 (1.9)	2 (5.9)	3 (6.8)	–	–
Neck	11 (12.9)	5 (9.4)	2 (5.9)	4 (9.1)	–	–
Trunk	19 (22.3)	15 (28.3)	9 (26.5)	13 (29.5)	0.62	0.89
Thorax	12 (14.1)	5 (9.4)	7 (20.6)	3 (6.8)	0.38	–
Abdomen	5 (5.9)	1 (1.9)	0	3 (6.8)	–	–
Back	12 (14.1)	9 (17.0)	5 (14.7)	7 (15.9)	–	0.89
Genitalia	0	10 (18.9)	0	2 (4.5)	–	0.03
Upper limbs	28 (32.9)	11 (20.7)	12 (35.3)	17 (38.6)	0.81	0.05
Arms	13 (15.3)	5 (9.4)	8 (23.5)	14 (31.8)	0.29	0.006
Forearms	21 (24.7)	8 (15.1)	5 (14.7)	9 (20.4)	0.23	0.49
Hands	11 (12.9)	1 (1.9)	5 (14.7)	8 (18.2)	–	–
Lower limbs	21 (24.7)	8 (15.1)	7 (20.6)	11 (25.0)	0.63	0.22
Thighs	15 (17.6)	8 (15.1)	4 (11.8)	10 (22.7)	0.43	0.33
Leg calves	16 (18.8)	4 (7.5)	6 (17.6)	5 (11.4)	0.88	0.52
Feet	1 (1.2)	0	0	2 (4.5)	–	–

Data is presented as no. (%).

especially youth violence, occur less frequently or is reported less frequently to the Police in Greece than in other countries.

Physical violence was the most common mechanism that perpetrator(s) employed, which is in accordance with other studies [5,12]. According to an American study, injuries inflicted by weapon(s) were less frequent in girls than boys and were recorded only in CV incidents [13]. This finding probably means that DV perpetrators (mostly parents) employ just physical violence (by use of body parts) as punishment and disciplinary measures.

Another finding of our study was the smaller frequency of prior examination by a clinician for DV inci-dents, compared to CV frequency. Clinicians, especially pediatricians, can and should play an important role in the early diagnosis of abuse and victimization, especially in the domestic context. According to Joseph, et al. [14], boys admitted at emergency departments (EDs) were more likely to be DV victims than their female counterparts. Our results do not confirm this finding. Furthermore, according to our results, head was the predominant site of injury, which is in accordance to another Greek study [5]. Nevertheless, the latter depicts only male victims of CV, in contrast to other studies that reported head injuries in child abuse incidents more frequently [5,14]. These findings could possibly suggest a selection bias, as our study included forensic population (after allegations for inter-personal violence), whilst the studied populations by Joseph, et al. [14] and Petridou, et al. [5] represented patients admitted at EDs.

According to a UK study 65.6% of assaults were recorded only on EDs, 23.6% were reported only to the Police, and only 10.8% were reported both to EDs and the Police. Furthermore only 1 or 2 out of 10 minors have reported their victimization to both a police officer and a clinician, as up to 60-70% had mentioned the incident only at EDs [15]. These findings suggest that future research should combine records from EDs, forensic departments and the police department, to ascertain the true extent of minors' victimization which seek medical care or judicial support.

Our study demonstrated that most DV and CV adolescent victims sustained injuries, suggesting that they are in greater danger of getting injured than younger children, especially than children at the preschool development stage. Furthermore, upper limbs injuries could possibly become a screening tool for domestic abuse in school-age children and adolescents, whilst trunk injuries could imply domestic abuse in preschool children, but these results should be verified by future large scale community studies.

WHAT THIS STUDY ADDS?

- In a Greek population, head injuries in boys and genital injuries in girls were associated with victimization in the community context, whereas arm injuries in girls were associated with domestic violence.
- Upper limb injuries in school-age children and adolescents, and trunk injuries in preschool children were associated with domestic abuse.

To the best of our knowledge, this is the first study in Greece that compared minors' victimization in the community and the domestic context. High incidence and prevalence of exposure to physical violence (both domestic and community) reported by Petroulaki, et al. [6] compared to allegation rates in our Department suggest that minors' victimization is underreported in Greece. Campaigns about child abuse and youth violence are needed, to eliminate or at least reduce these phenomena.

Ethics clearance: Ethics Committee of the Medical School of National and Kapodistrian University of Athens, Greece; No. 5836 dated February 2, 2015.

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Web Table I Body Region Injured and Victim Age in Children With Interpersonal Violence (*N*=216)

	Community violence (n=138)			*Domestic violence (n=78)*		
	Preschool child (n=7)	*School-age child (n=34)*	*Adolescent (n=97)*	*Preschool child (n=13)*	*School-age child (n=37)*	*Adolescent (n=26)*
None	4 (57.1)	13 (38.2)	19 (19.6)	6 (46.1)	12 (32.4)	5 (19.2)
Head	1 (14.3)	4 (11.8)	56 (57.7)	3 (23.1)	6 (16.2)	8 (30.8)
Face	1 (14.3)	4 (11.8)	55 (56.7)	3 (23.1)	5 (13.5)	7 (26.9)
Cranium	0	0	9 (9.3)	1 (7.7)	1 (2.7)	2 (7.7)
Neck	0	4 (11.8)	12 (12.4)	0	4 (10.8)	2 (7.7)
Trunk	1 (14.3)	8 (23.5)	25 (25.8)	5 (38.5)	10 (27.0)	6 (23.1)
Thorax	0	2 (5.9)	15 (15.5)	2 (15.4)	5 (13.5)	2 (7.7)
Abdomen	1 (14.3)	0	5 (5.1)	0	2 (5.4)	1 (3.8)
Back	0	4 (11.8)	17 (17.5)	3 (23.1)	6 (16.2)	3 (11.5)
Genitalia	0	5 (14.7)	5 (5.1)	1 (7.7)	0	1 (3.8)
Upper limbs	2 (28.6)	10 (29.4)	27 (27.8)	3 (23.1)	15 (40.5)	11 (42.3)
Arms	1 (14.3)	4 (11.8)	13 (13.4)	2 (15.4)	12 (32.4)	8 (30.8)
Forearms	0	8 (23.5)	21 (21.6)	2 (15.4)	6 (16.2)	6 (23.1)
Hands	1 (14.3)	0	11 (11.3)	3 (23.1)	4 (10.8)	6 (23.1)
Lower limbs	1 (14.3)	8 (23.5)	20 (20.6)	0	10 (27.0)	7 (26.9)
Thighs	1 (14.3)	4 (11.8)	18 (18.6)	0	6 (16.2)	7 (26.9)
Leg calves	0	6 (17.6)	14 (14.4)	0	6 (16.2)	4 (15.4)
Feet	0		1 (1.0)	0	1 (2.7)	1 (3.8)

Data is presented as no. (%). Infant (<1 y); preschool age (1-5 y); school age (6-12 y); adolescent (13-17 y).