



ORIGINAL ARTICLE

# Analysis of contextual variables in the evaluation of child abuse in the pediatric emergency setting<sup>☆</sup>



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Received 3 June 2016; accepted 14 September 2016

Available online 27 April 2017

## KEYWORDS

Physical violence;  
Sexual violence;  
Children;  
Portugal;  
Hospital urgency

## Abstract

**Objective:** This article comprises a sample of abuse modalities observed in a pediatric emergency room of a public hospital in the Lisbon metropolitan area and a multifactorial characterization of physical and sexual violence. The objectives are: (1) to discuss the importance of social and family variables in the configuration of both types of violence; (2) to show how physical and sexual violence have subtypes and internal diversity.

**Methods:** A statistical analysis was carried out in a database (1063 records of child abuse between 2004 and 2013). A form was applied to cases with suspected abuse, containing data on the child, family, abuse episode, abuser, medical history, and clinical observation. A factorial analysis of multiple correspondence was performed to identify patterns of association between social variables and physical and sexual violence, as well as their internal diversity.

**Results:** The prevalence of abuse in this pediatric emergency room was 0.6%. Physical violence predominated (69.4%), followed by sexual violence (39.3%). Exploratory profiles of these types of violence were constructed. Regarding physical violence, the gender of the abuser was the first differentiating dimension; the victim's gender and age range were the second one. In the case of sexual violence, the age of the abuser and co-residence with him/her comprised the first dimension; the victim's age and gender comprised the second dimension.

**Conclusion:** Patterns of association between victims, family contexts, and abusers were identified. It is necessary to alert clinicians about the importance of social variables in the multiple facets of child abuse.

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<sup>☆</sup> Please cite this article as: Almeida AN, Ramos V, Almeida HN, Escobar CG, Garcia C. Analysis of contextual variables in the evaluation of child abuse in the pediatric emergency setting. J Pediatr (Rio J). 2017;93:374–81.

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**PALAVRAS-CHAVE**

Violência física;  
Violência sexual;  
Crianças;  
Portugal;  
Urgência hospitalar

## Análise das variáveis contextuais na avaliação dos maus-tratos infantis a partir da realidade de uma urgência pediátrica

**Resumo**

**Objetivo:** Este artigo apresenta uma casuística de modalidades de maus-tratos numa Urgência Pediátrica (UP) de um hospital público na Área Metropolitana de Lisboa e uma caracterização multifatorial da violência física e violência sexual. Os objetivos são: 1) discutir a importância de variáveis sociais e familiares na configuração de ambos; 2) mostrar como violência física e violência sexual apresentam subtipos e diversidade interna.

**Métodos:** Realizou-se uma análise estatística de uma base de dados (1063 registos de maus-tratos infantis, entre 2004-2013). Utilizou-se o formulário aplicado a casos com suspeita de maus-tratos, com dados sobre a criança, família, episódio de maus-tratos, agressor, história médica e observação clínica. Foi realizada uma análise fatorial de correspondências múltiplas para identificar padrões de associação entre variáveis sociais e violência, física e sexual, bem como sua diversidade interna.

**Resultados:** A prevalência de maus-tratos nesta UP foi de 0,6%. Predominam a violência física (69,4%) e a violência sexual (39,3%). Perfis exploratórios destes tipos foram construídos. Quanto à violência física, o sexo do agressor estrutura a primeira dimensão diferenciadora; sexo e grupo etário da vítima estruturam a segunda. No caso da violência sexual, a idade do agressor e coresidência com ele estruturam a primeira dimensão; idade e sexo das vítimas organizam a segunda dimensão.

**Conclusão:** Identificaram-se padrões de associação entre vítimas, contextos familiares e agressores. É necessário alertar os clínicos para a importância das variáveis sociais nas múltiplas faces que os maus-tratos assumem.

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**Introduction**

In its several forms, child abuse remains a characteristic that affects contemporary childhood on a worldwide scale. It occurs in a variety of contexts, particularly those where the child should be safer and more protected (family, home, school, institutions where care is provided).<sup>1</sup> It is a major cause of childhood morbidity and mortality, and its consequences for the development and well-being of children are devastating.<sup>1,2</sup>

It is estimated that 4–16% of children in high-income countries are physically abused and one in ten suffers psychological violence or neglect.<sup>3</sup> According to the World Health Organization (WHO), 18 million children in Europe are victims of sexual violence, 44 million, of physical violence, and 55 million, of psychological violence; approximately 850 children die each year as a result of these types of abuse.<sup>4</sup> The actuality and severity of this problem persists,<sup>3</sup> despite child protection policies developed internationally since the 1970s.<sup>5</sup> In a scenario of greater social intolerance to such situations,<sup>6</sup> the contribution of researchers and professionals is crucial so that decision-makers can promote adjusted public policies (for information registration, training of technicians, prevention, intervention, and follow-up in the field).

In the last decade, Portugal has implemented specific policies on child safety, allowing the country to make significant progress in this area. However, reliable national data are not yet available to allow a full and accurate assessment of the situation.

Aiming to overcome the lack of studies in the area, this article presents a series of maltreatment modalities in a pediatric emergency room (PER) unit of a public hospital in Lisbon and a multifactorial characterization of the two most frequent types, physical violence, and sexual violence. The objectives are (1) to discuss the importance of family and social variables (e.g., gender of victims and abusers, type of relationship, time) in the configuration of both types of abuse; (2) to show how physical and sexual violence have subtypes and internal diversity.

**Definitions**

In line with the Convention on the Rights of the Child, an individual younger than 18 years is considered a "child". In 1999, the WHO defined child abuse as all forms of physical or emotional abuse, sexual violence, neglect, or commercial exploitation that results in actual or potential harm to the child's health, survival, development, or dignity in the context of a relationship of responsibility, trust, or power.<sup>6</sup> It considers as physical violence an action by any caregiver that causes actual or potential physical harm to the child. Sexual violence is an act in which the caregiver uses the child for his or her sexual gratification. Emotional violence includes the failure by the caregiver to provide a child-friendly environment (e.g., restricting movement, threatening, ridiculing, intimidating, discriminating, rejecting, and other non-physical forms of hostile treatment),<sup>7</sup> which adversely impacts the child's development and emotional health. Bullying constitutes a specific process of violence based on the

intimidation and continuous abuse of a child over another who has no chance to defend him or herself.<sup>8,9</sup>

Neglect or abandonment is defined as the caregiver's failure to ensure the child's development in areas considered to be vital, such as health, education, emotional development, nutrition, shelter, and safety.<sup>8</sup>

## Methods

### Participants

This study included records of 1063 children over a ten-year period (from 2004 to October 2010, aged 0–16 years and from the last date up to age 18), identified as alleged victims of some form of child abuse (by the patient him or herself, his/her caregiver, or the attending physician), who came to, or were referenced to the PER unit of the hospital.

### Tools

As data collection instrument, a specific form was used for cases with suspected abuse, filled out by the medical team during the emergency episode. This is a semi-structured questionnaire that contains data on the child and his/her family, the abuse episode, the abuser, medical history and clinical observation, and the subsequent recommendations for the situation. The collection depended on the interview and observation performed by the attending clinician in the PER unit and, thus, there is some heterogeneity in the completion of the social fields.

### Procedures

The variables of the collection tool, on a paper form (up to 2011) and computer file (from 2011 onwards), were retrospectively inserted into a computerized database for posterior analysis by the multidisciplinary team (Hospital Support Center for at-Risk Child and Youth). Data included the victim's characteristics (gender, age, household composition, personal history of chronic diseases, domestic violence in the usual domicile), the abuser's characteristics (gender and age, relationship with the victim), and abuse (date of occurrence, type of abuse), as well as the subsequently implemented measures.

### Statistical analysis

Firstly, the study sample was briefly described. Exploratory models were then constructed, containing the two most frequent types of abuse in the sample: physical violence (64.2%) and sexual violence (39.3%). The models are based on the multiple correspondence factorial analysis, using the optimal scaling method.<sup>10,11</sup> This technique aims to analyze associations between variables in a multidimensional space, summarizing information about a large number of category variables, facilitating the understanding of how they organize themselves into specific patterns. For the numerical variables with normal distribution, the means and the standard deviations were calculated. For the variables without normal distribution, the median, minimum

and maximum values were calculated. The chi-squared test was used for the comparative analyses in categorical variables. This technique does not replace any predictive or risk model. Statistical analyses were performed using SPSS Statistics® (IBM SPSS Statistics for Windows, Version 24.0. NY, USA).

### Ethical considerations

The data collection during the clinical process is performed by the clinician after verbal consent provided by the child's or adolescent's caregiver in the PER unit, according to the law. The procedures for collecting, processing, and analyzing data were approved by the Hospital Ethics Committee of the PER unit.

### Results

During the study period, 1063 cases of abuse were recorded, corresponding to 0.6% of occurrences in this PE. Most of the victims were female (62.4%) and the mean age was 8.8 years ( $SD \pm 5.1$ ). Overall, most episodes occurred in children aged 10–14 years (32.7%). Female victims tended to be older (mean = 9.4,  $SD \pm 5.0$ ). Most of the male victims were aged 0–4 years old (32.5%). Regarding the victims' parents, the mean age of the mothers was 35 years ( $SD \pm 8$ ), whereas the mean age of the fathers was 38 years ( $SD \pm 9$ ). Most were employed (83.6% of fathers and 76.6% of mothers) and more than half (56.2%) were divorced or separated. In 158 cases, there was a report of domestic violence in the household where the child usually lived.

Physical violence was the most common type of abuse (69.4%), followed by sexual (39.3%) and emotional violence (22.2%). In 8.7% of the cases, the assessed children were victims of neglect and in 0.7% of cases, they had been abandoned. Most of the abusers are males (72.3%), with a mean age of 32 years ( $SD \pm 13.3$ ). With slight variations in their relative weight, this is the pattern typically seen in a PER unit,<sup>12,13</sup> different from what is found, for instance, at the Child and Youth Protection Commissions (Comissões de Proteção de Crianças e Jovens [CPCJ]), where neglect and emotional violence are the most frequently recorded types (Table 1).<sup>14</sup>

Time introduces other characterization patterns. Despite the annual variations (the longitudinal analysis did not consider the year 2004, since the form was not in use on the beginning of that year), there was an increasing trend in the number of cases detected. But the annual evolution per type of abuse is differentiated. The number of cases of sexual violence has remained stable, with peaks in 2007 and 2012. As for the cases of emotional violence, they have increased in recent years (Fig. 1).

The analysis of the monthly distribution of reported episodes of violence indicates a cumulative mean of 83 occurrences. The monthly variation, which refers to seasonal rhythms of social life, is significant: there were more cases in the spring and summer months (March, May, June, July, September, and October) and fewer cases in late autumn and winter (November, December, and January). Physical violence was the most common type of abuse throughout the year. Sexual abuse peaked in the summer and

**Table 1** Sample characteristics.

| Variable                                     | Categories         | n   | %      | Descriptive data   |
|--|--------------------|-----|--------|--|
| Victim's gender ( <i>n</i> = 1060)           | Male               | 399 | 37.60% | Mean: 8.8<br>Median: 9.0<br>Standard deviation: 5.1<br>Min-max: 0.1–18.0                         |
|  | Female             | 661 | 62.40% |  |
| Victim's age (years; <i>n</i> = 1061)        |                    |     |        |  |
| Victim's age range (years; <i>n</i> = 1061)  | 0–4 years          | 294 | 27.70% | Mean: 34.9<br>Median: 35.0<br>Standard deviation: 8.0<br>Min-max: 16.0–59.0                      |
|  | 5–9 years          | 238 | 22.50% |  |
|  | 10–14 years        | 353 | 33.30% |  |
|  | 15–18 years        | 175 | 16.50% |  |
| Maternal age (years; <i>n</i> = 723)         |                    |     |        | Mean: 38.4<br>Median: 39.0<br>Standard deviation: 9.0<br>Min-max: 17.0–74.0                      |
| Paternal age (years; <i>n</i> = 616)         |                    |     |        |  |
| Maternal employment ( <i>n</i> = 838)        | Unemployed         | 179 | 21.40% |  |
|  | Employed           | 642 | 76.60% |  |
|  | Retired            | 5   | 0.60%  |  |
|  | Absent             | 12  | 1.40%  |  |
|  | Unemployed         | 77  | 10.50% |  |
| Paternal employment ( <i>n</i> = 733)        | Employed           | 613 | 83.60% |  |
|  | Retired            | 14  | 1.90%  |  |
|  | Absent             | 29  | 4.00%  |  |
| Divorced/separated parents ( <i>n</i> = 828) | No                 | 363 | 43.80% |  |
|  | Yes                | 465 | 56.20% |  |
| Domestic violence ( <i>n</i> = 272)          | No                 | 114 | 41.90% |  |
|  | Yes                | 158 | 58.10% |  |
| Type of abuse ( <i>n</i> = 1063)             | Physical violence  | 682 | 65.20% |  |
|  | Sexual violence    | 358 | 34.20% |  |
|  | Emotional violence | 114 | 10.90% |  |
|  | Neglect            | 91  | 8.70%  |  |
|  | Abandonment        | 7   | 0.70%  |  |
| Abuser's gender ( <i>n</i> = 823)            | Male               | 595 | 72.30% | Mean: 32.0<br>Median: 33.0<br>Standard deviation: 13.3<br>Min-max: 5.0–80.0<br>( <i>n</i> = 583) |
|  | Female             | 228 | 27.70% |  |
| Abuser's age (583)                           |                    |     |        |  |

Source: Emergency sign form for the abused child (2004–2013).

in December (months that coincide with school holidays and children staying at home). Emotional violence cases were more common in the last two months of the year (November and December).

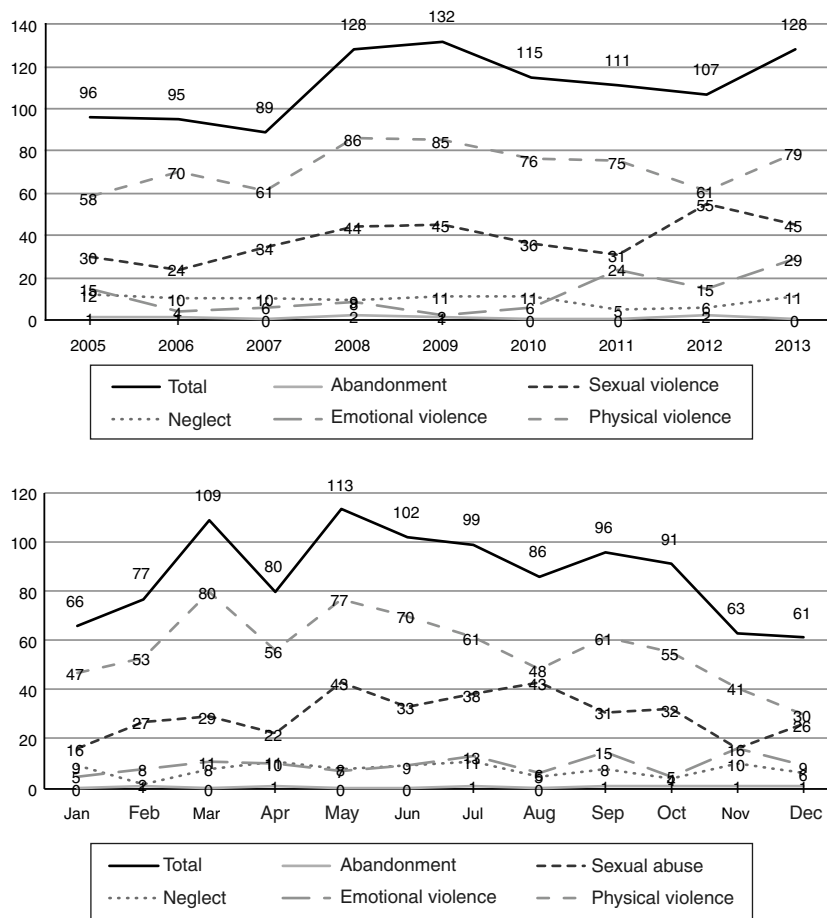
### Exploratory profiles of physical violence and sexual violence

Exploratory profiles of the association between social variables and the most common types of abuse were delineated using the FAMC. The results are shown in Figs. 2 and 3. Variables associated with the victim and with the abuser (gender

and age group) and family context (divorced/separated parents) were included.

As for physical violence, the abuser's gender constitutes the first dimension, while the victim's gender and age group constitutes the second one (Fig. 2). The abuser's age is a factor that mediates these two elements.

A first profile of physical violence was identified, in which victims and abusers are adolescents (lower right-hand corner), in situations of peer violence (*i.e.*, bullying) occurring both inside and outside the school settings. A second profile (lower left-hand corner) corresponds to male abusers, tending to be older, who attack victims, especially females, between 10 and 14 years of age; victims and abusers live



**Figure 1** Annual and monthly evolution (total and per type of case).  
Source: Emergency sign form for the abused child (2004–2013).

together. A third profile (upper left-hand corner) highlights female abusers, separated, or divorced, between the ages of 20 and 39. Here, the victims tend to be male and very young (between 5 and 9 years of age) and living in partial co-residence with the abuser. There is a fourth profile, less defined, in the upper right-hand corner, in which the victims are very small, male children; information about the abuser and the marital status of the parents is scarce.

Regarding sexual violence, the data are structured differently. The age of the abuser and co-residence with the aggressor constitute the first dimension. The victims' age and gender constitute the second one. The abuser's gender and recent separation/divorce are the elements that connect the two dimensions.

There is an association between male aggressor and female victims (bottom of the chart). In this profile, violence occurs in situations where the victim comes from families in which the parents are not separated/divorced. These are male abusers who attack pre-adolescent or adolescent female victims. A second profile (upper part of the chart) associates female abusers between the ages of 30 and 39 with younger victims, who come from settings in which the parents have separated. The quality of the data presents some bias here due to the lack of information on the identity and age of the abuser, which compromises the description of the other two quadrants. This sign suggests the relative

opacity that surrounds sexual violence situations involving very young children, in addition to the fact that they may be practiced by women or through their connivance/protection of the abuser/partner.

## Discussion

The present series, obtained from the context of a PER unit does not differ from others found in the literature, namely Portuguese studies.<sup>8,9</sup> The descriptive statistics showed that the type of abuse most frequently observed in the PER (physical and sexual violence) are, therefore, forms of active maltreatment, as opposed to neglect (typically identified through social work services and technicians),<sup>1</sup> and their relative weight follow common patterns.<sup>15</sup>

This sample showed signs of physical violence among peers, especially among older children. If, in other countries, bullying has acquired some statistical visibility, as well as in pediatric newspapers,<sup>5,16</sup> in Portugal the approach of the subject remains incipient. This is certainly due to the disregard or lack of notification of these situations in the current protocols of information collection.

The gender of the child and of the abuser were considered in the analysis. The gender variable had a relatively predictable performance, compared to the known

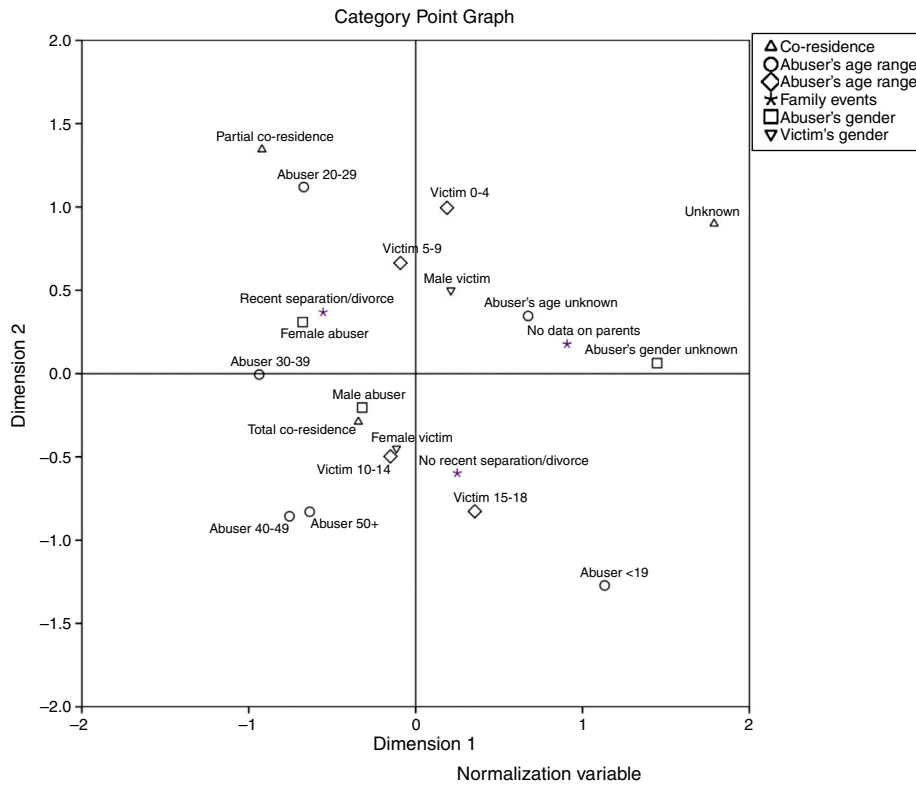


Figure 2 Factorial analysis of multiple correspondence: physical violence<sup>a</sup>.

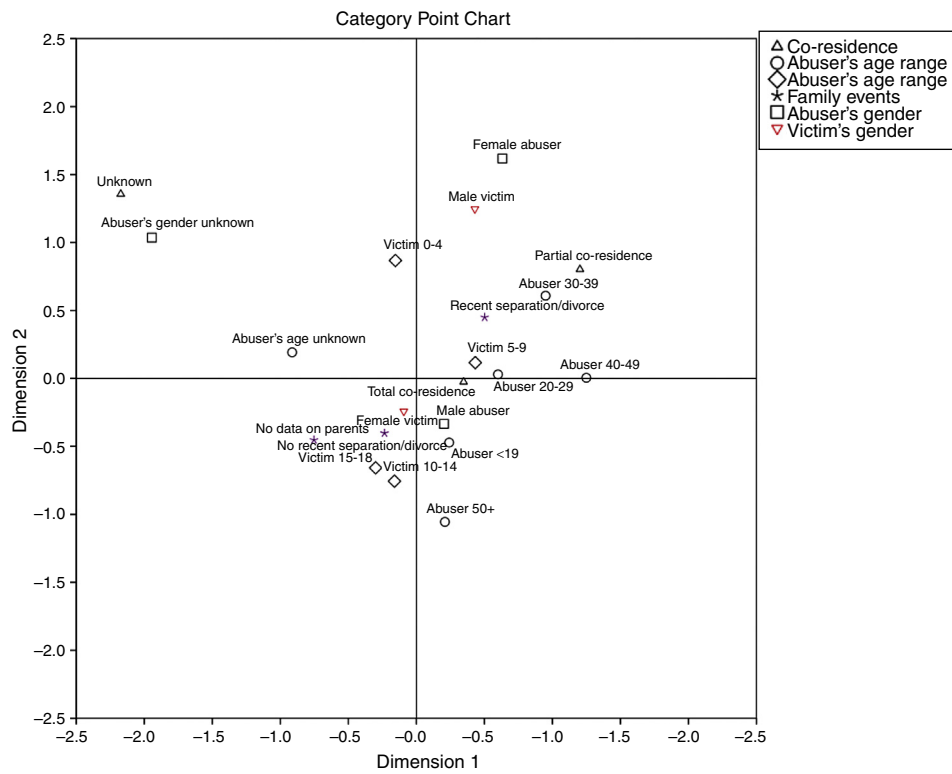


Figure 3 Factorial analysis of multiple correspondence: sexual violence<sup>a</sup>.

literature,<sup>17</sup> as follows: abusers are mostly males (72%), with mainly female victims (62%); gender was important in structuring the closeness or distance between illustrative variables in the construction of both types of violence, physical or sexual.

Compared to others, this study tested the introduction of social variables that are seldom used in the analysis and characterization of child abuse. Time, on the one hand, and the marital relationship between the child's parents, on the other hand, showed innovative results.

The seasonal pattern of abuse has become apparent: spring and summer show maximum peaks, whereas late fall and winter show minimum values. The relative stability of physical violence throughout the year contrasts with the concentration of sexual violence in the summer months and in December. Further research will allow a better understanding of this variability; but the rhythms of school life (with children staying at home for longer periods of time or exclusively under the custody of the family during school vacation) may be part of the explanation.

Conversely, the nature of the marital relationship between the child's parents (married parents vs. divorced/separated parents) was an explanatory variable. It is a result that stands out from the dominant approach in the literature on child abuse, which favors – in the characterization of the couple's relationship – the question of the presence of violence.<sup>18</sup> Thus, the parents' marital status (whether they are together or separated), in itself, plays a role in the configuration of two subtypes of sexual violence: between male abusers and pre-adolescent or adolescent female victims and between female abusers and younger children. The first scenario is associated with parents who live together; the second, with separated/divorced parents. The data refers primarily to suspected cases of violence; sometimes, at a young age, they are difficult to prove and depend on the (biased?) report of the parent accompanying the child to the PER unit, who may be involved in a situation of litigious separation.

This article also attempted to apply a multidimensional methodology, not commonly employed in the literature, which allowed the discovery of other subtypes of physical and sexual violence. Gender plays an important role in the structuring of these profiles: the gender of the child and of the abuser in physical violence, as well as the child's gender in the different forms of sexual violence. It is also worth noting the existence, in cases of sexual violence, of the woman as the abuser of a younger child, which is a reality rarely identified or discussed in similar studies,<sup>19</sup> but to which the intervention must be attentive.

The limitations of this study originate, to a great extent, from the gaps in the filling out of data by the professionals of the PER unit, a situation enhanced by the circumstance that, to date, protocol completion is not mandatory. The fact that it is filled out during the busy hospital working hours also contributes to the lower precision and attention given to this process. These factors explain the lower quality or even lack of data on the child's social background, particularly evident in the case of parents of sexual violence victims (level of education, occupation, and employment, among others).

It is known that the situations reported in a PER unit are only a fraction of cases of child abuse, even among those where the child is taken to the hospital<sup>20</sup>; and that such

abuse is often only detected after multiple visits.<sup>21</sup> The expansion and improvement of the questions used in the form and its conversion into a mandatory platform, attached to the hospital file, will contribute to overcome the problems of data incompleteness, as well as to increase the rate of detection of situations of violence, in the wake of documented good practices.<sup>15,22</sup>

Better awareness of the importance of social and family variables, as well as of the school context on the multiple facets of abuse, will inevitably be useful to healthcare professionals, trained mainly for the assessment of organic or psychological risk factors. This study intends to contribute in this sense.

## Conflicts of interest

The authors declare no conflicts of interest.

## Acknowledgements

The authors would like to thank the team of the Pediatrics Department of Hospital Fernando Fonseca, EPE, for providing the information and for the support provided during this study. They would also like to thank Débora Terra for the review of the manuscript in Brazilian Portuguese.

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