Dentistry Students’ Knowledge of Pediatric Patients Who Suffered Violence: A Systematic Review

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ABSTRACT

Objective: To review the literature unprecedentedly to identify the dentistry students' knowledge of pediatric patients who suffered violence. Material and Methods: A systematic review was conducted using PubMed, Web of Science, LILACS, SciELO, Google Scholar, and OpenGrey electronic databases up to November 2021. The "Grey Literature" was verified through Google Scholar and Open Grey searches to avoid any selection bias. There was no restriction on the date of publication or language. Results: The systematic search yielded 2,756 studies in the first selection phase, but only twenty-two articles were included. All selected articles were published between 1998 and 2021 and used a questionnaire to evaluate the dentistry students' knowledge regarding child maltreatment cases. Brazil was the country that had the most studies included (10 articles). Despite the majority of the students presenting insufficient knowledge about child maltreatment, evidence from this research showed that every form of approach by professionals toward child maltreatment should be considered important. Conclusion: Therefore, there are deficiencies regarding the teaching-learning methodology, reinforcing the need for improvements in Dentistry undergraduate curricula.

Keywords: Child Abuse; Students, Dental; Violence; Education, Dental; Study Characteristics.
Introduction

According to the World Health Organization, the term "child and adolescent mistreatment" is determined by the violence that happens to a person under 18 years old. It encompasses all types of physical or emotional punishment, sexual misuse, neglect, negligence, and commercial or other exploitation, which produces actual or potential harm to the kid's health, survival, development, or dignity in the context of a relationship of responsibility, trust or power and implicates any action or omission that impairs the child's well-being, physical or psychological integrity or freedom and the right to complete outgrowth [1]. Violence against children can be committed outside or within the home ambiance [2,3]. The violent actions are often performed by family members, who are generally considered the child's protective agents. Such type of family violence tends to go unnoticed, and one of the reasons for that is the victim's fear of denouncing the abuser and, thus, to undergo retaliations at home [4].

Child and adolescent maltreatment is a significant public health problem. Yet, a gap in understanding its serious lifelong results and the cost and burden on society has hampered investment in prevention programs [5-7]. To effectively respond to the question, the World Health Organization report on the prevention of child maltreatment recommended expanding the scientific evidence base for the magnitude, consequences, and preventability of child violence [8]. The relationship between child sexual abuse and adverse psychological effects in adults is well established [9]. Maltreatment of children most often results in traumas with cognitive, behavioral, and emotional sequelae that can be prolonged for life [10,11].

In situations of violence, dentists are in a prerogative position to recognize possible victims due to the frequent involvement of orofacial structures [12,13]. Furthermore, the attendance frequency during the dental treatment is another point to contribute, as it enables the dentist to approach the patient and their family, helping to identify behaviors and physical injuries resulting from aggression against the child [13,14].

Faced with the exposed reality, a university education is considered of fundamental relevance, as reflected in the professionals' education and attitudes. The dentist must have skills and competencies, such as identifying dental negligence, suspecting physical, sexual, and psychological violence, and detecting the aggressors' possible characteristics. These actions should be part of the role of a health professional, within the perspective of integral attention to the patient's needs [15].

Thus, given the importance of the present subject and the scarcity of systematic reviews on child abuse in dentistry, the present article proposes to systematically review the literature to identify the dentistry students' knowledge of pediatric patients who suffered violence.

Material and Methods

A systematic review was carried out to identify publications about the perception, knowledge, and attitude of undergraduate dentistry students concerning situations of abuse in childhood.

This article aimed to answer the following research question: "What is the knowledge of undergraduate dentistry students regarding the situations of punishment against childhood?". The research guiding question was constructed using the following strategy: Population – Dentistry Students; Outcome – knowledge of dentistry students' conduct in treating abused patients. Secondary outcomes comprise the diagnostic ability of dental undergraduate academics to identify victims of abuse and their perceptions regarding the referral of the situations of child abuse to the appropriate authorities/agencies.
This study was described following the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) for systematic reviews [16] and was registered on the PROSPERO (International Prospective Register of Systematic Reviews) platform with protocol number [removed for anonymous peer review].

Search Strategy
The bibliographic research was conducted between 22 November 2016 and 17 November 2021 to analyze the most recent evidence. Searches using the MeSH (Medical Subject Headings) terms were conducted using synonyms and combinations of the following search terms: "dentists," "dentistry," "students, dental," "child abuse," and "violence" (Table 1). In addition to the electronic search, an analogical search was carried out in the bibliographic references of the selected articles. The merging of searches and removal of duplicate articles was performed in the Rayyan QCRI software (https://www.rayyan.ai/).

Table 1. These are the terms used in the search strategy in PubMed (MedLine).

<table>
<thead>
<tr>
<th>Search</th>
<th>Terms Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>#2</td>
<td>&quot;Dentists&quot;[MESH] OR &quot;Dentist&quot; OR &quot;Dentistry&quot; OR &quot;Odontology&quot;[MESH] OR Students, Dental OR &quot;Dental Students&quot; OR &quot;Student, Dental&quot; OR &quot;Dental Student&quot;</td>
</tr>
</tbody>
</table>

Databases
A systematic review was performed in the following electronic databases: PubMed, Web of Science, Scopus, LILACS, SciELO, Google Scholar, and OpenGrey. The "Grey Literature" was verified through Google Scholar; only the first 200 results were assessed, excluding patents and citations. The list of references for each article was also evaluated.

Inclusion and Inclusion Criteria
The inclusion criteria were no restrictions for date of publication and language. Cross-sectional (observational) studies were used to evaluate the perception, knowledge, and attitude of dental undergraduate students regarding cases of violence against children. The exclusion criteria were case reports, pilot studies, revisions of narrative literature, letters to the editor, books, book chapters, course papers, and studies not performed with undergraduate dental students.

Selection of Studies
The review was developed by two participants who independently applied the same criteria in the article screening. When it was impossible to reach a consensus about the inclusion or exclusion of an article, such conflict was analyzed with a third coworker.

Firstly, a screening was performed by reading the titles and abstracts, followed by the total reading of the pre-selected papers. Studies whose abstract was not available but the title suggested any relationship with the inclusion criteria of the present research were also selected for full reading.
In cases where the selected article was not fully available on the Internet, it was requested via e-mail from the corresponding author of the study in question. Also, these papers were requested from the library of the [removed for anonymous peer review]. The study was removed from the review when these location alternatives were inadequate.

Extraction of Data

An Excel spreadsheet (Microsoft Corporation, Redmond, WA, USA) was used to extract data into the included articles. Studies were categorized according to the following items according to Tables 2 and 3: Table 2: Author publication, country of research, publication's year, sample, gender of participants, age of participants, and university period of participants; and Table 3: Author, diagnosis, perception, and undergraduate level information.

Bias Risk Evaluation

The risk of bias in the included articles was verified following the instrument for non-randomized studies ROBINS-I [17] to avoid overestimating the results of the selected studies. The coworkers elected independently included articles and solved the unconformities by reciprocal consulting. This assessment was performed similarly to the study by Schmid et al. [18].

Statistical Analysis

The selected information was evaluated by the descriptive statistics indicating the values of the study variables.

Results

Search Details

The systematic search resulted in 2,756 studies in the first selection phase. A total of 1,974 studies remained after removing duplicates. One thousand nine hundred and forty (1,938) were subsequently excluded for different reasons for not meeting the inclusion criteria. The leading cause was studies that were not performed with undergraduate dental students.

Thirty-six potentially relevant studies were selected for full reading, of which 14 were excluded, 3 for not specifying the sort of abuse and maltreatment [19-21], 1 evaluated the teaching mode in cases of child abuse [21], 4 assessed the knowledge regarding cases of domestic violence [22-25], 2 of them were with dentists that had already graduated in Dentistry [24,25], 1 in the study with Dentistry resident students [26], one letter to the editor [27], one systematic review article on dentists knowledge about cases of domestic violence against children [28] and 1 study assessed or students facing ethical troubles, not specifying the kind of abuse [29]. Therefore, just 22 articles were included in this review (Figure 1).

Study Design and Characteristics

Data for the included articles are reported in Table 2. All the articles were published between 1998 and 2021. All the studies applied a questionnaire to evaluate the knowledge, perception, and attitudes of undergraduate dentistry students, most between the eighth semester and the end of the course, regarding cases of child maltreatment. According to Table 2, Brazil is the country with more selected articles, 10 of them. In addition, Table 3 summarizes the main results of the studies.
Figure 1. Diagram of the studies selection process according to PRISMA guidelines.

Risk of Bias within Studies

The risk of bias judgments in ROBINS-I, including pre-, at-, and post-intervention domains, are depicted in Table 4. Twenty-two non-randomized studies were evaluated to have an overall serious risk of bias. The domains with the majority that presented a severe risk of bias were confounding, as were the selection of participants and the selection of reported results. Also, almost all the authors did not report clearly the issue of missing data on results.

Effect of Interventions
Knowledge, Diagnosis, and Perceptions:

The majority of the students showed insufficient knowledge about child and adolescent maltreatment. Concerning the diagnosis, almost all the articles presented that the students know that the dentist has the legal responsibility to report cases of abuse, but not all the students thought they were able to diagnose situations and conduct them properly.

Regarding the students' perceptions, the outcomes of the studies are divergent; in some places, the scholars have demonstrated the knowledge of where the complaint is made, and in others, the insufficiency of teaching in this area was evident. Of the studies assessed, not all the students had contact with this field at the undergraduate level. However, some of them are at the beginning or half of their undergraduate level, so it is possible to have this content at the end of the course. Also, it is relevant to point out that in all the research, the students showed a desire to obtain more knowledge regarding the subject.
<table>
<thead>
<tr>
<th>Author</th>
<th>Country</th>
<th>Year</th>
<th>Sample Size</th>
<th>Genus</th>
<th>Age</th>
<th>University Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jesse and Martin [30]</td>
<td>EUA</td>
<td>2018</td>
<td>221 Students</td>
<td>55.2% - male and 44.8% - female</td>
<td>Not reported.</td>
<td>1st to 4th year</td>
</tr>
<tr>
<td>Thomas et al. [31]</td>
<td>EUA</td>
<td>2006</td>
<td>390 Students</td>
<td>▪ 3rd year: 50.2% - female and 49.8% - male ▪ 4th year: 100% - female</td>
<td>Not reported.</td>
<td>3rd and 4th year</td>
</tr>
<tr>
<td>Carvalho et al. [32]</td>
<td>Brazil</td>
<td>2006</td>
<td>70 Students</td>
<td>70% - female and 30% - male</td>
<td>84% - among 20 and 24 years</td>
<td>7th to 10th semester</td>
</tr>
<tr>
<td>Josgrilberg et al. [33]</td>
<td>Jordan</td>
<td>2010</td>
<td>383 Students</td>
<td>63.3% - female and 36.7% - male</td>
<td>Not reported.</td>
<td>4th year</td>
</tr>
<tr>
<td>Al-Jundi et al. [34]</td>
<td>Brazil</td>
<td>2010</td>
<td>150 Students</td>
<td>Not reported.</td>
<td>82.5% - &lt; 25 years</td>
<td>4th and 5th year</td>
</tr>
<tr>
<td>Gomes et al. [35]</td>
<td>Brazil</td>
<td>2011</td>
<td>91 Students</td>
<td>57.1% - female and 42.9% - male</td>
<td>64.1% - 21 to 24 years</td>
<td>3rd and 5th year</td>
</tr>
<tr>
<td>Serpa and Santos [36]</td>
<td>Brazil</td>
<td>2011</td>
<td>61 Students</td>
<td>▪ 6th semester: 51.0% - female and 48.4% - male ▪ 10th semester: 76.7% - female and 23.3% - male</td>
<td>19 to 29 years: 6th semester - 22 years average 10th semester - 23.3 years average</td>
<td>6th and 10th semester</td>
</tr>
<tr>
<td>Sousa et al. [37]</td>
<td>Brazil</td>
<td>2012</td>
<td>59 Students</td>
<td>55.5% - female and 44.1% - male</td>
<td>93.2% - 20 to 29 years</td>
<td>9th and 10th semester</td>
</tr>
<tr>
<td>Jordan et al. [38]</td>
<td>Croatia</td>
<td>2012</td>
<td>544 Students</td>
<td>71.9% - female and 28.1% - male</td>
<td>Not reported.</td>
<td>11th to 6th year</td>
</tr>
<tr>
<td>Wacheski et al. [39]</td>
<td>Brazil</td>
<td>2012</td>
<td>96 Students</td>
<td>72% - female and 28% - male</td>
<td>Not reported.</td>
<td>3rd to 5th year</td>
</tr>
<tr>
<td>Matos et al. [40]</td>
<td>Brazil</td>
<td>2013</td>
<td>77 Students</td>
<td>&gt; 60% - female and &gt; 10% - male</td>
<td>Not reported.</td>
<td>7th and 8th semester</td>
</tr>
<tr>
<td>Hashim and Al-Ani [41]</td>
<td>United Arab Emirates</td>
<td>2013</td>
<td>578 Students</td>
<td>76.6% - female and 23.4% - male</td>
<td>89.1% - &lt; 25 years</td>
<td>4th and 5th year</td>
</tr>
<tr>
<td>Vergara et al. [42]</td>
<td>Colombia</td>
<td>2014</td>
<td>208 Students</td>
<td>64% - female and 36% - male</td>
<td>13% - &lt; 20 years</td>
<td>6th to 10th semester</td>
</tr>
<tr>
<td>Moura et al. [43]</td>
<td>Portugal</td>
<td>2015</td>
<td>40 Students</td>
<td>63% - female and 37% - male</td>
<td>Not reported.</td>
<td>11th and 5th year</td>
</tr>
<tr>
<td>Silva Júnior et al. [44]</td>
<td>Brazil</td>
<td>2015</td>
<td>100 Students</td>
<td>63% - female and 37% - male</td>
<td>33% - 19 to 21 years</td>
<td>5th to 9th semester</td>
</tr>
<tr>
<td>Bromdulu et al. [45]</td>
<td>Turkey</td>
<td>2016</td>
<td>248 Students</td>
<td>55.3% - female and 44.7% - male</td>
<td>Not reported.</td>
<td>3rd to 5th year</td>
</tr>
<tr>
<td>Abreu et al. [46]</td>
<td>Brazil</td>
<td>2017</td>
<td>195 Students</td>
<td>72.8% - female and 23.2% - male</td>
<td>Among 20 and 24 years</td>
<td>6th to 9th semester</td>
</tr>
<tr>
<td>Busato et al. [47]</td>
<td>Brazil</td>
<td>2017</td>
<td>363 Students</td>
<td>73% - female and 27% - male</td>
<td>21.3 years average</td>
<td>11th to 10th semester</td>
</tr>
<tr>
<td>Al-Dahaan and Allam [48]</td>
<td>Saudi Arabia</td>
<td>2018</td>
<td>141 Students</td>
<td>▪ 4th year: 47.9% - female and 52.1% - male ▪ 5th year: 46.7% - female and 53.3% - male</td>
<td>Not reported.</td>
<td>4th and 5th year</td>
</tr>
<tr>
<td>Aziz et al. [49]</td>
<td>Malaysia</td>
<td>2020</td>
<td>140 Students</td>
<td>85.7% - female and 14.3% - male</td>
<td>21 to 26 years - 90%</td>
<td>3rd to 5th year</td>
</tr>
</tbody>
</table>

Table 2. Demographic data of included studies.
Duman et al. [50]  
Australia, Pakistan, Turkey, Jordan, the Turkish Republic of Northern Cyprus, Poland, the Republic of South Africa, Nigeria, Cambodia, and the United States of America  
2021  
660 Students  
64.9% - female and 35.1% - male  
Not reported.  
Final-year

Al-Ani et al. [51]  
Germany  
2021  
181 Students  
61.9% - female and 38.1% - male  
60.2%: < 25 years  
39.8%: > 25 years  
3th to 5th year

### Table 3. Summary of results of included studies.

<table>
<thead>
<tr>
<th>Author</th>
<th>Knowledge</th>
<th>Diagnosis</th>
<th>Perception</th>
<th>Graduation Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jesse and Martin [30]</td>
<td>Not reported.</td>
<td>Not reported.</td>
<td>Most know that the dentist has a moral obligation to recognize and report cases of child maltreatment.</td>
<td>More than 60% of the students reported that the content needed to be improved.</td>
</tr>
</tbody>
</table>
| Thomas et al. [31] | Seven point seven percent of the academics correctly described child and adolescent mistreatment, while the others gave a partially correct response to the same question. | • The students had a low percentage of correct answers to questions about signs of violence.  
• Dentistry students answered just 3.42 of the six questions correctly. | The percentage of dental students who knew how to report all suspected cases of child and adolescent abuse/neglect (67.8%). | Every student reported that they had learned about child and adolescent abuse/neglect in the classroom setting. |
| Carvalho et al. [32] | Most of the students presented partial knowledge about the subject.        | The majority of students cited physical injuries besides behavioral changes such as signs of mistreatment. | No student was able to inform the professional's conduct correctly. | Fifty-one point four percent had received information on this topic during the undergraduate course. |
| Josgrilberg et al. [33] | • Twenty point nine percent know that the orofacial structures are the most affected region in the body by violence.  
• Ninety-eight point four percent of them know the relevance of anamnesis and clinical examination to recognize situations of abuse. | When examining the patient, 66.7% are worried only about the mouth. | Eighty-eight point seven percent would conduct the situation correctly, denouncing the Guardianship Council. | Ninety-six percent would like to receive more information. |
| Al-Jundi et al. [34] | • Most students know that the law in Jordan does not demand dentists to report these cases of abuse.  
• Just 32.4% of students knew where to report child and adolescent mistreatment (Department of Family Protection) | All students from both universities lack knowledge of indicators of diagnosis of mistreatment. | Ninety point one percent believed they had an ethical duty to report the trouble. | Eighty point two percent did receive insufficient training to recognize and report childhood mistreatment. |
| Gomes et al. [35] | • Eighty-five point seven percent of students said being capable of defining child and adolescent mistreatment. | • Ninety-one point two percent of the students answered that it is the | • Fifty-nine point three percent said that they would be capable of | Thirty-four point one percent, 34.1%, had received information during the undergraduate program, |

27 years or above - 1.4%
<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serpa and Santos [36]</td>
<td>Eighty-six point nine percent of the students answered that they know how to define child abuse cases. The definition was considered adequate in 62.3% of the situations.</td>
</tr>
<tr>
<td>Sousa et al. [37]</td>
<td>Seventy-nine point seven percent reported being able to define child maltreatment. Seventy-four point five percent defined &quot;child maltreatment&quot; incompletely. Forty-five point eight percent stated that they knew the types of maltreatment.</td>
</tr>
<tr>
<td>Jordan et al. [38]</td>
<td>A gap in knowledge about abuse and neglect was identified between the students. Fifty-eight point six percent of academics answered the question about where to communicate a suspected case correctly. The academics were not aware of some of the signs and symptoms of abuse.</td>
</tr>
<tr>
<td>Wacheski et al. [39]</td>
<td>Seventy-four percent of academics correctly answered the definition of maltreatment. Seventy-one point percent answered that they might know how to recognize, 4% said they would not, and 25% thought they could.</td>
</tr>
<tr>
<td>Matos et al. [40]</td>
<td>Forty-nine point three percent were unaware of the legal implications for professionals in situations of mistreatment. Seventy-six point six percent felt trained to diagnose children and adolescents suffering from maltreatment.</td>
</tr>
<tr>
<td>Hashim and Al-Ani [41]</td>
<td>Eighty-seven point five percent know that professionals are legally required to communicate child and adolescent abuse. Seventy-eight point two percent know that repeated teeth injury that results in avulsion or discolored crowns may indicate repeated trauma from physical violence.</td>
</tr>
</tbody>
</table>

- Almost half of the students (49.5%) reported they knew the kinds of abuse.
- The majority would be able to diagnose cases of mistreatment (94.5%).
- The definition was considered adequate in 62.3% of the situations.
- About the conduct, the most frequently reported action was the complaint to the tutelary board / competent organ (83.3%) and questioning parents (29.6%).
- Forty-one percent would know how to act in the face of a suspicion of mistreatment, and nearly 60% would communicate to the Guardianship Council.
- Ninety-one percent of the students in the 10th period reported that the information received at graduation was insufficient.
- Eighty-six point seven percent would like to access more training.
- Sixty percent of all students faced situations of child abuse during the course and received information about the topic in detail.
- Ninety percent of the students in the 10th period reported being the Guardianship Council.
- Sixty-two point three percent of the academics learned about the topic under graduation in Legal Dentistry.
Abreu et al. [46]  
- Thirty-six point two percent of the academics know where to communicate the abuses.
- Forty-six point four percent know that bruises noted around the neck are usually related to accidental trauma.
- More than 91% indicated that they did not receive enough formal training in recognizing and reporting child abuse.

Vergara et al. [42]  
- Ninety-six percent know about the obligation to communicate suspected cases.
- Seventy-three percent know where to report.
- Knowledge regarding the mistreatment was evaluated, resulting in a higher occurrence of acceptable results (60.1%) for psychological abuse and good (52.4%) for sexual abuse.
- Identification of violent lesions associated with the dental office, obtaining the highest percentages in the presence of cheek bruises (94.2%), object burns (90.8%), repeated lesions, and dental avulsion or fracture (89.4%).
- Ninety-eight point five percent realize a connection between oral negligence and physical negligence.
- Fifty-seven point six percent believe they don’t have enough knowledge on the topic. They believe that the question deserves more training.

Moura et al. [43]  
- Not reported.
- About the examination in cases of abuse, all students selected the "Intra and extraoral" option.
- Most students chose "head and neck" as the area most injured in these situations.
- In a suspected mistreatment situation, most students would either warn the police or report the case.
- Forty-seven percent of 1st year and 60% of 5th year students reported receiving information during their undergraduate.

Silva Junior et al. [44]  
- The majority of academics showed poor knowledge regarding the concept of child and adolescent abuse.
- The majority of academics mentioned physical injuries (bruises, wounds, marks on the body) together with behavioral changes as a sign of suspected mistreatment.
- Regarding the conduct in suspected cases, the academics could not inform the correct sequence of necessary procedures.
- Seventy-two percent would communicate the suspicion to Guardianship Council / Police.
- In a situation of abuse identification, 66% would not attend to the patient.
- Seventy-four percent did not obtain information about the topic.
- More than 90% would like to receive information on identifying and referring suspected situations.

Bromdulu et al. [45]  
- They reported deficiencies in the knowledge of signs and symptoms of child and adolescent abuse.
- Fifth-year academics demonstrated more knowledge about childhood mistreatment than third and fourth-year students.
- Thirty-seven point four percent of third-year academics, 48.5% of fourth-year, and 50% of fifth-year knew where to report abuse.
- Not reported.
- Most students were aware of their ethical responsibility for protecting the kids from abuse.
- Two point two percent of third-year, 13.3% of fourth-year, and 21.4% of fifth-year academics answered that they had formal training on the subject.

Abreu et al. [46]  
- Seventy-four point four percent of students knew the agency or institution they could turn to communicate suspected situations of child abuse, and 28.2% would use more than one agency or institution to report this problem.
- Eighty-six percent of the participants identified fear as the main barrier to
- Three point one percent identified cases that involved orofacial trauma.
- Ninth-period academics consider themselves more apt to diagnose than 7th-period students (p=0.008).
- The 6th-period academics were more willing to be involved in detecting child abuse than the 8th-period group period (p=0.013).
- Fourteen point four percent of academics said they had witnessed suspected situations of child abuse among their patients.
- Notification was made only by 5 (2.6%) students.
- Eighty-nine point seven percent express interest in receiving training on identification mechanisms and notification of child abuse cases.
- Ninety-six point six percent believe these should be part of professional training courses.
notification, followed by insufficient knowledge (81.9%) and lack of confidentiality (62.3%).

Busato et al. [47]
3.3% of students correctly defined "Child Physical Abuse," 30.6% defined it incorrectly, 69.9% defined it incompletely, and 8% did not answer the question.
- Thirty-five point three percent claimed to know what the Child and Adolescent Statute was, 63.6% were not aware of it, and 11.1% did not answer this question.
- Eighty-six point eight percent feel able to identify child abuse, 11.8% do not feel able, and 1.4% did not respond.
- Fifteen point seven percent of students from Lages and 27.6% from Vitória stated that they had witnessed such situations.

As for receiving more information on this subject, 95.1% answered yes, and only 4.9% answered no.

Al-Dabaan and Allam [48]
- Seven point one percent have had previous training in child protection: 5.5% male students versus 9.0% females.
- Four point nine percent had training in the undergraduate, just 2.1% had attended a workshop, while only 2.8% had online training.

Al-Ani et al. [51]
- Some academics answered positively when asked whether a professional was legally required to communicate situations of mistreatment in Germany (72.4%).

Most of the academics were unable to recognize the signs and symptoms of physical abuse clearly.

Nearly 95% of academics indicated that they have insufficient training regarding childhood mistreatment.

Duman et al. [50]
- Students' knowledge concerning childhood abuse has been verified as good (46.8%) / moderate (42.8%) / poor (10.3%).
- The knowledge was significantly higher in Australia, the United States, and Jordan than in other countries.
- Internet (60.3%) was commonly used as an information source.

The majority of the students said that professionals should be legally responsible for communicating the abuses, and 95% agreed that health professionals should be trained in the management of child and adolescent mistreatment.

Most students agreed that the dentists who failed to communicate a suspected situation may have inadvertently enabled the patient to be continuously injured.

A total of 56% of the participants received formal training on childhood abuse.

Eighty-six percent indicated a desire for more training in recognizing and reporting abuses.

Aziz et al. [49]
- Dentistry journals hold the lowest outcome on how the academics know about the information relating to child and adolescent mistreatment (4.3 percent).
- Seventy point seven percent were capable of diagnosing physical abuse between the child mistreatment.

Majority decided that they prefer to communicate the mistreatment to the police rather than the family, hospital, or social services.
- The hospital is the last place that the academics want to communicate abuse cases.

Nearly 50% of the academics said they did not get the information from dental school, dentistry journals, and lectures.

Not reported.
Not reported.
Eight point four percent of dental students agreed that more training is required in this field.

Duman et al. [50]
- Students' knowledge concerning childhood abuse has been verified as good (46.8%) / moderate (42.8%) / poor (10.3%).
- The knowledge was significantly higher in Australia, the United States, and Jordan than in other countries.
- Internet (60.3%) was commonly used as an information source.

The majority of the students said that professionals should be legally responsible for communicating the abuses, and 95% agreed that health professionals should be trained in the management of child and adolescent mistreatment.

Most students agreed that the dentists who failed to communicate a suspected situation may have inadvertently enabled the patient to be continuously injured.

A total of 56% of the participants received formal training on childhood abuse.

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Eighty-six percent indicated a desire for more training in recognizing and reporting abuses.

Aziz et al. [49]
- Dentistry journals hold the lowest outcome on how the academics know about the information relating to child and adolescent mistreatment (4.3 percent).
- Seventy point seven percent were capable of diagnosing physical abuse between the child mistreatment.

Majority decided that they prefer to communicate the mistreatment to the police rather than the family, hospital, or social services.
- The hospital is the last place that the academics want to communicate abuse cases.

Nearly 50% of the academics said they did not get the information from dental school, dentistry journals, and lectures.
### Table 4. Risk of bias judgments in non-randomized studies of interventions according to ROBINS-I.

<table>
<thead>
<tr>
<th>Author</th>
<th>Confounding</th>
<th>Selection of Participants</th>
<th>Classification of Interventions</th>
<th>Deviations from Intended Interventions</th>
<th>Missing Data</th>
<th>Measurement of Outcomes</th>
<th>Selection of Reported Results</th>
<th>Overall</th>
</tr>
</thead>
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<tr>
<td>Jesse and Martin [30]</td>
<td>Serious</td>
<td>Serious</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Serious</td>
<td>Serious</td>
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<td>Low</td>
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<td>Low</td>
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<td>Serious</td>
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</tr>
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</tr>
<tr>
<td>Josgrilberg et al. [33]</td>
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<td>Serious</td>
<td>Low</td>
<td>Moderate</td>
<td>Not Informed</td>
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<td>Moderate</td>
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<tr>
<td>Serpa and Santos [36]</td>
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<td>Moderate</td>
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<td>Moderate</td>
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<td>Sousa et al. [37]</td>
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<tr>
<td>Jordan et al. [38]</td>
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<td>Low</td>
<td>Moderate</td>
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<tr>
<td>Wacheski et al. [39]</td>
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<td>Low</td>
<td>Low</td>
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<td>Matos et al. [40]</td>
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<tr>
<td>Bromdulu et al. [45]</td>
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<td>Moderate</td>
<td>Low</td>
<td>Moderate</td>
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<tr>
<td>Busato et al. [47]</td>
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<tr>
<td>Al-Dabaan and Allam [48]</td>
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<td>Serious</td>
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<td>Aziz et al. [49]</td>
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<td>Duman et al. [50]</td>
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<td>Al-Ani et al. [51]</td>
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<td>Low</td>
<td>Not Informed</td>
<td>Serious</td>
<td>SERIOUS</td>
</tr>
</tbody>
</table>

Low comparable to a well-performed randomized trial, Moderate sound for a non-randomized study, but not comparable to a rigorous randomized trial, Serious presence of essential problems, Critical too problematic to provide any valid evidence on the effects of intervention, Overall risk of bias equal to the most severe level of bias found in any domain.
Discussion

Despite the legal obligation to denounce situations suspected of violence against children and to be in a prerogative function to realize such situations, there are still many situations of under-reporting by health workers [52,53]. The obligatory inclusion of this topic in the curriculum of the Dentistry courses is primordial, thus enabling greater contact and the student's learning on the subject.

Besides the dental students' knowledge regarding situations of child mistreatment, some of them showed insufficient knowledge about the topic [52,53-38,42,43]. In the paper written by Gomes et al. [35], 85.7% of the academics reported being able to define a child's mistreatment. Among them, the most, 65.4%, defined it as completely correct. A similar outcome was found in the study by Serpa and Santos [36], in which 86.9% responded that they knew how to describe situations of childhood mistreatment. Still, the concept was considered adequate in 62.3% of the situations. In the investigation conducted by Sousa et al. [37], around 79% of the scholars reported being capable of defining correctly, although no one defined it correctly, and more than 70% defined it incompletely. Thus, it is essential to rethink academic methodologies to provide more education on child abuse in dental school curricula.

Of the various types, physical abuse stands out as the most commonly identified kind [49]. To act and help the victim in time, the professional must have skills such as identifying Dentistry negligence, suspecting physical and psychological violence, and discovering the possible aggressors' characteristics [1]. The early identification of abuse situations is rather relevant, as this avoids consequences of greater severity, allowing resolutions and preventing the recurrence of these situations [1,49].

Concerning the identification of mistreatment, dental academics have shown that it is the professional's responsibility to identify and denounce these situations [35-37]. The selected papers observed that most academics could identify situations of child mistreatment, with a response rate of more than 70% [35-37,39].

To identify situations of violence against children and adolescents, characteristic signs and symptoms must be perceived. As for signs of child mistreatment, most dental academics cited physical injuries (bruises, wounds, and body marks) and behavioral modifications [32,41-44]. In the investigations carried out by Al-Jundi et al. [34], Jordan et al. [38], and Bromdulu et al. [45], students demonstrated difficulties in recognizing signs of violence against children. However, in the investigation by Bromdulu et al. [45], the fifth-year academics had better knowledge when compared to third- and fourth-year academics.

About the dental academics' attitude to situations of child abuse and violence, in the paper written by Sousa et al. [37], more than 75.0% of the academics reported that they would know how to handle the maltreatment detection, a similar result was found in the research carried by Matos et al. [40], in which the response rate was more than 75%. Results lower than these were found in other studies, such as approximately 50% [35] and 40% [40].

In Brazil, the Guardianship Council is one of the places where complaints of mistreatment against childhood can be made. From the investigations carried out in that country, Josgrilberg et al. [33] analyzed that more than 85% of the dental undergraduate academics would conduct the situation correctly; outcomes similar to this were found in the analysis of Gomes et al. [35], approximately 80%, Sousa et al. [37], in which more than 75% of the academics who would know how to handle with mistreatment detection, more than 80% of them, would report to the Guardianship Council and Silva Junior et al. [44], around 70%. In the investigations carried out by Matos et al. [40], Wacheski et al. [39], and Serpa and Santos [36], the outcomes found were lower, and the response rate was around 60%.
In the article by Hashim and Al-Ani [41], more than 85% of dental academics know that professionals in Dentistry are legally required to report violence against childhood in the United Arab Emirates. Still, just 36.2% knew where to denounce these situations. More optimistic data were identified in the study by Vergara et al. [42] in Colombia, where more than 95% of academics knew the obligation to communicate suspected abuse, and 73% had knowledge of where to denounced it.

In this context, culture can have a significant influence on the perception and knowledge of dentistry students from North America or Asia, for example, when identifying and approaching child patients who are victims of domestic violence. Attitudes towards child abuse can vary significantly across cultures. In some cultures, physical punishment of children is accepted and even encouraged, while in others, it is strongly condemned. Dentistry students from different cultures may have different levels of awareness about child abuse and may have been exposed to various educational materials regarding the identification and reporting of child abuse [54,55]. In addition, communication style can also be influenced by culture. For example, some cultures highly value indirect communication, while others prefer direct communication. When approaching child patients who may be victims of domestic violence, dentistry students from different cultures may use different communication styles that could impact the patient’s willingness to disclose information about their situation [56,57]. Trust in authority figures can also vary across cultures. In some cultures, there is a high level of trust in law enforcement and other authority figures, while in others, there is a deep mistrust. Dentistry students who come from cultures with low levels of trust in authority figures may be less likely to report suspected child abuse, even if they recognize the signs [58,59]. Finally, cultural attitudes towards domestic violence can impact the willingness of dentistry students to identify and report cases of suspected abuse. In some cultures, there is a significant stigma around domestic violence, and victims may be reluctant to seek help or disclose their situation. Dentistry students who come from cultures with high levels of stigma around domestic violence may be less likely to recognize the signs of abuse or may be hesitant to intervene [60,61].

Concerning the information received in the undergraduate course on violence against childhood, there are many divergences among the articles because of the differences in curriculum among the dentistry schools. In the investigations by Gomes et al. [35] and Silva Junior et al. [44], it was checked that less than half of the academics reported receiving information during the undergraduate course. On the other hand, in the papers written by Sousa et al. [37], around 80%, Matos et al. [40], approximately 60%, Jordan et al. [38], 60%, and Carvalho et al. [32], around 50%, of the academics reported received information during the undergraduate course.

A rather relevant fact to highlight is that in practically all the papers, the academics stated that they wanted to obtain more information and knowledge regarding this subject [32,35-37,44]. The lack of information about infallible abuse in dentists’ training, combined with the desire of scholars to know more about the subject, generates a reflection on the obligatory inclusion of this subject in the dentistry courses’ curricula worldwide. More lectures and workshops concerning childhood mistreatment could be available to every professional to reinforce their knowledge as well as to strengthen their skills when confronted with suspected situations of kid and adolescent mistreatment [49,53]. In the studies included in this systematic review, there were differences in relation to the undergraduate period in which the students were. The studies conducted by Sousa et al. [37] and Duman et al. [50] evaluated only final-year students, but other studies evaluated students from the first graduation level [30,38,43,47]. This point can lead to differences in the perception and knowledge related to child abuse and domestic violence between dentistry students at different stages of their education. Dentistry students who are earlier in their academic formation may have received less training in identifying and reporting...
child abuse and domestic violence compared to students who are further along in their graduate course. In addition, students who are further along in their dental course may have had more exposure to clinical experiences where they have encountered child patients who are victims of domestic violence, which could impact their ability to identify and approach these patients. Furthermore, students who are further along in their formation may be more confident in their ability to recognize signs of child abuse and domestic violence, which could impact their willingness to report suspected cases. Finally, as dental students progress through their education, they may gain a greater understanding of their ethical and legal responsibilities to report suspected cases of child abuse and domestic violence [62-66].

This review has limitations that need to be considered when interpreting the findings of this study. The results of the selected articles are based on descriptive cross-sectional studies considered to be relatively weak evidence. So, future research needs to consider using a more accurate measure to assess the student's knowledge of violence suffered by childhood patients to help better understand the experience of dentistry students and, consequently, improve their learning environment. Besides, the papers show that countries differ in child abuse and neglect definition and management quite significantly, and cultural issues can affect teaching about this problem.

Conclusion

From the articles analyzed all of them showed that undergraduate dentistry students have knowledge regarding the situations of abuse against children and adolescents despite failures in the diagnosis and denunciation. It is concluded that there are deficiencies regarding the syllabus of the undergraduate degree in Dentistry when it comes to information about violence against children worldwide. Dental schools' curricula should be modified to improve education, including a component on recognizing and reporting child maltreatment. Just through knowledge, dentists will be capable of identifying more safely situations suspected of mistreatment and taking the necessary steps to conduct them. It is essential to produce more on the subject so that this knowledge can contribute to changing this reality.

Authors' Contributions

IAS Conceptualization, Methodology, Software, Validation, Formal Analysis, Investigation, Data Curation and Writing - Original Draft.

LMP Methodology, Software, Formal Analysis, Investigation, Data Curation and Writing - Original Draft.

LDC Conceptualization, Data Curation and Supervision.

MSA Conceptualization, Supervision and Project Administration.

RGL Conceptualization, Writing - Review and Editing, Supervision and Project Administration.

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Conflict of Interest

The authors declare no conflicts of interest.

Data Availability

The data used to support the findings of this study can be made available upon request to the corresponding author.

References


