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REVIEW ARTICLE

Domestic Violence against Women Detected and Managed in Dental Practice: a Systematic Review

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Abstract

This study aimed to investigate the knowledge of dental care professionals to identify and manage clinical situations that indicate violence against women. PRISMA guidelines were followed and a systematic review protocol was registered in PROSPERO. The systematic search was designed based on the PICo strategy. Six databases were used as primary research sources (PubMed, Scopus, LILACS, SciELO, Web of Science, and Embase). Three databases (OpenGrey, OpenThesis, and OATD) were used to detect the "grey literature". Observational studies (cross-sectional, cohort, or case-control) were included, and there were no restrictions of year or language of publication. Two authors selected and extracted the data from the eligible studies. The risk of bias was assessed with the JBI Critical Appraisal Checklist. The search resulted in 10,115 studies. Eleven met the eligibility criteria and were included in the qualitative synthesis. The studies were published from 1994 to 2018. All studies presented low risk of bias. Among the dental care professionals, only 1-7.1% of the dentists included injury search and examination of their patients for signs of violence. Less than 47% of the professionals had knowledge to identify violence injuries. When it comes to knowledge to identify signs of domestic violence, positive answers were below 24%. Considering all the variables assessed in this study, dental care professionals presented deficiencies regarding the knowledge and management of situations of domestic violence against women. Educational strategies are necessary to prepare dental care professional to identify and report suspicious cases.

Keywords COVID-19 · Domestic violence · Intimate partner violence · Forensic dentistry

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Introduction

In the World Report on Violence and Health (WRVH), the World Health Organization (WHO) defined 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, maldevelopment, or deprivation*" (WHO, 1996). From the environmental perspective, interpersonal violence may involve family or community. Family violence may target children, intimate partners, and the elderly. Among intimate partners, women are more susceptible and more frequently victimized (Krug et al., 2002).

Violence against women is defined by the United Nations as "*any act of gender-based violence that results in, or is likely to result in, physical, sexual, or mental harm or suffering to women, including threats of such acts, coercion or arbitrary deprivation of liberty, whether occurring in public or in private life*" (OHCHR, 1993). Epidemiological investigations reveal that up to 35% of women worldwide will experience gender-based violence (Flury et al., 2010). Similarly, WHO specifies that nearly 30% of women will face physical or sexual violence in their lives (WHO, 2018).

Regarding the current global situation, COVID-19 pandemic negatively affected the exposure of women to domestic violence. Consequently, an increased number of reports was detected (Moreira & Costa, 2020). Investigations have indicated a major vulnerability of women to interpersonal violence in periods of lockdown and social distancing (Sánchez et al., 2020). Other authors, however, detected a decreased number of reports from victim assistance programs (Barbara et al., 2020). At first, this phenomenon could have a positive interpretation, but it also means that women are more restricted in the process of reporting violence experienced in the domestic environment. In practice, the pandemic restrictions highlighted the need for new protection strategies for women, such as applications (apps) to enable on-line reports. A recent example of tool dedicated to protecting women is the FollowIt™ app (Scottish Women's Rights Centre, Glasgow, UK) – an initiative of Rape Crisis Scotland and Media co-op. The software is not necessarily designed for domestic violence but works on-line on the protection of women that experienced stalking. While on-line reporting is under construction, violence continues - highlighting the importance of constant surveillance.

In this context, some authors claim that health care professionals have a determinant role in the identification and management of cases of violence against women (Barbara et al., 2020). An open question in this scenario is whether dental care professionals are aware and prepared to identify and manage cases of domestic violence against female patients. Therefore, a systematic literature review was designed to assess the knowledge and attitudes of dental care professionals regarding cases of violence against women.

Methods

Protocol Registration

The research protocol was prepared according to the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) (Shamseer et al., 2015) and registered at the International Prospective Register of Systematic Reviews (PROSPERO) database, under number *CRD42020198305* (http://www.crd.york.ac.uk/PROSPERO). This systematic review was reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Page et al., 2021) and conducted according to the Joanna Briggs Institute (JBI) manual (Aromataris & Munn, 2020).

Research Question and Eligibility Criteria

This systematic review aimed to answer the following guiding question, based on the PICo acronym (Population, Interest, and Context): What is the educational background, management, perception, knowledge level, and attitude of dental care professionals regarding domestic violence against women?

Inclusion criteria.
Population: Dental care professionals of both sexes, regardless of the level of education and degree of professional training;
Interest: Educational background, management, perception, knowledge level, and attitude;
Context: Domestic violence against women;
Study design: Observational studies (cross-sectional, cohort, or case-control).
There were no restrictions on the language or year of publication.

Exclusion criteria.
Studies using secondary databases;
Surveys without specific questions on violence against women;
Studies that assessed health care professionals other than dental care related;

Studies that did not separate the results of dental care professionals from other health care professionals;
Solely qualitative studies.

Sources of Information, Search, and Selection of Studies

The electronic search was performed in MedLine/PubMed, Scopus, LILACS, SciELO, Embase, and Web of Science databases. The OpenGrey, OpenThesis, and OATD databases were used to partially capture the "grey literature". Medical Subject Headings (MeSH), Health Sciences Descriptors (DeCS), and Embase Subject Headings (Emtree) were used to select the search descriptors. Additionally, synonyms and free words were used to improve the search. The Boolean operators "AND" and "OR" were used to connect terms. Table 1 shows the search strategies used in each database (strategies were adapted to each database, following their syntax and system). The bibliographical search ended in October 2020. The search results were exported to EndNote Web™ software (Thomson Reuters, Toronto, Canada) in order to exclude duplicates and enable better organization. The grey literature was exported to Microsoft Word (Microsoft™, Ltd., Washington, USA) for manual removal of duplicates.

Before study selection, a calibration exercise was performed, in which the examiners discussed the eligibility criteria and applied them to a sample of 20% of the studies to

Table 1 Strategies for database search

Database	Search Strategy (October, 2020)
PubMed http://www.ncbi.nlm.nih.gov/pubmed	(("Perception" OR "Attitude" OR "Management" OR "Diagnosis" OR "Knowledge" OR "Attention" OR "Sensation") AND ("Violence" OR "Domestic violence" OR "Intrafamily violence" OR "Intimate partner violence" OR "Intimate" OR "Partner") AND ("Female" OR "Woman" OR "Women") AND ("Dentist" OR "Dentistry" OR "Health Personnel" OR "Health Care Providers" OR "Health Care Provider"))
Scopus http://www.scopus.com	(("Perception" OR "Attitude" OR "Management") AND ("Violence" OR "Domestic violence" OR "Intrafamily violence") AND ("Female") AND ("Dentist" OR "Dentistry" OR "Health Personnel"))
	(("Diagnosis" OR "Knowledge" OR "Attention" OR "Sensation") AND ("Intimate partner violence" OR "Intimate" OR "Partner") AND ("Woman" OR "Women") AND ("Health Care Providers" OR "Health Care Provider" OR "Dentist"))
LILACS http://lilacs.bvsalud.org/	("Perception" OR "Attitude" OR "Management" OR "Diagnosis" OR "Knowledge" OR "Attention" OR "Sensation") AND ("Violence" OR "Domestic violence" OR "Intrafamily violence" OR "Intimate partner violence" OR "Intimate" OR "Partner")
SciELO http://www.scielo.org/	("Perception" OR "Attitude" OR "Management" OR "Diagnosis" OR "Knowledge" OR "Attention" OR "Sensation") AND ("Violence" OR "Domestic violence" OR "Intrafamily violence" OR "Intimate partner violence" OR "Intimate" OR "Partner")
Embase http://www.embase.com	('perception' OR 'attitude' OR 'management' OR 'diagnosis' OR 'knowledge' OR 'attention' OR 'sensation') AND ('violence' OR 'domestic violence' OR 'intrafamily violence' OR 'intimate partner violence' OR 'intimate' OR 'partner') AND ('female' OR 'woman' OR 'women') AND ('dentist' OR 'dentistry' OR 'health personnel' OR 'health care providers' OR 'health care provider')
Web of Science http://apps.webofknowledge.com/	(("Perception" OR "Attitude" OR "Management" OR "Diagnosis" OR "Knowledge" OR "Attention" OR "Sensation") AND ("Violence" OR "Domestic violence" OR "Intrafamily violence" OR "Intimate partner violence" OR "Intimate" OR "Partner") AND ("Female" OR "Woman" OR "Women") AND ("Dentist" OR "Dentistry" OR "Health Personnel" OR "Health Care Providers" OR "Health Care Provider"))
OpenGrey http://www.opengrey.eu/	(("Perception" OR "Attitude" OR "Management" OR "Diagnosis" OR "Knowledge" OR "Attention" OR "Sensation") AND ("Violence" OR "Domestic violence" OR "Intrafamily violence" OR "Intimate partner violence" OR "Intimate" OR "Partner") AND ("Female" OR "Woman" OR "Women") AND ("Dentist" OR "Dentistry" OR "Health Personnel" OR "Health Care Providers" OR "Health Care Provider"))
OpenThesis http://www.openthesis.org/	(("Perception" OR "Attitude" OR "Management" OR "Diagnosis" OR "Knowledge" OR "Attention" OR "Sensation") AND ("Violence" OR "Domestic violence" OR "Intrafamily violence" OR "Intimate partner violence" OR "Intimate" OR "Partner") AND ("Female" OR "Woman" OR "Women") AND ("Dentist" OR "Dentistry" OR "Health Personnel" OR "Health Care Providers" OR "Health Care Provider"))
Open Access Theses and Dissertations (OATD) https://oatd.org/	(("Perception" OR "Attitude" OR "Management" OR "Diagnosis" OR "Knowledge" OR "Attention" OR "Sensation") AND ("Violence" OR "Domestic violence" OR "Intrafamily violence" OR "Intimate partner violence" OR "Intimate" OR "Partner") AND ("Female" OR "Woman" OR "Women") AND ("Dentist" OR "Dentistry" OR "Health Personnel" OR "Health Care Providers" OR "Health Care Provider"))

determine inter-examiner agreement. Examiners were considered eligible for the subsequent phase only after reaching an agreement of Kappa ≥0.81.

The results were exported to Rayyan software (Qatar Computing Research Institute - QCRI, Doha, Qatar). Title and abstract reading were performed within the software. Studies that did not fit to the research topic were excluded (first exclusion phase). In the second phase, the eligible studies underwent full-text reading to verify whether they met the eligibility criteria. The studies excluded in this phase were stored separately with the reasons for their exclusion. When the full texts were not available, a bibliographic request was performed to the institutional library and e-mails were sent to the corresponding authors. All phases were performed independently by two reviewers, and in case of doubt or disagreement, a third reviewer was consulted to make a final decision.

Data Collection

Before data extraction, to ensure consistency between the reviewers, a calibration exercise was performed between them, in which information was extracted jointly from an eligible study. Any disagreement between the examiners was settled with discussion and with the aid of a third examiner.

The following information was extracted from the studies: study identification (author, year and country of publication), sample characteristics (sample size, sex distribution, and average work experience), data collection and processing aspects (e.g. collection method: survey or interview), and main outcomes (quantity of professionals who reported educational background on the topic, quantity of professionals who included the search of signs of domestic violence during their clinical routine, quantity of professionals who reported knowledge to identify signs of violence against women, quantity of professionals who reported knowledge to manage suspicious cases of domestic violence, and the main attitudes of the dental care professionals in these cases. In case of doubt or lack of information in the eligible studies, the corresponding authors were contacted via e-mail. Up to three tentative e-mails were sent.

Risk of Bias Assessment

To analyze the risk of bias and individual methodological quality of the eligible studies, the JBI Critical Appraisal Checklist (Moola et al., 2020) was used. Two reviewers assessed independently each domain regarding the potential risk of bias - as recommended by the PRISMA statement (Page et al., 2021). Each study was categorized according to the percentage of positive answers to the questions provided within the assessment tool. The risk of bias was considered High when the study obtained 49% of "yes" answers, Moderate when the study obtained 50% to 69% of "yes" answers, and Low when the study reached more than 70% of "yes" answers.

Summary of Measurements and Synthesis of Results

The results were presented narratively/descriptively and analyzing the methodological heterogeneity of the eligible studies. Absolute (n) and relative (%) values were collected from each study, especially for participant's educational background, and their management, perception, knowledge, and attitudes in case of violence against women.

Results

Study Selection

During the first phase of study selection, 10,115 results were found. After removing duplicates, 6800 results remained for title and abstract reading-. In total, 6719 exclusions were performed. From the 81 studies that remained for full-text reading three were not retrieved, and 67 were excluded (reasons for exclusion were registered in Online Resource 1). Finally, 11 studies (Carvalho et al., 2013; Chiodo et al., 1994; Danley et al., 2004; Drigeard et al., 2012; Goff et al., 2001; Harris et al., 2016; Hsieh et al., 2006; Lea et al., 2016; Love et al., 2001; McDowell et al., 1994; Parish et al., 2018) were included in the qualitative analysis. Figure 1 represents the flowchart of the study selection procces.

Study Characteristics

The studies were published between 1994 and 2018 and were performed in four different countries: eight studies in the United States (Chiodo et al., 1994; Danley et al., 2004; Goff et al., 2001; Harris et al., 2016; Hsieh et al., 2006; Love et al., 2001; McDowell et al., 1994; Parish et al., 2018), one in Brazil (Carvalho et al., 2013), one in the United Kingdom (Lea et al., 2016), and one in France (Drigeard et al., 2012). Nine studies (Danley et al., 2004; Drigeard et al., 2012; Goff et al., 2001; Harris et al., 2016; Hsieh et al., 2006; Lea et al., 2016; Love et al., 2001; McDowell et al., 1994; Parish et al., 2018) collected data exclusively from surveys, while one study applied surveys and in-person interviews (Carvalho et al., 2013). One study collected data with surveys and via phone interview (Chiodo et al., 1994). Four studies did not report ethical aspects/criteria (Danley et al., 2004; Lea et al., 2016; Love et al., 2001; McDowell et al., 1994). None of the studies followed the STROBE (von Elm et al., 2008) guidelines for observational studies. Six studies (Carvalho et al., 2013; Drigeard et al., 2012; Hsieh et al., 2006; Love et al., 2001; McDowell et al., 1994; Parish et al., 2018) applied

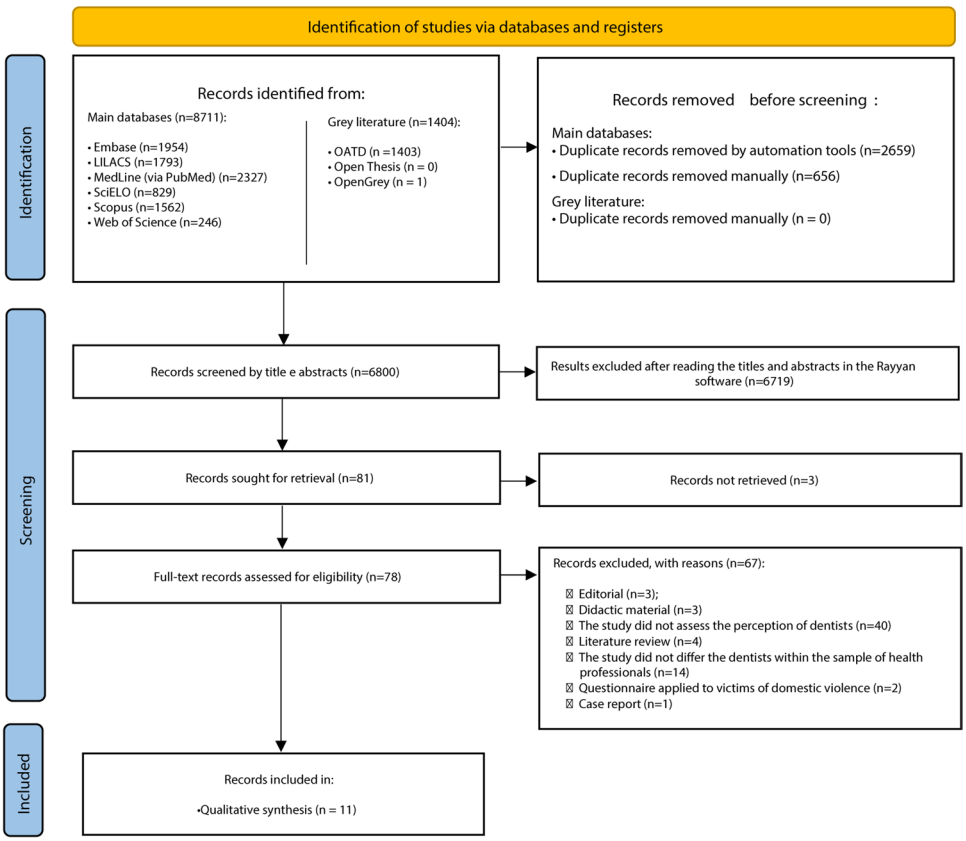

Fig. 1 Flowchart of the selection process, according to PRISMA

surveys exclusively to dentists, two studies applied surveys to dentists and dental hygienists (Chiodo et al., 1994; Harris et al., 2016), one study assessed dentists and dental students (Danley et al., 2004), one study assessed only dental students (Lea et al., 2016), and one study assessed dentists, physicians, and nurses (Chiodo et al., 1994). Seven studies (Danley et al., 2004; Goff et al., 2001; Harris et al., 2016; Hsieh et al., 2006; Lea et al., 2016; Love et al., 2001; Parish et al., 2018) assessed violence exclusively against female partners, while four studies (Carvalho et al., 2013; Chiodo et al., 1994; Drigeard et al., 2012; McDowell et al., 1994;) assessed domestic violence against female partners, children, or the elderly.

Among the studies that reported the number of participants included, the sum of samples resulted in 3780 participants (21.97% females, 77.65% males, and 0.47% of individuals that did not report sex). Three studies investigated the specialized field of the involved dental care professionals (Chiodo et al., 1994; Harris et al., 2016; McDowell et al., 1994). In these studies, the combined sample was 775 participants, from which 77.41% weregeneral practitioners, 7.09% were orthodontists, 3.74% were pediatric dentists, 2.7% were periodontologists, 2.45% were maxillofacial surgeons, 2.06% were public health specialists, 1.16% were endodontists, and 0.51% were dental prothodontists. The remaining 2.83% did not reported their specialty or reported a field that was different from the above. Table 2 shows the main characteristics of the eligible studies.

Assessment of the Risk of Bias of the Studies

All the 11 studies were classified as a low risk of bias. Question 1 (referring to the eligibility criteria used in the sampling process) presented negative answers in five studies (Chiodo et al., 1994; Drigeard et al., 2012; Goff et al., 2001; Love et al., 2001; McDowell et al., 1994). This answer is important because it predicts sample standardization to decrease the risk of bias. Questions 5 and 6 were considered not applicable for all the studies because the questions refer to the confounding factors, which are applicable only in study models that include intervention or exposure. All the other questions presented positive answers. Table 3 shows the outcomes of the assessment of the risk of bias.

Results of Individual Studies

Seven studies (Carvalho et al., 2013; Chiodo et al., 1994; Goff et al., 2001; Harris et al., 2016; Love et al., 2001; McDowell et al., 1994; Parish et al., 2018) revealed the percentage of professionals who reported knowledge to identify signs of domestic violence. Six studies (Carvalho et al., 2013; Danley et al., 2004; Harris et al., 2016; Lea

Table 2 Summary of the main characteristics of the eligible studies

Author	Country	Sample	Age	Sex	Work time	Method
Chiodo et al., 1994	United States	250	Between 28 and 47 years old	92% m 8% f	Average year of graduation: 1973	PQ / PI
McDowell et al., 1994	United States	407	Between 25 and 73 years old	90% m 7% f 3% did not identify	Graduated between 1942 and 1991	PQ
Goff et al., 2001	United States	170	µ	92% m 8% f	Does not provide data only for dentists, but for the overall sample (16.7 years)	PQ
Love et al., 2001	United States	321	Up to 39 years old (28%); between 40 and 49 (36%); between 50 and 59 (25%); over 60 years old (12%)	91% m 9% f	Graduated until 1969 (24%); between 1970 and 1979 (33%); between 1980 and 1989 (32%); after 1990 (11%)	PQ
Danley et al., 2004	United States	174	µ	52% m 48% f	Dental students at last two years of graduation	PQ
Hsieh et al., 2006	United States	174	µ	60% m 40% f	It was not considered statistically significant, so it did not present the data	PQ
Drigeard et al., 2012	France	228	µ	57.9% m 42.1% f	Graduated between 1961 and 1969 (0.9%); between 1970 and 1979 (25.9%); between 1980 and 1989 (36.8%); between 1990 and 1999 (22.4%); between 2000 and 2007 (13.2%)	PQ
Carvalho et al., 2013	Brazil	80	µ	47.5% m 52.5% f	Graduated for at least one year	PQ
Harris et al., 2016	United States	117	Between 25 and 64 years old	20% m 79% f 1% t	Average of 19 years working	PQ
Lea et al., 2017	United Kingdom	57	µ	µ	Only dental students, with time of graduation not specified	PQ
Parish et al., 2018	United States	1802	Between 25 and 43 years old (24.4%); between 44 and 52 (22.6%); between 53 and 59 (25.6%); between 60 and 99 (27.4%)	78.3% m 21.7% f	Graduated before1970 (7.3%); between 1970 and 1979 (25%); between 1980 and 1989 (33.6%); between 1990 and 1999 (17.5%); after 2000 (16.6%)	PQ / TQ

m- Male sex; f- Female sex; t- Transgender; µ- Information not related on the study; Methods for questionnaire application: PQ- Postal Questionnaire; PI- Personal Interview; TQ- Telephone Questionnaire

Table 3 Risk of bias assessed by the Joanna Briggs Institute Critical Appraisal Tools for use in JBI Critical Appraisal Checklist for Analytical Cross Sectional Studies

Authors	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	% Yes	Risk
Chiodo et al., 1994	–	√	√	√	NA	NA	√	√	83.3	Low
McDowell et al., 1994	–	√	√	√	NA	NA	√	√	83.3	Low
Goff et al., 2001	–	√	√	√	NA	NA	√	√	83.3	Low
Love et al., 2001	–	√	√	√	NA	NA	√	√	83.3	Low
Danley et al., 2004	√	√	√	√	NA	NA	√	√	100	Low
Hsieh et al., 2006	√	√	√	√	NA	NA	√	√	100	Low
Driegard et al. 2012	–	√	√	√	NA	NA	√	√	83.3	Low
Carvalho et al., 2013	√	√	√	√	NA	NA	√	√	100	Low
Harris et al., 2016	√	√	√	√	NA	NA	√	√	100	Low
Lea et al., 2017	√	√	√	√	NA	NA	√	√	100	Low
Parrish et al. 2018	√	√	√	√	NA	NA	√	√	100	Low

Q1- Were the criteria for inclusion in the sample clearly defined?; Q2- Were the study subjects and the setting described in detail?; Q3- Was the exposure measured in a valid and reliable way?; Q4- Were objective and standard criteria used for measuring the condition?; Q5- Were confounding factors identified?; Q6- Were strategies to deal with confounding factors stated?; Q7- Were the outcomes measured in a valid and reliable way?; Q8- Was appropriate statistical analysis used? Yes (√); No (−-); Not Applicable (NA)

et al., 2016; Love et al., 2001; McDowell et al., 1994) investigated whether the professionals could identify injuries that could indicate violence against women. Seven studies (Carvalho et al., 2013; Chiodo et al., 1994; Danley et al., 2004; Goff et al., 2001; Lea et al., 2016; Love et al., 2001; Parish et al., 2018) assessed whether dental care professionals had received an educational background on violence at any academic stage. Three studies (Goff et al., 2001; Love et al., 2001; Parish et al., 2018) questioned whether professionals exam their patients during routine appointments in order to look for signs of violence. Two studies (McDowell et al., 1994; Harris et al., 2016) questioned whether dental care professionals would know the procedure in case of finding signs of domestic violence (Table 4). In two studies (Carvalho et al., 2013; Harris et al., 2016), the results were displayed in graphs and the values were extracted using Adobe Photoshop (Adobe Systems, California, United States).

Three studies (Carvalho et al., 2013; Love et al., 2001; McDowell et al., 1994) provided the answers from dental care professionals about their attitudes in suspicious cases of violence against women. McDowell et al. (1994) suggested that 3% of the participants reported cases of suspected domestic violence to the authorities. Among the reasons behind professional omission in suspecious cases of violence were: the lack of knowledge about patient's medical history (37%) and lack of knowledge on violence (33%). Love et al. (2001) indicated that 64% of the participants would register their personal observations as notes on patients' records and would request clinical follow-up. Moreover, 54% of the participants would talk to the patient about the alleged problem. Regarding the attitudes in practice, 10% would report to the police, 29% would provide information from victim assistance services, and 13% would arrange for patient safety. Carvalho et al. (2013) showed that the main attitude of dental care professionals (37-40%) in public and private practices/services would communicate suspicious cases to the competent authorities. Other attitudes included talking to the patient or to the partner. Specifically in the private services, 7.1% of the participants said they would ignore a suspicious case (justifying that it was not their concern). In the public dental practice, omission reached 4.2%.

Chiodo et al. (1994) provided percentages of dentists (41.6%) and dental hygienists (40.9%) that reported any educational background on family violence. The authors observed that only 22.4% of the dentists and 21.9% of the dental hygienists had background knowledge on the reporting procedures. Additionally, only a restricted number (<22%) of dental care professional reported being aware of the types of violence and legal aspects behind suspicious cases.

In the study by Goff et al. (2001), education background was measured on a scale of 2–20, in which 2 represented no education at all about domestic violence. Participants' mean score was 5.9 - indicating little education or information on the topic. The study also revealed that only 2.7% of the participants performed clinical examination to search for potential signs of domestic abuse.

Danley et al. (2004) randomly assigned dentists and dental students to one of the following groups: a control group that answered two surveys without technical instructions about domestic violence; an experimental group that answered surveys before and after instructions the about violence; and an experimental group that answered to a survey only after the instructions. The technical instructions had a positive influence because participants in both experimental groups showed significantly higher scores of knowledge to identify injuries suggestive of domestic violence.

Table 4 Summary of the main results of eligible studies

Author	Question	Knowledge of reporting requirements (%)	Screening for injuries (%)	Perception of physical indicators (%)	Educational background (%)
Chiodo et al., 1994	Dentists reporting educational background in family violence issues. - Physical indicators	–	–	41.6	–
	Dentists reporting educational background in family violence issues. - Spouse abuse	–	–	–	15
McDowell et al., 1994	No knowledge of mechanism for reporting spouse abuse (Negative answers)	24	–	–	–
	Knowledge of relationship of head and neck injury to potential abuse – Spouse abuse	–	–	10.3	–
Goff et al., 2001	Questions are part of routine examination	–	2.7	–	–
Love et al., 2001	Screened for domestic violence at checkups – Often or always	–	1	–	–
	Screened for domestic violence when head or neck injury – Often or always	–	–	39	–
	Domestic violence education - Neither in dental school nor in continuing education (Negative answers)	–	–	–	43
Danley et al., 2004	Knowledge about role in recognizing domestic violence?	–	–	–	–
Carvalho et al., 2013	Instructions about domestic violence in undergraduate and/or graduate studies – professional was instructed and participated in the classes on the topic	–	–	–	5.1 (Public health system) 7.2 (Private clinics)
	Training for diagnosing signs of domestic violence	–	–	47.2 (Public health system) 37.1 (Private clinics)	–
Harris et al., 2016	Fulfill state reporting requirements for intimate partner violence (IPV) – Well prepared or quite well prepared	22.7	–	–	–
	Identify IPV indicators based on patient history and physical examination - Well prepared or quite well prepared			25.6	
Lea et al., 2017	How sufficient is the domestic violence content in current dental curricula	--	--	--	33
	How likely is the dentist able to recognize domestic violence-related injury	--	--	16	--
Parish et al., 2018	Patient history form includes question about IPV	–	7.1	–	–
	Amount of training in IPV – None (Negative answers)	–	–	–	46.8

-- - not reported

Hsieh et al. (2006) performed a controlled cross-sectional study in which one group answered to a survey, watched tutorial instructions on how to approach cases of domestic violence, and then answered another survey. The control group also answered to both surveys but without watching the instructions. The participants of the study confirmed that the instructions were effective to guide their actions in situations of domestic violence. The answers to the surveys were provided on a quantitative (likert-like) scale from 1 to 7, in which 1 was "strongly disagree" and 7 "strongly agree". Dental care professionals scored the highest values for the following sentences: "I would document the abuse in the patient's chart" (mean score = 4.2 ± 0.1), followed by "I would offer referral sources for domestic violence" (mean score = 3.8 ± 0.1).

The study by Drigeard et al. (2012) applied a comprehensive survey on domestic violence without reporting descriptive data for the identification of injuries, background education, and attitudes in situations of violence against women. However, the study showed that most of the participants (54%) suspected of cases of violence against women (female patients).

Harris et al. (2016) showed that 22.7% of the participants (dentists and dental hygienists) knew the requirements to report intimate partner violence (these professional were self-classified as well prepared or quite well prepared). Additionally, 25.6% of the participants would be able to identify intimate partner violence indicators based on patient's history and physical examination.

Lea et al. (2016) carried out a survey with dental students and assessed their knowledge to identify injuries related to domestic violence.the study showed that 16% of the participants were "very likely" able to recognise these signs). The participants (33%) also pointed out that domestic violence is not sufficiently provided in current academic curricula.

Parish et al. (2018) revealed that only 7.1% of the participants included a question in the anamnesis (patient history form) to screen potential intimate partner violence. Most of the dental care professionals also did not know where to refer patients experiencing intimate partner violence, and did not believe that screening signs of violence should be part of their job. In the same study, 40.86% of the participants received educational background on violence.

Discussion

Health care professionals play an important part in the detection and management of patients under veiled violence. Dental care professionals, in specific, work in close contact with the head and neck of their patients. The scientific literature highlights the role of dental care professionals to identify signs of violence against vulnerable individuals, such as children (Rodrigues et al., 2016) and the elderly (Rodrigues et al., 2017; Silva et al., 2017). Interpersonal violence in the domestic environment (re)entered the spotlight of public health sciences with the ongoing COVID-19 pandemic. In this context, women emerge as vulnerable victims of intimate partner violence. It is estimated that violence against women (physical, sexual, or psychological) is an underreported crime. Consequently, with the progressive return of regular dental activities and the decreasing incidence of new cases of COVID-19, female patients that were constantly exposed to violence at home will gradually return for dental appointments with potentially detectable signs of violence. This study investigated the scientific literature on violence against women to find out whether dental care professionals are aware of the proper identification and management of cases of domestic violence against women.

When it comes to the discussion of methods, a systematic literature review was justified based on a preliminary search (and acquired knowledge) of existing original studies in the field. To cover the broad spectrum of violence and retrieve only the original observational studies related to violence against women, a strategic search was performed. Out of the initial sample of 10,115 studies, only 0.08% (n = 11) were eligible. The strategic search combined evidence on the awareness (identification) and attitudes (management) of dental care professionals related to violence against women. From a deeper methodological perspective, it must be noted that all the eligible studies were observational but none of them followed the STROBE (von Elm et al., 2008) guidelines (or any other EQUATOR-like standards). This particular issue was previously raised by the scientific literature (Franco et al., 2020) and has a direct and negative impact on data standardization. Consequently, meta-analysis are hampered giventhe lack of uniform methods and outcomes (affecting heterogeneity).

The outcomes of the present research showed that the sample of dental care professionals across studies (n = 3780) consisted mostly of men (≈77%) and general practitioners (≈77%). This interesting phenomenon could highlight the behavior (including empathy or not) of male dental care professionals regarding violent situations experienced or reported by female patients. Overall, the outcomes revealed that dental care professionals lack knowledge and feel the need to be properly trained on the topic.. In general, violence against women is not addressed in the dental and dental hygiene curricula worldwide. Public health and forensic dentistry are some of the fields that usually approach the topic at undergraduate level. At higher levels (e.g. specialization or Masters), the topic may be addressed more specifically depending on the course. Specialized training programmes in public health, for instance, have strategies dedicated to managing populations in vulnerable conditions, such as women experiencing domestic violence. In

Brazil, a non-governmental organization named "*Apôlonias do Bem*" combines the efforts of nearly 2000 dental care professionals to treat women affected by domestic violence. Since 2012, over 1000 women were treated with the most diverse dental care, especially oral rehabilitation with implants (https://www.uol.com.br/universa). Between 2007 and 2017, homicides (the most extreme side of violence against women) increased 1.7 and 60% for Brazilian white and black women, respectively (Cerqueira et al., 2020). The alarming rates illustrate a potential profile of the victims of violence to be found in dental practice. Recently, legal strategies, such as the Maria da Penha Law (a particular regulation of gender-based violence advocated by feminist organizations in Brazil (Ávila, 2018)) and the femicide Law n. 13.104/2015 (Messias et al., 2019), were triggered. Additionally, violence also targets more frequently women with a low level of education, income, and socioeconomic status (Figueroa et al., 2004). Based on the information exposed in the present study, educational strategies must be developed to enable the training of undergraduate and graduate students to identify signs of violence against female patients.

The scientific literature also provides evidence of the anatomic locations more frequently involved in injuries against women (Orchs et al., 1996). In 2009, Brink found neck injuries to be more associated with female victims of violence compared to males. The head and neck are anatomic regions related to the dental practice. In this context, the clinical examination must be highlighted as a two-step procedure: physical examination and anamnesis (Nieschlag et al., 2010). In both procedures, violence can be screened – in the former by a visual inspection of the head and neck and the latter by registering patient's medical history on their records.

While dental care professionals are not ideally prepared to identify signs of injury, some of them take action to manage suspicious cases in the dental office. Love et al. (2001) observed that 54% of dental care professionals would talk to the patient to share their concern regarding the alleged signs of violence. Informing the patient about protection services was reported by 29% of dental care professionals in the same study. In the study by Carvalho et al. (2013), over 40% of dental care professionals would report to the authorities. Talking about the situation could be dangerous if the offender is involved in the process. Retaliations could be expected in these circumstances, making the victims even more exposed to violence at home. In, Herman's (1998) model of recovery from trauma, establishing a safe environment is the first step to approach the victim. Prioritizing the victim a traumatic event (violence) is an act of empathy and must be followed to prevent the situation from worsening. Violence against women is a violation of human rights and the response of dental care professionals to it must consider the importance and impact of their attitudes in the lives of the victims. In Brazil, reporting domestic violence is mandatory for health care providers. More specifically, the Code of Dental Ethics allows professionals to break professional secrecy in cases of patients experiencing domestic violence (CFO, 2012). In this scenario, Brazilian professionals are not only obliged to report violence against women but are also encouraged to do it under the safety of ethics. Depending on the country and jurisdiction, telephone numbers are available to report suspicious cases, as well as websites. Rape Crisis Scotland (https://www.rapecrisisscotland.org.uk/), for instance, offers helplines dedicated to support victims of sexual violence. Given the differences between jurisdictions about the procedures to report domestic violence, evidence-based studies (e.g. in form of systematic reviews), could be useful to support the development of country-specific reporting strategies.

The combination of training for dental care professionals and strategies to support the process of assertive reporting is the ideal set up to promote optimal involvement of dental care professionals in the protection of female patients. This study screened the available literature on the topic and detected as limitations the lack of standard research models (methods) and report (outcomes), and three full-texts that were not detected. Regarding research models, studies in the field should benefit from guidelines on research methodology as an effort to aid the process of data analysis in future evidence-based reviews.. Regarding the missing full-texts, this is a common occurrence in evidence based reviews (systematic or scoping) as well, especially if the studies were not published recently. To overcome this limitation, e-mails were sent up to three times to the corresponding authors of the missing full-texts (with no success). It is also a common practice in systematic and scoping reviews the update of evidence when the literature is revisited in the future – this will be the opportunity to try subsequent contact with authors and to analyze potentially eligible full-texts. Finally, when it comes to future studies in gender-based violence and the role of dental care professional, authors should consider the evolving awereness of the gender science and the possibility of contributing to the scarce dental literature behind the LGBTQ+ patients.

Conclusions

This review identified eleven eligible studies out of 10,115 initial entries. The screened methodological designs were considerably different among studies, but overall low risk of bias was detected. Dental care professionals showed restrictions on their knowledge of domestic violence against women, as a potential result of the lack of education/training in the field. When faced with suspicious/confirmed cases of domestic violence against women, dental care professionals

would talk to the patient or report it. In practice, reporting violence against women is mandatory in several countries and, depending on the jurisdiction, it justifies the breach of professional secrecy. Violence against women is a violation of human rights and dental care professionals must be able to identify signs of violence and to report properly. Educational training strategies in the field are encouraged.

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Declarations

Conflict of Interest The authors have no conflicts of interest to disclose.

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