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Dentists' intention to report suspected violence: a cross sectional study in eight Arab countries

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3 **1 Dentists' intention to report suspected violence: a cross sectional study in eight Arab**
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5 **2 countries**

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1
2
3 31 **Abstract**

4
5 32 **Objectives**

6
7 33 This study assessed the intention of dentists in eight Arab countries to report suspected
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9 34 exposure to violence among their patients and factors associated with this intention based on
10
11 35 the theory of planned behavior.

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13 36 **Methods**

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15 37 A cross sectional study was conducted in 2016 including dentists practicing in public, private
16
17 38 and academic sectors in Algeria, Egypt, Jordan, Kuwait, Libya, Palestine, Saudi Arabia and
18
19 39 Yemen. Respondents were selected using a convenience sample. They answered a self-
20
21 40 administered questionnaire that collected information about personal and professional
22
23 41 background and perceived ability to identify victims of violence. The questionnaire also
24
25 42 assessed (on a scale from 1 to 10 using 6 negative statements) dentists' perception of
26
27 43 healthcare system mandated reporting of suspected violence. Six other statements were used
28
29 44 to assess professional attitude toward reporting suspected violence. Logistic regression
30
31 45 analysis was used to assess the association between intention to report suspected violence and
32
33 46 perceived ability, perception and attitude adjusting for confounders.

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35 47 **Results**

36
37 48 The response rate was 65.2% (n= 2,936) with 68.8% intending to report and 52.2%
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39 49 considering themselves able to identify victims of violence. The mean (SD) negative
40
41 50 perception score= 5.3 (2.1) and the mean (SD) professional attitude score= 7.5 (1.9). In
42
43 51 multivariate regression, intention to report was associated with professional attitude (OR=
44
45 52 1.08, 95%CI= 1.03, 1.14), ability to identify violence victims (OR= 1.76, 95%CI=1.45, 2.12)
46
47 53 and negative perception that reporting is not mandated (OR= 0.89, 95%CI=0.85, 0.94).
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49 54 Significant differences existed between countries in intention to report.

50
51 55 **Conclusion**

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3 56 Most dentists intended to report suspected violence and their intention could be explained by
4
5 57 the theory of planned behavior which offers a framework for professional development so that
6
7 58 dentists can support victims of violence. Sharing of training resources, policies and guidelines
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9 59 is needed to ensure that practices similar to international guidelines are consistently adopted
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11 60 by dentists across Arab countries.
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3 61 **Strengths and limitations**
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- 5 62 • We included dentists from eight Arab countries which increases the geographic
6
7 63 representativeness of our findings and fills a knowledge gap about the intended
8
9 64 practices of dentists in this region.
10
11 65 • The theory of planned behavior provides a frame to explain the intention to report and
12
13 66 helps in planning professional development activities to better prepare dentists to help
14
15 67 their patients.
16
17 68 • Social desirability might have affected our estimates of dentists' intention to report
18
19 69 suspected violence.
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21 70 • Dentists in private practice were under represented compared to dentists from the
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23 71 public and academic sectors.
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29 73 **Funding statement**
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31 74 This research received no specific grant from any funding agency in the public,
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33 75 commercial or not-for-profit sectors.
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37 77 **Competing interest statement**
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39 78 None declared.
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44 80 **Data sharing statement**
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46 81 The dataset will be made available from the corresponding author.
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82 **Introduction**

83 In 2014, the World Health Organization (WHO) issued the first report on the global
84 status of violence prevention [1]. The report defined interpersonal violence as violence that
85 occurs between family members, intimate partners, friends, acquaintances and strangers and
86 includes child maltreatment, intimate partner violence and elder abuse in addition to some
87 other forms of violence. The report showed that although the problem is preventable and
88 efforts were already under way to reduce it, much remained to be done. Global statistics [1]
89 indicate that most cases of violence against children, women and elderly are not reported to
90 authorities or service providers. This emphasizes the need of the health sector to have a more
91 active role in documenting and reporting cases of violence.

92 The Eastern Mediterranean Region which includes Arab countries has one of the
93 highest prevalence of intimate partner violence, the most extensively surveyed of all types of
94 violence, among the six WHO regions (37%). Comprehensive information about violence
95 against children and the elderly is not available [1]. Arab countries are more defined by their
96 shared culture than by being a specific race [2]. Given that what constitutes violence depends
97 on contextual and cultural norms, what would be labelled as violence against women or
98 children in western countries, may be culturally acceptable or may be considered a private
99 matter in Arab countries [3]. Because of this, studies related to violence management that
100 were conducted in western countries may not apply in Arab countries.

101 Dental care settings are often the primary contact point for violence victims since head
102 and face injuries are sites with common manifestation of physical violence [4]. Like all health
103 care professionals, dentists' main goal is to protect human life and the wellbeing of their
104 patients [5] and therefore, they can play an important role in identifying and reporting victims
105 of violence. However, we know little about Arab dentists' willingness to report cases of
106 violence. A review of literature showed that there were few studies that were conducted

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3 107 among dentists in Arab countries and that they focused on children abuse; in Jordan [6,7],
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5 108 Saudi Arabia [8, 9] and the United Arab Emirates [10]. However, none of these studies
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7 109 investigated dentists' intention to report suspicion of violence among adults.
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9 110 Based on the limited number of studies addressing the issue, there is a need to assess
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11 111 the willingness of dentists in Arab countries to report suspected violence. Such information
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13 112 helps inform public health policy, laws and future intervention programs targeting prevention
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15 113 and management of violence. The hypothesis of the study was that dentists' intention to report
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17 114 violence can be explained by the theory of planned behavior [11] where dentists would be
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19 115 more willing to report if they perceive that the health care system requires them to report
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21 116 (normative beliefs), if they have favorable professional attitude toward reporting (behavioral
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23 117 beliefs) and if they think they are able to identify victims of violence (control beliefs). The
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25 118 aims of this study were to 1) assess the intention of dentists in eight Arab countries to report
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27 119 cases of suspected violence and to 2) identify factors associated with this intention.
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33 121 **Methods**

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35 122 Data for this cross sectional study was collected from April to December 2016 after
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37 123 obtaining the approval of the Research Unit, College of Dentistry, University of Dammam,
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39 124 Saudi Arabia (EA216008) and in accordance with the guidelines of the Helsinki Declaration.
40
41 125 Dentists were targeted in 8 Arab countries; Algeria, Egypt, Jordan, Kuwait, Libya, Palestine,
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43 126 Saudi Arabia and Yemen. To assess the prevalence of intention to report, sample size was
44
45 127 calculated (<http://www.nss.gov.au/nss/home.nsf/pages/Sample+size+calculator>) using the
46
47 128 following assumptions: confidence level= 95%, confidence interval= 5%, total number of
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49 129 dentists in each country [12] with an estimated percentage of reporting suspected violence=
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51 130 32% [10]. The number was increased by 25% to allow for non-response. The minimum
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53 131 required sample size per country ranged from 300 to 470 dentists.
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3 132 Participants were selected using convenience sampling including dentists affiliated
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5 133 with professional groups, or from regions where they would be clustered such as capitals and
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7 134 big cities and from different areas in each country to ensure geographic coverage. Because of
8
9 135 the war situation in Libya, data collection was restricted only to Eastern Libya. In Algeria,
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11 136 only the city of Annaba was included and the respondents were alumni of Annaba University.

12
13 137 Dentists were invited to participate if they 1) had a bachelor of dentistry or equivalent
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15 138 degree and 2) were practicing in one of the eight Arab countries. In the beginning, dentists
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17 139 were included only if they were nationals of the country. Later on, this criterion was dropped
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19 140 due to the presence of a considerable percentage of expats in some countries so that the
20
21 141 sample would reflect the profession profile in the participating countries.

22
23 142 Data was collected using a questionnaire that was developed based on previous studies
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25 143 [9, 10, 13]. It consisted of five sections including 20 close-ended questions. The first section
26
27 144 sought information about personal background (age in years, gender (male or female) and
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29 145 having children (yes or no)). The 2nd section inquired about professional background
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31 146 including specialization (general practitioner or specialist/ consultant), type of practice
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33 147 (private, public or academic sectors), receiving training (yes or no) and perceived ability to
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35 148 identify victims of violence (yes or no). The 3rd section assessed perception of mandated
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37 149 reporting of suspected violence. Participants were asked to indicate how much they
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39 150 considered each of six statements was true of the place they worked on a scale from not true
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41 151 at all (1) to very true (10). The statements were all negatively phrased and indicated that
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43 152 reporting was not required by law, not enforced, not a rule of the place one worked, not the
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45 153 dentist's job to do, not culturally acceptable and that there was no specific authority to report
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47 154 to. The 4th section assessed respondents' attitude toward reporting violence using 6 statements
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49 155 to which they were asked to indicate agreement on a scale from completely disagree (1) to
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51 156 completely agree (10). The statements indicated that reporting was the right thing to do, was
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3 157 the dentist's responsibility, that the dentist would always document the manifestations of
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5 158 suspected violence (positive) in addition to statements indicating that the dentist was too busy
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7 159 with patients to report, that the issue of violence was a family's business where nobody
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9 160 should interfere and that it was embarrassing to check about violence (negative). In the 5th
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11 161 section, respondents were asked whether they would report suspected violence to the police,
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13 162 social services agencies/ Ministry of Social Affairs, Ministry of Health, non- governmental
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15 163 organizations (NGOs) or others.

16 164 The questionnaire was preceded by a brief explanation of the study purpose and
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18 165 explained that by responding, the dentist indicated consent to join the study. It took about ten
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20 166 minutes to complete and was self-administered, in Arabic and English, as printed and
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22 167 electronic versions. A respondent received the questionnaire by hand or a link to the
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24 168 electronic version was sent to an email list or by WhatsApp message. The investigator issued
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26 169 three reminders over a period of three months in case of non-response.

30 170 Analysis

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32 171 The internal consistency of the statements of perception and attitude was assessed
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34 172 using Cronbach alpha. Overall scores of the two constructs were developed by averaging the
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36 173 items' scores after reverse coding negative attitude statements. Higher perception score thus
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38 174 indicated negative perception that dentists were not mandated to report and higher attitude
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40 175 score indicated more positive professional attitude. Separate logistic regression models were
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42 176 developed to assess the association between intention to report suspected violence
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44 177 (dichotomous outcome: yes vs no) and each of (a) perception of mandated reporting (norms)
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46 178 (measured on a scale from 1 to 10), (b) professional attitude toward reporting (measured on a
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48 179 scale from 1 to 10) and (c) perceived ability to identify victims of violence (control) (yes vs
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50 180 no) in addition to personal and professional factors (all were categorical variables except age).
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52 181 Countries were considered to have protective services for children or adults based on the
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182 WHO report whether these services were limited, partial or full [1]. All factors were included
 183 in a multivariable model where they were simultaneously adjusted after removing the factors
 184 whose estimates showed correlation. All models were adjusted for country of practice. Odds
 185 ratios, 95% confidence intervals and p values were calculated for all models and so was the
 186 percentage of correctly classified cases for the model including all variables.

188 Results

189 The overall response rate was 65.2% ranging from 51% in Palestine to 78% in Yemen
 190 (Table 1). Some nationalities practiced in their own countries and in other countries included
 191 in the study (Egyptians 28.1% vs 29.9%, Jordanians 11.8% vs 12.6% and Yemenis 9.9% vs
 192 10.4%). The majority of expats were from Asian (5.4%) or other Arab countries not included
 193 in the study (3.1%). Protective services for victims of violence were not documented in
 194 Kuwait, Libya and Palestine.

196 Table 1: Response rate, presence of protective services and intention to report by country

Country	Response rate	Documented presence of protective services	Intention to report N (%)
Algeria	110/ 175= 62.9%	Yes	88 (80%)
Egypt	826/ 1271= 65%	Yes	505 (61.1%)
Jordan	347/ 475= 73.1%	Yes	271 (78.1%)
Kuwait	449/ 632= 71%	No	305 (67.9%)
Libya	225/389= 57.8%	No	159 (70.7%)
Palestine	380/ 745= 51%	No	326 (85.8%)
Saudi Arabia	308/ 446= 69.1%	Yes	190 (61.7%)
Yemen	291/ 373= 78%	Yes	175 (60.1%)

Total	2936/ 4506= 65.2%	2019 (68.8%)
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198 The mean (SD) age in years was 31.0 (9.2), 56.7% were females and 53.7% had no
 199 children (Table 2). Most respondents were general practitioners (70.9%) working in the public
 200 (43.9%) or private sectors (34.2%). Only 19.3% reported receiving training to manage victims
 201 of violence and 52.2% claimed that they can identify them. Protective services for victims of
 202 violence were present in the countries of practice of 64.1% of the respondents.

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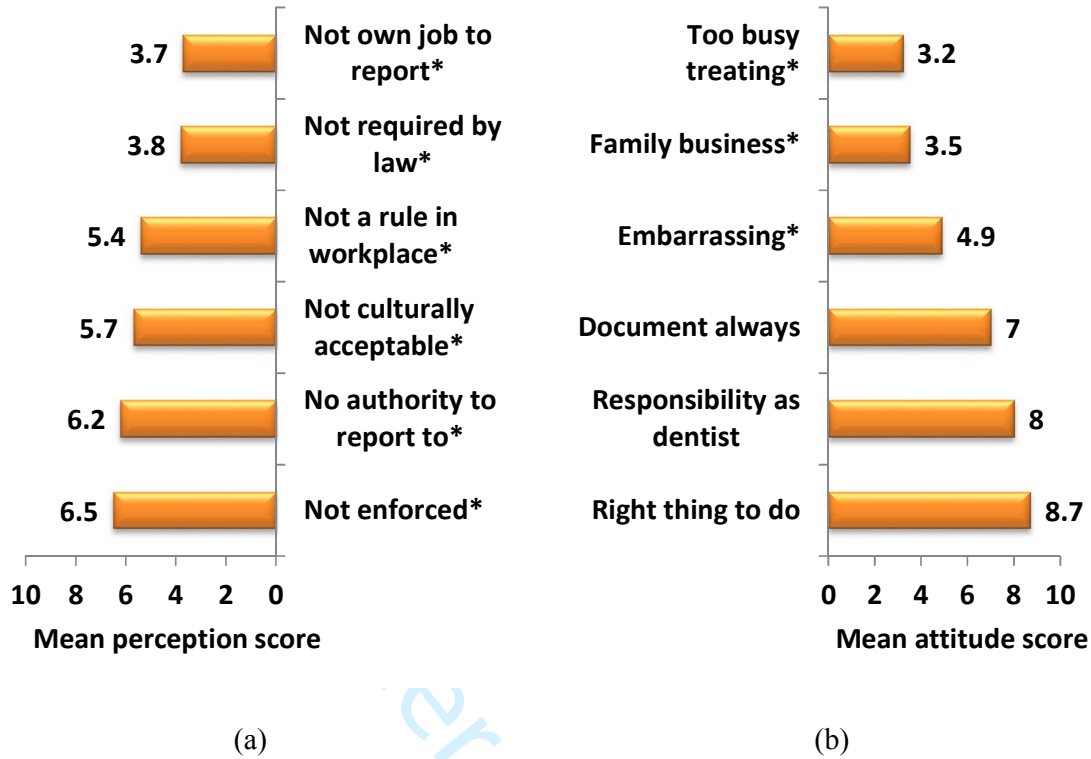
204 Table 2: Personal and professional background of participants

Factor		N (%)
Age	Mean (SD)	31.0 (9.2)
Gender	Male	1268 (43.3%)
	Female	1659 (56.7%)
Has no children		1571 (53.7%)
Specialization	General practitioner	2047 (70.9%)
	Specialist/ consultant	839 (29.1%)
Type of practice	Private sector	976 (34.2%)
	Public sector	1257 (43.9%)
	Academic sector	623 (21.9%)
Received training		565 (19.3%)
Perceived ability to identify victims of violence		1445 (52.2%)
Presence of protective services for children or adults in country of practice		1882 (64.1%)

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3 206 The majority of respondents indicated their intention to report suspected violence
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5 207 (2019, 68.8%); mainly to the police (933, 31.8%), or social affairs agencies (842, 28.7%)
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7 208 followed by the Ministry of Health (303, 10.3%) and NGOs (132, 4.5%). There was a
8
9 209 significant difference among countries in the percentage of dentists indicating intention to
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11 210 report ranging from 60.1% in Yemen to 85.8% in Palestine ($P < 0.0001$, Table 1).

12
13 211 Figure 1 shows that the highest mean negative perception item score was for
14
15 212 perceiving that reporting was not enforced (6.5) followed by perceiving that there was no
16
17 213 authority to report to (6.2). The internal consistency of perception statements was acceptable
18
19 214 (Cronbach alpha = 0.68, 95% C.I.= 0.66, 0.70, $P < 0.0001$) and the mean (SD) equals 5.3 (2.1).
20
21 215 The highest mean score for statements of attitude toward reporting was for indicating that it
22
23 216 was the right thing to do (8.7) and the lowest was for the negative statement indicating that
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25 217 the respondent was too busy treating patients to report (mean= 3.2). The internal consistency
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27 218 of the statements was good (Cronbach alpha = 0.72, 95% C.I.= 0.70, 0.74, $P < 0.0001$) and the
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29 219 mean (SD) equals 7.5 (1.9).
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221 Figure 1: (a) Negative perception of mandated reporting, mean (SD)= 5.3 (2.1), range= 1-10,
 222 (b) Professional attitude toward reporting, mean (SD)= 7.5 (1.9), range= 1-10.
 223 (*: negatively phrased statement)

224
 225 Dentists who practiced in countries where there were protective services for violence
 226 victims had significantly higher negative perception and lower attitude scores than those
 227 without such services ($P < 0.0001$ and 0.02). Dentists who reported being able to identify
 228 violence victims had significantly lower negative perception and higher attitude scores than
 229 those who did not ($P < 0.0001$, Table 3). There was a significant moderate negative correlation
 230 between perception and professional attitude (Pearson $r = -0.32$, $P < 0.0001$).

234 Table 3: Association of perception and attitude with presence of protective services and
 235 ability to identify victims of violence

	Score: mean (SD)		P value
	Protective services in country of practice	No protective services in country of practice	
Negative perception	5.50 (2.13)	4.87 (2.11)	<0.0001*
Positive professional attitude	7.41 (1.94)	7.59 (1.87)	0.02*
	Able to identify victims of violence	Not able to identify victims of violence	
Negative perception	4.98 (2.17)	5.56 (2.06)	<0.0001*
Positive professional attitude	7.72 (1.85)	7.25 (1.99)	<0.0001*

236 *: statistically significant at $P < 0.05$

237

238 Table 4 shows that attitude, perception and reported ability to identify violence
 239 victims were significantly associated ($P < 0.0001$) with intention to report in the separate
 240 models (model 1) in addition to gender ($P < 0.0001$), age ($P = 0.004$) and presence of
 241 protective services ($P < 0.0001$). In the multivariable model 2, higher odds of intention to
 242 report were significantly associated with higher professional attitude score (OR= 1.08, 95%
 243 C.I.= 1.03, 1.14) and reported ability to identify victims of violence (OR= 1.76, 95% C.I.=
 244 1.45, 2.12). Lower odds of intended reporting were significantly associated with higher score
 245 of negative perception (OR= 0.89, 95% C.I.= 0.85, 0.94). In addition, the presence of
 246 protective services was associated with significantly lower odds of intention to report (OR=
 247 0.34, 95% C.I.= 0.22, 0.50). The multivariable model 2 correctly classified 71.6% of dentists
 248 based on intention to report suspected violence.

249

250

251 Table 4: Factors associated with intention to report suspected violence

Factors	Model 1		Model 2	
	OR (95% C.I.)	P value	OR (95% C.I.)	P value
Higher attitude score by one point	1.10 (1.06, 1.15)	<0.0001*	1.08 (1.03, 1.14)	0.002*
Higher negative perception score by one point	0.88 (0.84, 0.92)	<0.0001*	0.89 (0.85, 0.94)	<0.0001*
Ability to identify victims of violence vs not	1.80 (1.52, 2.14)	<0.0001*	1.76 (1.45, 2.12)	<0.0001*
Male vs female	1.74 (1.47, 2.06)*	<0.0001*	1.85 (1.52, 2.25)	<0.0001*
Older dentist by one year	1.01 (1.004, 1.02)	0.004*	1.01 (0.99, 1.02)	0.36
Has children vs does not have children	1.14 (0.97, 1.35)	0.12	-	-
General practitioner vs specialist/ consultant	0.99 (0.83, 1.19)	0.93	-	-
Working in public vs private sector	0.95 (0.77, 1.18)	0.66	1.11 (0.87, 1.42)	0.40
Working in academic vs private sector	0.83 (0.66, 1.05)	0.11	0.88 (0.68, 1.15)	0.37
Presence of protective services in country of practice vs not	0.25 (0.17, 0.36)	<0.0001*	0.34 (0.22, 0.50)	<0.0001*

252 Model 1: includes individual factors adjusted for country of practice

253 Model 2: includes all factors adjusted for country of practice

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3 254 OR: odds ratio, C.I.: confidence interval, *: statistically significant at $P < 0.05$. Percent
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5 255 correctly classified by multivariable model: 71.6%.

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9 257 **Discussion**

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11 258 Our results indicated a moderate level of dentists' intention to report suspected
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13 259 violence with significant difference among the eight Arab countries. The findings supported
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15 260 the hypothesis and showed that the theory of planned behavior [11] correctly classified most
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17 261 dentists regarding their intention to report suspected violence. A combination of dentist's
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19 262 professional attitude, perceived ability to identify victims of violence and perception of
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21 263 mandatory rules and regulation were associated with intention to report. The presence of
22
23 264 protective services in the country of practice was associated with less intention to report.

24
25 265 Most dentists in the present study (68.8%) indicated they intended to report violence.
26
27 266 This finding is similar to those of previous studies in Arab countries such as Jordan [6] and
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29 267 Saudi Arabia [8,9] and western countries such as Scotland [14] and Brazil [15]. However, less
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31 268 intention to report was shown in some studies from Italy [16], Brazil [17] and France [5].

32
33 269 Even with the most favorable intentions, dentists will not report violence if they
34
35 270 cannot identify its signs. In the present study, 52.2% of the respondents reported being able to
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37 271 identify victims of violence. Previous studies showed differences in dentists' perceived ability
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39 272 to identify victims of violence across countries [5,6, 8, 16-18] which might be attributed to
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41 273 variations in training requirements and opportunities across countries.

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43 274 Our definition of subjective norms was based on dentists' perception of mandated
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45 275 reporting in the workplace. We used this definition instead of focusing on significant others
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47 276 since the mobility of dentists across countries meant that the values shared by these others
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49 277 may differ from those prevailing in country of practice. The approach we followed was
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51 278 similar to the definition of Ben Natan et al [19] where they focused on those who educated

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3 279 nursing students. In the present study, the mean score of negative perception was 5.3/ 10
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5 280 indicating that, on average, no clear message was received by dentists from their work place
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7 281 whether or not to report suspected violence. This was more because dentists felt the law was
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9 282 not enforced than their perception that reporting was not mandated (mean = 6.5 and 3.8). This
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11 283 agrees with Adair et al [20] who concluded that the likelihood of intending to report suspected
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13 284 violence was greater if dentists recognized that they were legally mandated to report.
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15 285 Negative perception in the current study was also related to perceiving that there was no
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17 286 authority to report to and the absence of clear rules. Similar perceptions were reported in
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19 287 previous studies addressing child abuse in Arab countries such as Saudi Arabia [8,9] and in
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21 288 other countries including India [13], United States [21], Brazil [15] and Northern Ireland [22].
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23 289 This inadequate knowledge of how or who to report to might be due to the presence of several
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25 290 potential recipients of violence reports [10] or recent enactment of laws [9].
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29 291 In the present study, the presence of protective services was associated with lower
30
31 292 odds of intention to report (OR= 0.34), greater negative perception and less positive
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33 293 professional attitude. This might be attributed to dentists not perceiving these services as
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35 294 indicative of real change in social and cultural norms or health care system perspective
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37 295 regarding reporting. Alternatively, they might have considered that care of violence victims
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39 296 was shifted to these services so that they would be ethically justified not to report violence.
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41 297 However, studies using qualitative research techniques are needed for further investigation.
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44 298 In our study, respondents had positive professional attitude toward reporting violence
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46 299 (mean= 7.5/ 10) which agrees with previous studies from Saudi Arabia concerning reporting
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48 300 suspected child abuse [9] and domestic violence [23]. It also agrees with the positive attitude
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50 301 expressed by dentists toward their role in managing child abuse in India [24], Scotland [14],
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52 302 Jordan [6], Brazil [18] and Greece [25] as well as domestic violence reporting in Brazil [15],
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54 303 India [26] and France [5]. Such positive professional attitude - similar to dentists' attitude in
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3 304 other countries- might differ from some negative attitudes and practices in Arab societies that
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5 305 are seen in violence statistics [1]. The predominance of professional attitude over societal
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7 306 practices agrees with a study showing that cultural differences between Arab and Jewish
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9 307 nursing students in Israel did not affect the intention to screen for domestic violence due to
10
11 308 the similarity of their education [19]. It also agrees with a study from Taiwan, a country with
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13 309 eastern cultural values, which showed that nurses did not accept the cultural belief that
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15 310 parents can physically discipline their children because these nurses were exposed to mixed
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17 311 cultural influences from the east and west [27]. The young age of nurses in that study was
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19 312 similar to that of our participants and might explain the similarity between the two studies.
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21
22 313 However, the professional attitude in our study disagrees with Usta et al [28] who reported
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24 314 that Lebanese physicians considered domestic violence a social problem not a medical one
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26 315 and were ready to intervene only when there was actual physical injury. The difference
27
28 316 between that study and ours might be because most of the physicians were in private practice
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31 317 and more likely to be worried about the implications on practice income if their local
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33 318 community resented their intervention. Most of the participants in our study, on the other
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35 319 hand, were in the public or academic sectors.

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37 320 Female dentists in our study were less likely to intend reporting suspected violence.
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39 321 The impact of dentist gender in the issue of suspected violence varied among studies. At the
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41 322 level of knowledge of rules and regulation, female dentists in Saudi Arabia were better than
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43 323 males [9]. However, actual reporting of suspected violence was more likely among male
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45 324 dentists in Jordan [7]. Similarly, among Brazilian nurses, of whom 86% were female, under-
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47 325 reporting of violence was noticed and was attributed to conforming to cultural norms [29].
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49 326 Future studies using qualitative research techniques may help elucidate this gender difference
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51 327 and whether it is due to cultural expectations of how females- including dentists- should act or
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53 328 because they are less involved with victims of violence.
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3 329 In our study, the theory of planned behavior correctly classified most dentists based on
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5 330 intention to report violence. Previously, the theory predicted the intention of 28% of Israeli
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7 331 nurses to report child abuse [30, 31] and 32% of their intention to screen for domestic
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9 332 violence where attitudes and subjective norms were significant predictors (regression
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11 333 coefficients= 0.15 and 0.05) [19]. Similarly, Feng and Wu [32] explained Taiwanese nurses'
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13 334 intention to report child abuse using the same theory. Greater association with the outcome
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15 335 was attributed to professional attitude than subjective norms. The least impact was for
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17 336 perceived control which was attributed to the inadequate instructions of how to report.
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20 337 There are some limitations to this study that should be considered. We assessed the
21
22 338 intention to report which might differ from actual reporting [5] and future studies are needed
23
24 339 to assess these differences. Self-reporting and social desirability could have affected our
25
26 340 estimates of intention to report. We also assessed the intention to report regardless of the type
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28 341 of violence (physical, verbal or otherwise) or victim background (age or gender) and there is a
29
30 342 need to investigate how these factors might affect the intention to report. In addition, our
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32 343 estimate of intention to report might have been affected by the under representation of dentists
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34 344 in private practice compared to those in the public and academic sectors.
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38 39 346 **Conclusions**

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41 347 Our study included about 3,000 dentists out of 59.5 thousand dentists [12] (5%) caring
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43 348 for 213 million in eight Arab countries [33]. Their intention to report violence was associated
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45 349 with professional attitudes, perceptions and perceived abilities which were similar to those of
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47 350 dentists in other countries but never the less, showed differences by country of practice. Our
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49 351 findings have implications for training to improve the reporting of suspected violence by
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51 352 developing dentists' abilities to identify diagnostic signs, fostering favorable attitude and
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53 353 increasing awareness of already existing rules and regulations. There is a need to develop
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3 354 shared training resources, policies and clear guidelines that allow consistent professional
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5 355 practices and at the same time acknowledge cultural diversity across countries.
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3 448 **Authors' contribution**

- 4 449 • Maha El Tantawi, Maha Abdelsalam and Balgis Gaffar developed the study idea and questionnaire.
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6 450 • Maha El Tantawi developed the study methods.
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8 451 • Arheiam Arheiam, Wafaa AbdelAziz, Ola B. Al-Batayneh, Mansor Alhowiti, Sadeq Al-Maweri, Mai
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10 452 A. Dama, Mounir Zaghez, Khalid Saddiq Hassan, Mona Al-Sane, Fatma Abdelgawad, Thiyezen
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12 453 Abdullah Aldhelai, Omar Abd El Sadek El Meligy, Jehan AlHumaid and Fahad Al-Harbi collected
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14 454 data.
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16 455 • Maha El Tantawi, Arheiam Arheiam and Wael Sabbah analyzed and interpreted the results.
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20 457 Sadeq Al-Maweri and Wafaa AbdelAziz drafted the manuscripts.
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22 458 • All authors read and approved the final manuscript.
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STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	1
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	5& 6
Objectives	3	State specific objectives, including any prespecified hypotheses	6
Methods			
Study design	4	Present key elements of study design early in the paper	6
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	7
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	7& 8
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	7& 8
Bias	9	Describe any efforts to address potential sources of bias	-
Study size	10	Explain how the study size was arrived at	6
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	8
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	8
		(b) Describe any methods used to examine subgroups and interactions	-
		(c) Explain how missing data were addressed	-
		(d) If applicable, describe analytical methods taking account of sampling strategy	-
		(e) Describe any sensitivity analyses	-
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed	9

		eligible, included in the study, completing follow-up, and analysed	
		(b) Give reasons for non-participation at each stage	-
		(c) Consider use of a flow diagram	-
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	9& 10
		(b) Indicate number of participants with missing data for each variable of interest	-
Outcome data	15*	Report numbers of outcome events or summary measures	11&12
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	12& 13
		(b) Report category boundaries when continuous variables were categorized	-
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	-
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	-
Discussion			
Key results	18	Summarise key results with reference to study objectives	14
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	17
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	14-17
Generalisability	21	Discuss the generalisability (external validity) of the study results	17
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	4

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.

BMJ Open

Dentists' intention to report suspected violence: a cross sectional study in eight Arab countries

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Primary Subject Heading:	Dentistry and oral medicine
Secondary Subject Heading:	Ethics, Global health, Public health
Keywords:	International health services < HEALTH SERVICES ADMINISTRATION &

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	MANAGEMENT, ETHICS (see Medical Ethics), Human resource management < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, MEDICAL ETHICS, PRIMARY CARE, PUBLIC HEALTH

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3 **1 Dentists' intention to report suspected violence: a cross-sectional study in eight Arab**
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2
3 31 **Abstract**

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5 32 **Objectives**

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7 33 This study assessed dentists' intention in eight Arab countries to report suspected exposure to
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9 34 violence among patients and factors associated with this intention based on the theory of
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11 35 planned behavior.

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13 36 **Methods**

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15 37 A cross-sectional study was conducted in 2016 including a convenience sample of dentists
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17 38 practicing in public, private and academic sectors in Algeria, Egypt, Jordan, Kuwait, Libya,
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19 39 Palestine, Saudi Arabia and Yemen. Respondents answered a self-administered questionnaire
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21 40 collecting information about personal and professional background and perceived ability to
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23 41 identify victims of violence. The questionnaire assessed (on a scale from 1 to 10 using 6
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25 42 negative statements) dentists' perception of healthcare system mandated reporting of
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27 43 suspected violence. Six statements were used to assess professional attitude toward reporting
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29 44 suspected violence. Logistic regression was used to assess the association between intention
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31 45 to report suspected violence and perceived ability, perception and attitude adjusting for
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33 46 confounders.

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37 47 **Results**

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39 48 The response rate was 65.2% (n= 2,936/ 4506) from general practitioners (70.9%) of mean
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41 49 age= 31 years with 56.7% females. Of those, 68.8% intended to report and 52.2% considered
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43 50 themselves able to identify violence victims. The mean (SD) negative perception score=
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45 51 5.3/10 (2.1) and the mean (SD) professional attitude score= 7.5/10 (1.9). In multivariate
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47 52 regression, intention to report was associated with professional attitude (OR= 1.08, 95%CI=
48
49 53 1.03, 1.14), ability to identify violence victims (OR= 1.76, 95%CI=1.45, 2.12) and negative
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51 54 perception that reporting is not mandated (OR= 0.89, 95%CI=0.85, 0.94). Significant
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53 55 differences existed among countries in intention to report.

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3 56 **Conclusion**
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5 57 Most dentists intended to report suspected violence and their intention could be explained by
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7 58 the theory of planned behavior which offers a framework for professional development to
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9 59 support violence victims. Sharing of training resources, policies and guidelines is needed to
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11 60 ensure that practices similar to international guidelines are consistently adopted by dentists
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13 61 across Arab countries.
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For peer review only

62 **Strengths and limitations**

- 63 • We included dentists from eight Arab countries which increases the geographic
64 representativeness of our findings and fills a knowledge gap about the intended
65 practices of dentists in this region.
- 66 • The theory of planned behavior provides a framework to explain the intention to
67 report and helps in planning professional development activities to better prepare
68 dentists to help their patients.
- 69 • Social desirability might have affected our estimates of dentists' intention to report
70 suspected violence.
- 71 • Dentists in private practice were under represented compared to dentists from the
72 public and academic sectors.

74 **Funding statement**

75 This research received no specific grant from any funding agency in the public,
76 commercial or not-for-profit sectors.

78 **Competing interest statement**

79 None declared.

81 **Data sharing statement**

82 The dataset will be made available from the corresponding author.

83 **Introduction**

84 In 2014, the World Health Organization (WHO) issued the first report on the global
85 status of violence prevention [1]. The report defined interpersonal violence as violence that
86 occurs between family members, intimate partners, friends, acquaintances and strangers and
87 includes child maltreatment, intimate partner violence and elder abuse in addition to some
88 other forms of violence. The report showed that although the problem is preventable and
89 efforts were already under way to reduce it, much remained to be done. Global statistics [1]
90 indicate that most cases of violence against children, women and elderly are not reported to
91 authorities or service providers. This emphasizes the need of the health sector to have a more
92 active role in documenting and reporting cases of violence.

93 The Eastern Mediterranean Region which includes Arab countries has one of the
94 highest prevalence of intimate partner violence, the most extensively surveyed of all types of
95 violence, among the six WHO regions (37%). Comprehensive information about violence
96 against children and the elderly is not available [1]. Arab countries are more defined by their
97 shared culture than by being a specific race [2]. Given that what constitutes violence depends
98 on contextual and cultural norms, what would be labelled as violence against women or
99 children in western countries, may be culturally acceptable or may be considered a private
100 matter in Arab countries [3]. Because of this, studies related to violence management that
101 were conducted in western countries may not apply in Arab countries.

102 Dental care settings are often the primary contact point for violence victims since head
103 and face injuries are sites with common manifestation of physical violence [4]. Like all health
104 care professionals, dentists' main goal is to protect human life and the wellbeing of their
105 patients [5] and therefore, they can play an important role in identifying and reporting victims
106 of violence. However, we know little about Arab dentists' willingness to report cases of
107 violence. A review of literature showed that there were few studies that were conducted

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3 108 among dentists in Arab countries and that they focused on children abuse; in Jordan [6,7],
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5 109 Saudi Arabia [8, 9] and the United Arab Emirates [10]. However, none of these studies
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7 110 investigated dentists' intention to report suspicion of violence among adults.
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9 111 Based on the limited number of studies addressing the issue, there is a need to assess
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11 112 the willingness of dentists in Arab countries to report suspected violence. Such information
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13 113 helps inform public health policy, laws and future intervention programs targeting prevention
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15 114 and management of violence. The hypothesis of the study was that dentists' intention to report
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17 115 violence can be explained by the theory of planned behavior [11] where dentists would be
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19 116 more willing to report if they perceive that the health care system requires them to report
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21 117 (normative beliefs), if they have favorable professional attitude toward reporting (behavioral
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23 118 beliefs) and if they think they are able to identify victims of violence (control beliefs). The
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25 119 aims of this study were to 1) assess the intention of dentists in eight Arab countries to report
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27 120 cases of suspected violence and to 2) identify factors associated with this intention.
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32 122 **Methods**

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35 123 Data for this cross-sectional study was collected from April to December 2016 after
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37 124 obtaining the approval of the research ethics committee; the Research Unit in the College of
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39 125 Dentistry, University of Dammam, Saudi Arabia (EA216008) and in accordance with the
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41 126 guidelines of the Helsinki Declaration. Dentists were targeted in eight Arab countries;
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43 127 Algeria, Egypt, Jordan, Kuwait, Libya, Palestine, Saudi Arabia and Yemen. To assess the
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45 128 prevalence of intention to report, sample size was calculated
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47 129 (<http://www.nss.gov.au/nss/home.nsf/pages/Sample+size+calculator>) using the following
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49 130 assumptions: confidence level= 95%, confidence interval= 5%, total number of dentists in
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51 131 each country [12] with an estimated percentage of reporting suspected violence= 32% [10].
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3 132 The number was increased by 25% to allow for non-response. The minimum required sample
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5 133 size per country ranged from 300 to 470 dentists.

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7 134 Participants were selected using convenience sampling including dentists affiliated
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9 135 with professional groups, or from regions where they would be clustered such as capitals and
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11 136 big cities and from different areas in each country to ensure geographic coverage. Because of
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13 137 the war situation in Libya, data collection was restricted only to Eastern Libya. In Algeria,
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15 138 only the city of Annaba was included and the respondents were alumni of Annaba University.

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17 139 Dentists were invited to participate if they 1) had a bachelor of dentistry or equivalent
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19 140 degree and 2) were practicing in one of the eight Arab countries. In the beginning, dentists
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21 141 were included only if they were nationals of the country. Later on, this criterion was dropped
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23 142 due to the presence of a considerable percentage of expats in some countries so that the
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25 143 sample would reflect the profession profile in the participating countries.

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27 144 Data was collected using a questionnaire that was developed based on previous studies
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29 145 [9, 10, 13] (supplementary file). It consisted of five sections including 20 close-ended
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31 146 questions. The first section sought information about personal background (age in years,
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33 147 gender (male or female) and having children (yes or no)). The 2nd section inquired about
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35 148 professional background including specialization (general practitioner or specialist/
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37 149 consultant), type of practice (private, public or academic sectors), receiving training (yes or
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39 150 no) and perceived ability to identify victims of violence (yes or no). The 3rd section assessed
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41 151 perception of mandated reporting of suspected violence. Participants were asked to indicate
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43 152 how much they considered each of six statements was true of the place they worked on a scale
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45 153 from not true at all (1) to very true (10). The statements were all negatively phrased and
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47 154 indicated that reporting was not required by law, not enforced, not a rule of the place one
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49 155 worked, not the dentist's job to do, not culturally acceptable and that there was no specific
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51 156 authority to report to. The 4th section assessed respondents' attitude toward reporting violence
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3 157 using 6 statements to which they were asked to indicate agreement on a scale from completely
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5 158 disagree (1) to completely agree (10). The statements indicated that reporting was the right
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7 159 thing to do, was the dentist's responsibility, that the dentist would always document the
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9 160 manifestations of suspected violence (positive) in addition to statements indicating that the
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11 161 dentist was too busy with patients to report, that the issue of violence was a family's business
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13 162 where nobody should interfere and that it was embarrassing to check about violence
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15 163 (negative). In the 5th section, respondents were asked whether they would report suspected
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17 164 violence to the police, social services agencies/ Ministry of Social Affairs, Ministry of Health,
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19 165 non- governmental organizations (NGOs) or others. The questionnaire was pilot tested and
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21 166 culturally adapted in each country.

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24 167 The questionnaire was preceded by a brief explanation of the study purpose and
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26 168 explained that by responding, the dentist indicated consent to join the study. It took about ten
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28 169 minutes to complete and was self-administered, in Arabic and English, as printed and
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30 170 electronic versions. A respondent received the questionnaire by hand or a link to the
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32 171 electronic version was sent to an email list or by WhatsApp message. The investigator issued
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34 172 three reminders over a period of three months in case of non-response.

35 36 37 173 Analysis

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39 174 The internal consistency of the statements of perception and attitude was assessed
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41 175 using Cronbach alpha. Overall scores of the two constructs were developed by averaging the
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43 176 items' scores after reverse coding negative attitude statements. Higher perception score thus
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45 177 indicated less (negative) perception so that dentists considered themselves not mandated to
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47 178 report and higher attitude score indicated more positive professional attitude. Separate logistic
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49 179 regression models were developed to assess the association between intention to report
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51 180 suspected violence (dichotomous outcome: yes vs no) and each of (a) perception of mandated
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53 181 reporting (norms) (measured on a scale from 1 to 10), (b) professional attitude toward
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182 reporting (measured on a scale from 1 to 10) and (c) perceived ability to identify victims of
 183 violence (control) (yes vs no) in addition to personal and professional factors (all were
 184 categorical variables except age). Countries were considered to have protective services for
 185 children or adults based on the WHO report whether these services were limited, partial or
 186 full [1]. All factors were included in a multivariable model where they were simultaneously
 187 adjusted after removing the factors whose estimates showed correlation. All models were
 188 adjusted for country of practice. Odds ratios, 95% confidence intervals and p values were
 189 calculated for all models and so was the percentage of correctly classified cases for the model
 190 including all variables.

191

192 Results

193 The overall response rate was 65.2% ranging from 51% in Palestine to 78% in Yemen
 194 (Table 1). Some nationalities practiced in their own countries and in other countries included
 195 in the study (Egyptians 28.1% vs 29.9%, Jordanians 11.8% vs 12.6% and Yemenis 9.9% vs
 196 10.4%). The majority of expats were from Asian (5.4%) or other Arab countries not included
 197 in the study (3.1%). Protective services for victims of violence were not documented in
 198 Kuwait, Libya and Palestine.

199

200 Table 1: Response rate, presence of protective services and intention to report by country

Country	Response rate	Documented presence of protective services	Intention to report N (%)
Algeria	110/ 175= 62.9%	Yes	88 (80%)
Egypt	826/ 1271= 65%	Yes	505 (61.1%)
Jordan	347/ 475= 73.1%	Yes	271 (78.1%)
Kuwait	449/ 632= 71%	No	305 (67.9%)

Libya	225/389= 57.8%	No	159 (70.7%)
Palestine	380/ 745= 51%	No	326 (85.8%)
Saudi Arabia	308/ 446= 69.1%	Yes	190 (61.7%)
Yemen	291/ 373= 78%	Yes	175 (60.1%)
Total	2936/ 4506= 65.2%		2019 (68.8%)

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202 The mean (SD) age in years was 31.0 (9.2), 56.7% were females and 53.7% had no
 203 children (Table 2). Most respondents were general practitioners (70.9%) working in the public
 204 (43.9%) or private sectors (34.2%). Only 19.3% reported receiving training to manage victims
 205 of violence and 52.2% claimed that they can identify them. Protective services for victims of
 206 violence were present in the countries of practice of 64.1% of the respondents.

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208 Table 2: Personal and professional background of participants

Factor	N (%)	
Age	Mean (SD)	31.0 (9.2)
Gender	Male	1268 (43.3%)
	Female	1659 (56.7%)
Has no children		1571 (53.7%)
Specialization	General practitioner	2047 (70.9%)
	Specialist/ Consultant	839 (29.1%)
Type of practice	Private sector	976 (34.2%)
	Public sector	1257 (43.9%)
	Academic sector	623 (21.9%)
Received training		565 (19.3%)
Perceived ability to identify victims of violence		1445 (52.2%)

Presence of protective services for children or adults in country of practice	1882 (64.1%)
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210 The majority of respondents indicated their intention to report suspected violence
 211 (2019, 68.8%); mainly to the police (933, 31.8%), or social affairs agencies (842, 28.7%)
 212 followed by the Ministry of Health (303, 10.3%) and NGOs (132, 4.5%). There was a
 213 significant difference among countries in the percentage of dentists indicating intention to
 214 report ranging from 60.1% in Yemen to 85.8% in Palestine ($P < 0.0001$, Table 1).

215 Figure 1 shows that the highest mean negative perception item score was for
 216 perceiving that reporting was not enforced (6.5) followed by perceiving that there was no
 217 authority to report to (6.2). The internal consistency of perception statements was acceptable
 218 (Cronbach alpha = 0.68, 95% CI= 0.66, 0.70, $P < 0.0001$) and the mean (SD) equals 5.3 (2.1).
 219 The highest mean score for statements of attitude toward reporting (Figure 2) was for
 220 indicating that it was the right thing to do (8.7) and the lowest was for the negative statement
 221 indicating that the respondent was too busy treating patients to report (mean= 3.2). The
 222 internal consistency of the statements was good (Cronbach alpha = 0.72, 95% CI= 0.70, 0.74,
 223 $P < 0.0001$) and the mean (SD) equals 7.5 (1.9).

224 Dentists who practiced in countries where there were protective services for violence
 225 victims had significantly higher negative perception and lower attitude scores than those
 226 without such services ($P < 0.0001$ and 0.02). Dentists who reported being able to identify
 227 violence victims had significantly lower negative perception and higher attitude scores than
 228 those who did not ($P < 0.0001$, Table 3). There was a significant moderate negative correlation
 229 between perception and professional attitude (Pearson $r = -0.32$, $P < 0.0001$).

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232 Table 3: Association of perception and attitude with presence of protective services and
 233 ability to identify victims of violence

	Score: mean (SD)		P value
	Protective services in country of practice	No protective services in country of practice	
Negative perception	5.50 (2.13)	4.87 (2.11)	<0.0001*
Positive professional attitude	7.41 (1.94)	7.59 (1.87)	0.02*
	Able to identify victims of violence	Not able to identify victims of violence	
Negative perception	4.98 (2.17)	5.56 (2.06)	<0.0001*
Positive professional attitude	7.72 (1.85)	7.25 (1.99)	<0.0001*

234 *: statistically significant at $P < 0.05$

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 236 Table 4 shows that attitude, perception and reported ability to identify violence
 237 victims were significantly associated ($P < 0.0001$) with intention to report in the separate
 238 models (model 1) in addition to gender ($P < 0.0001$), age ($P = 0.004$) and presence of
 239 protective services ($P < 0.0001$). In the multivariable model 2, higher odds of intention to
 240 report were significantly associated with higher professional attitude score (OR= 1.08, 95%
 241 CI= 1.03, 1.14) and reported ability to identify victims of violence (OR= 1.76, 95% CI= 1.45,
 242 2.12). Lower odds of intended reporting were significantly associated with higher score of
 243 negative perception (OR= 0.89, 95% CI= 0.85, 0.94). In addition, the presence of protective
 244 services was associated with significantly lower odds of intention to report (OR= 0.34, 95%
 245 CI= 0.22, 0.50). The multivariable model 2 correctly classified 71.6% of dentists based on
 246 intention to report suspected violence.

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249 Table 4: Factors associated with intention to report suspected violence

Factors	Model 1		Model 2	
	OR (95% CI)	P value	OR (95% CI)	P value
Higher attitude score by one point	1.10 (1.06, 1.15)	<0.0001*	1.08 (1.03, 1.14)	0.002*
Higher negative perception score by one point	0.88 (0.84, 0.92)	<0.0001*	0.89 (0.85, 0.94)	<0.0001*
Ability to identify victims of violence vs not	1.80 (1.52, 2.14)	<0.0001*	1.76 (1.45, 2.12)	<0.0001*
Male vs female	1.74 (1.47, 2.06)*	<0.0001*	1.85 (1.52, 2.25)	<0.0001*
Older dentist by one year	1.01 (1.004, 1.02)	0.004*	1.01 (0.99, 1.02)	0.36
Has children vs does not have children	1.14 (0.97, 1.35)	0.12	-	-
General practitioner vs specialist/ consultant	0.99 (0.83, 1.19)	0.93	-	-
Working in public vs private sector	0.95 (0.77, 1.18)	0.66	1.11 (0.87, 1.42)	0.40
Working in academic vs private sector	0.83 (0.66, 1.05)	0.11	0.88 (0.68, 1.15)	0.37
Presence of protective services in country of practice vs not	0.25 (0.17, 0.36)	<0.0001*	0.34 (0.22, 0.50)	<0.0001*

250 Model 1: includes individual factors adjusted for country of practice

251 Model 2: includes all factors adjusted for country of practice

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3 252 OR: odds ratio, CI: confidence interval, *: statistically significant at $P < 0.05$. Percent
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5 253 correctly classified by multivariable model: 71.6%.

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9 255 **Discussion**

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11 256 Our results indicated a moderate level of dentists' intention to report suspected
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13 257 violence with significant difference among the eight Arab countries. The findings supported
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15 258 the hypothesis and showed that the theory of planned behavior [11] correctly classified most
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17 259 dentists regarding their intention to report suspected violence. A combination of dentist's
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19 260 professional attitude, perceived ability to identify victims of violence and perception of
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21 261 mandatory rules and regulation were associated with intention to report. The presence of
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23 262 protective services in the country of practice was associated with less intention to report.
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263 Most dentists in the present study (68.8%) indicated they intended to report violence.
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28 264 This finding is similar to those of previous studies in Arab countries such as Jordan [6] and
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30 265 Saudi Arabia [8,9] and western countries such as Scotland [14] and Brazil [15]. However, less
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32 266 intention to report was shown in some studies from Italy [16], Brazil [17] and France [5].
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35 267 Even with the most favorable intentions, dentists will not report violence if they
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37 268 cannot identify its signs. In the present study, 52.2% of the respondents reported being able to
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39 269 identify victims of violence. Previous studies showed differences in dentists' perceived ability
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41 270 to identify victims of violence across countries [5,6, 8, 16-18] which might be attributed to
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43 271 variations in training requirements and opportunities across countries.
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46 272 Our definition of subjective norms was based on dentists' perception of mandated
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48 273 reporting in the workplace. We used this definition instead of focusing on significant others
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50 274 since the mobility of dentists across countries meant that the values shared by these others
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52 275 may differ from those prevailing in country of practice. The approach we followed was
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54 276 similar to the definition of Ben Natan et al [19] where they focused on those who educated
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3 277 nursing students. In the present study, the mean score of negative perception was 5.3/ 10
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5 278 indicating that, on average, no clear message was received by dentists from their work place
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7 279 whether or not to report suspected violence. This was more because dentists felt the law was
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9 280 not enforced than their perception that reporting was not mandated (mean = 6.5 and 3.8). This
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11 281 agrees with Adair et al [20] who concluded that the likelihood of intending to report suspected
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13 282 violence was greater if dentists recognized that they were legally mandated to report.
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15 283 Negative perception in the current study was also related to perceiving that there was no
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17 284 authority to report to and the absence of clear rules. Similar perceptions were reported in
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19 285 previous studies addressing child abuse in Arab countries such as Saudi Arabia [8,9] and in
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21 286 other countries including India [13], United States [21], Brazil [15] and Northern Ireland [22].
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23 287 This inadequate knowledge of how or who to report to might be due to the presence of several
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25 288 potential recipients of violence reports [10] or recent enactment of laws [9].
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29 289 In the present study, the presence of protective services was associated with lower
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31 290 odds of intention to report (OR= 0.34), greater negative perception and less positive
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33 291 professional attitude. This might be attributed to dentists not perceiving these services as
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35 292 indicative of real change in social and cultural norms or health care system perspective
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37 293 regarding reporting. Alternatively, they might have considered that care of violence victims
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39 294 was shifted to these services so that they would be ethically justified not to report violence.
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41 295 However, studies using qualitative research techniques are needed for further investigation.
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44 296 In our study, respondents had positive professional attitude toward reporting violence
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46 297 (mean= 7.5/ 10) which agrees with previous studies from Saudi Arabia concerning reporting
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48 298 suspected child abuse [9] and domestic violence [23]. It also agrees with the positive attitude
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50 299 expressed by dentists toward their role in managing child abuse in India [24], Scotland [14],
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52 300 Jordan [6], Brazil [18] and Greece [25] as well as domestic violence reporting in Brazil [15],
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54 301 India [26] and France [5]. Such positive professional attitude - similar to dentists' attitude in
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3 302 other countries- might differ from some negative attitudes and practices in Arab societies that
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5 303 are seen in violence statistics [1]. The predominance of professional attitude over societal
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7 304 practices agrees with a study showing that cultural differences between Arab and Jewish
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9 305 nursing students in Israel did not affect the intention to screen for domestic violence due to
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11 306 the similarity of their education [19]. It also agrees with a study from Taiwan, a country with
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13 307 eastern cultural values, which showed that nurses did not accept the cultural belief that
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15 308 parents can physically discipline their children because these nurses were exposed to mixed
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17 309 cultural influences from the east and west [27]. The young age of nurses in that study was
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19 310 similar to that of our participants and might explain the similarity between the two studies.
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22 311 However, the professional attitude in our study disagrees with Usta et al [28] who reported
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24 312 that Lebanese physicians considered domestic violence a social problem not a medical one
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26 313 and were ready to intervene only when there was actual physical injury. The difference
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28 314 between that study and ours might be because most of the physicians were in private practice
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31 315 and more likely to be worried about the implications on practice income if their local
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33 316 community resented their intervention. Most of the participants in our study, on the other
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35 317 hand, were in the public or academic sectors.

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37 318 Female dentists in our study were less likely to intend reporting suspected violence.
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39 319 The impact of dentist gender in the issue of suspected violence varied among studies. At the
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41 320 level of knowledge of rules and regulation, female dentists in Saudi Arabia were better than
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43 321 males [9]. However, actual reporting of suspected violence was more likely among male
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45 322 dentists in Jordan [7]. Similarly, among Brazilian nurses, of whom 86% were female, under-
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47 323 reporting of violence was noticed and was attributed to conforming to cultural norms [29].
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49 324 Future studies using qualitative research techniques may help elucidate this gender difference
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51 325 and whether it is due to cultural expectations of how females- including dentists- should act or
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53 326 because they are less involved with victims of violence.
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3 327 In our study, the theory of planned behavior correctly classified most dentists based on
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5 328 intention to report violence. Previously, the theory predicted the intention of 28% of Israeli
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7 329 nurses to report child abuse [30, 31] and 32% of their intention to screen for domestic
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9 330 violence where attitudes and subjective norms were significant predictors (regression
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11 331 coefficients= 0.15 and 0.05) [19]. Similarly, Feng and Wu [32] explained Taiwanese nurses'
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13 332 intention to report child abuse using the same theory. Greater association with the outcome
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15 333 was attributed to professional attitude than subjective norms. The least impact was for
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17 334 perceived control which was attributed to the inadequate instructions of how to report.

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20 335 There are some limitations to this study that should be considered. We assessed the
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22 336 intention to report which might differ from actual reporting [5] and future studies are needed
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24 337 to assess these differences. Self-reporting and social desirability could have affected our
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26 338 estimates of intention to report. We also assessed the intention to report regardless of the type
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28 339 of violence (physical, verbal or otherwise) or victim background (age or gender) and there is a
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30 340 need to investigate how these factors might affect the intention to report. In addition, our
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32 341 estimate of intention to report might have been affected by the under representation of dentists
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34 342 in private practice compared to those in the public and academic sectors. Our results need to
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36 343 be interpreted with caution due to the convenience sample we used.

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40 41 345 **Conclusions**

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43 346 Our study included about 3,000 dentists out of 59.5 thousand dentists [12] (5%) caring
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45 347 for 213 million in eight Arab countries [33]. Their intention to report violence was associated
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47 348 with professional attitudes, perceptions and perceived abilities which were similar to those of
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49 349 dentists in other countries [34, 35] but never the less, showed differences by country of
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51 350 practice. Our findings have implications for training to improve the reporting of suspected
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53 351 violence by developing dentists' abilities to identify diagnostic signs, fostering favorable
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352 attitude and increasing awareness of already existing rules and regulations. There is a need to
353 develop shared training resources, policies and clear guidelines that allow consistent
354 professional practices and at the same time acknowledge cultural diversity across countries.

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3 453 **Authors' contribution**

- 4 454 • Maha El Tantawi, Maha Abdelsalam and Balgis Gaffar developed the study idea and questionnaire.
- 5
6 455 • Maha El Tantawi developed the study methods.
- 7
8 456 • Arheiam Arheiam, Wafaa AbdelAziz, Ola B. Al-Batayneh, Mansor Alhowiti, Sadeq Al-Maweri, Mai
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10 457 A. Dama, Mounir Zaghez, Khalid Saddiq Hassan, Mona Al-Sane, Fatma Abdelgawad, Thiyezen
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12 458 Abdullah Aldhelai, Omar Abd El Sadek El Meligy, Jehan AlHumaid and Fahad Al-Harbi collected
13
14 459 data.
- 15
16 460 • Maha El Tantawi, Arheiam Arheiam and Wael Sabbah analyzed and interpreted the results.
- 17
18 461 • Maha El Tantawi, Arheiam Arheiam, Wael Sabbah, Arwa I. Owais, Omar Abd El Sadek El Meligy,
19
20 462 Sadeq Al-Maweri and Wafaa AbdelAziz drafted the manuscripts.
- 21
22 463 • All authors read and approved the final manuscript.
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3 464 **Figure legends**

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5 465 Figure 1: Negative perception of mandated reporting, mean (SD)= 5.3 (2.1), range= 1-10

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7 466 Figure 2: Professional attitude toward reporting, mean (SD)= 7.5 (1.9), range= 1-10 (*:

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9 467 negatively phrased statement)

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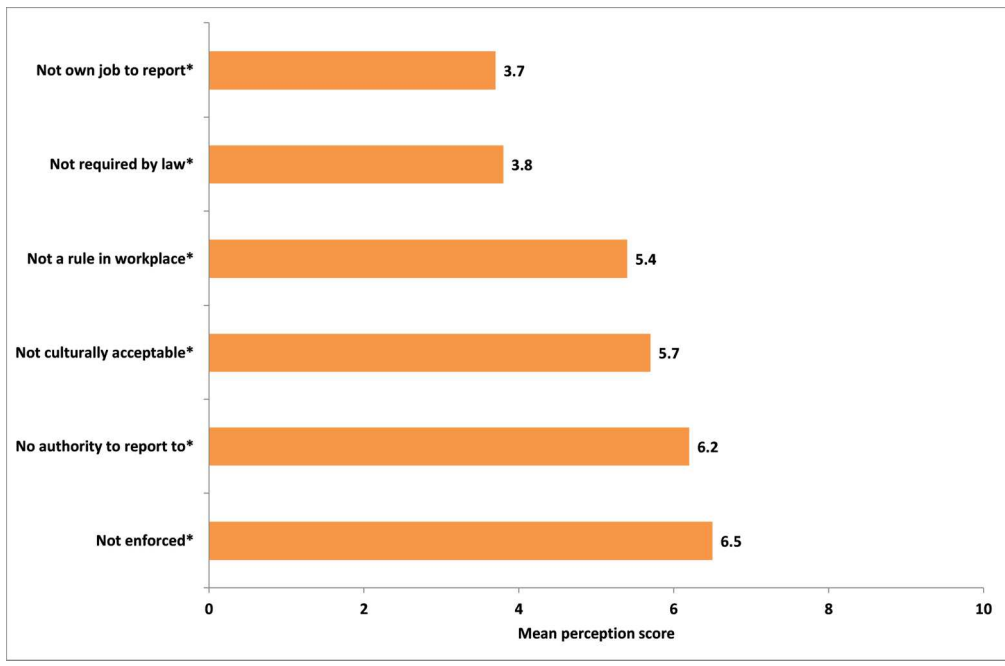


Figure 1: Negative perception of mandated reporting, mean (SD)= 5.3 (2.1), range= 1-10

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view only

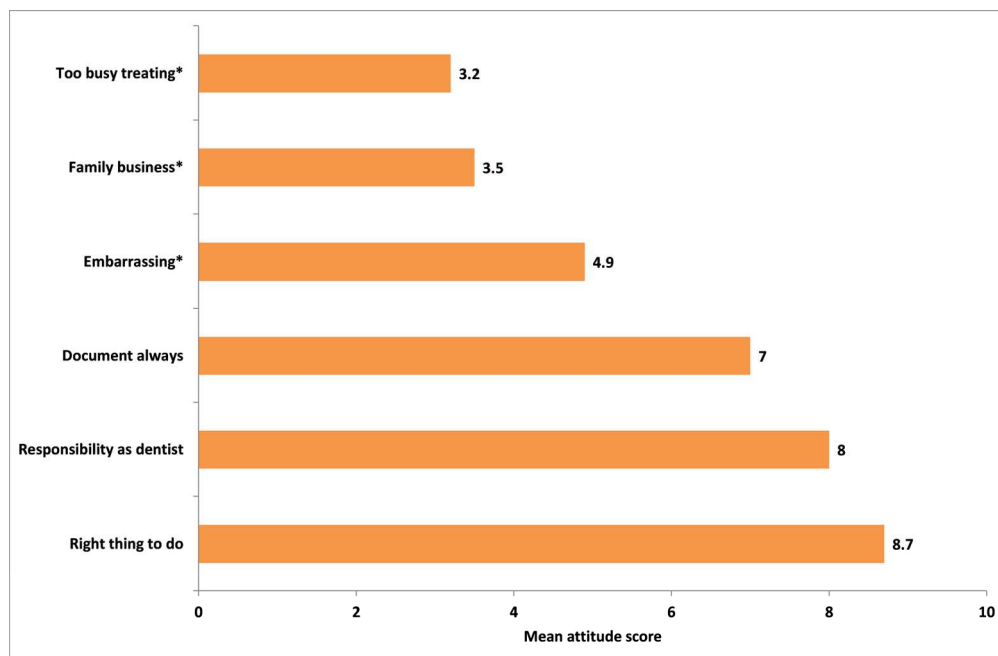


Figure 2: Professional attitude toward reporting, mean (SD)= 7.5 (1.9), range= 1-10 (*: negatively phrased statement)

168x110mm (300 x 300 DPI)

ABUSE MANAGEMENT IN DENTAL PRACTICE

This study is conducted to investigate the role of dentists in abuse management. The questionnaire takes 10 minutes. Kindly answer all questions. All information you provide is confidential and will only be used for research purposes.

I- Personal Information

1. Gender	<input type="checkbox"/> Male	<input type="checkbox"/> Female
2. Age	
3. Has children	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Nationality	
Country where you are currently practicing	

II- Professional background

4. Specialization	<input type="checkbox"/> General Practitioner	<input type="checkbox"/> Specialist/ Consultant	
5. Type of practice	<input type="checkbox"/> Private sector	<input type="checkbox"/> Public sector	<input type="checkbox"/> University clinic/ hospital
6. Did you have any training in abuse management?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
7. Do you think you can identify signs of abuse in your patients?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	

III- Perception of abuse reporting in clinical practice

How much, on a scale of **1** (not true at all) to **10** (very true), in your opinion is the following true about abuse reporting where you practice?

8. Reporting abuse is not required by law.	
9. Reporting abuse is not enforced.	
10. Reporting abuse is not a rule of the place where I work.	
11. There is no specific authority to report to.	
12. It is not my job to report abuse.	
13. Reporting abuse is not culturally accepted	

IV- Attitudes towards abuse reporting

Select the response that represents your attitude on a scale from **1** (completely disagree) to **10** (completely agree) for each of the following

14. Reporting abuse is the right thing to do	
15. It is my responsibility as a dentist to report abuse	
16. I am too busy treating patients to report abuse	
17. I would document abuse manifestations even if not relevant to treatment	
18. If abuse is suspected within a family, it is their business; no one should interfere	
19. It is embarrassing to interfere with others to check about suspected abuse	

20. Which of the following would be your first choice to report abuse to?

<input type="checkbox"/> Police	<input type="checkbox"/> Social Service Agencies / Ministry of Social Affairs	<input type="checkbox"/> Ministry of Health
<input type="checkbox"/> Non-governmental Organizations	<input type="checkbox"/> Others (specify.....)	<input type="checkbox"/> I do not know

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	1
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	5& 6
Objectives	3	State specific objectives, including any prespecified hypotheses	6
Methods			
Study design	4	Present key elements of study design early in the paper	6
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	7
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	7& 8
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	7& 8
Bias	9	Describe any efforts to address potential sources of bias	-
Study size	10	Explain how the study size was arrived at	6
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	8
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	8
		(b) Describe any methods used to examine subgroups and interactions	-
		(c) Explain how missing data were addressed	-
		(d) If applicable, describe analytical methods taking account of sampling strategy	-
		(e) Describe any sensitivity analyses	-
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed	9

		eligible, included in the study, completing follow-up, and analysed	
		(b) Give reasons for non-participation at each stage	-
		(c) Consider use of a flow diagram	-
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	9& 10
		(b) Indicate number of participants with missing data for each variable of interest	-
Outcome data	15*	Report numbers of outcome events or summary measures	11&12
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	12& 13
		(b) Report category boundaries when continuous variables were categorized	-
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	-
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	-
Discussion			
Key results	18	Summarise key results with reference to study objectives	14
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	17
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	14-17
Generalisability	21	Discuss the generalisability (external validity) of the study results	17
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	4

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.

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3 **1 Dentists' intention to report suspected violence: a cross-sectional study in eight Arab**
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5 **2 countries**

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31 Abstract

32 Objectives

33 This study assessed ~~dentists' the~~ intention ~~of dentists~~ in eight Arab countries to report
34 suspected exposure to violence among ~~their~~ patients and factors associated with this intention
35 based on the theory of planned behavior.

36 Methods

37 A cross-sectional study was conducted in 2016 including a convenience sample of dentists
38 practicing in public, private and academic sectors in Algeria, Egypt, Jordan, Kuwait, Libya,
39 Palestine, Saudi Arabia and Yemen. ~~Respondents were selected using a convenience sample.~~
40 They Respondents answered a self-administered questionnaire ~~that collect~~ing information
41 about personal and professional background and perceived ability to identify victims of
42 violence. The questionnaire ~~also~~ assessed (on a scale from 1 to 10 using 6 negative
43 statements) dentists' perception of healthcare system mandated reporting of suspected
44 violence. Six ~~other~~ statements were used to assess professional attitude toward reporting
45 suspected violence. Logistic regression ~~analysis~~ was used to assess the association between
46 intention to report suspected violence and perceived ability, perception and attitude adjusting
47 for confounders.

48 Results

49 The response rate was 65.2% (n= 2,936/ 4506) from general practitioners (70.9%) of mean
50 age= 31 years with 56.7% females. Of those, with 68.8% intended to report and 52.2%
51 considered themselves able to identify violence victims ~~of violence~~. The mean (SD)
52 negative perception score= 5.3/10 (2.1) and the mean (SD) professional attitude score= 7.5/10
53 (1.9). In multivariate regression, intention to report was associated with professional attitude
54 (OR= 1.08, 95%CI= 1.03, 1.14), ability to identify violence victims (OR= 1.76, 95%CI=1.45,

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3 55 2.12) and negative perception that reporting is not mandated (OR= 0.89, 95%CI=0.85, 0.94).
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5 56 Significant differences existed ~~between~~among countries in intention to report.
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7 57 **Conclusion**
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9 58 Most dentists intended to report suspected violence and their intention could be explained by
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11 59 the theory of planned behavior which offers a framework for professional development ~~so that~~
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13 60 ~~dentists can to~~ support violence victims ~~of violence~~. Sharing of training resources, policies
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15 61 and guidelines is needed to ensure that practices similar to international guidelines are
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17 62 consistently adopted by dentists across Arab countries.
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63 **Strengths and limitations**

- 64 • We included dentists from eight Arab countries which increases the geographic
65 representativeness of our findings and fills a knowledge gap about the intended
66 practices of dentists in this region.
- 67 • The theory of planned behavior provides a framework to explain the intention to
68 report and helps in planning professional development activities to better prepare
69 dentists to help their patients.
- 70 • Social desirability might have affected our estimates of dentists' intention to report
71 suspected violence.
- 72 • Dentists in private practice were under represented compared to dentists from the
73 public and academic sectors.

75 **Funding statement**

76 This research received no specific grant from any funding agency in the public,
77 commercial or not-for-profit sectors.

79 **Competing interest statement**

80 None declared.

82 **Data sharing statement**

83 The dataset will be made available from the corresponding author.

84 **Introduction**

85 In 2014, the World Health Organization (WHO) issued the first report on the global
86 status of violence prevention [1]. The report defined interpersonal violence as violence that
87 occurs between family members, intimate partners, friends, acquaintances and strangers and
88 includes child maltreatment, intimate partner violence and elder abuse in addition to some
89 other forms of violence. The report showed that although the problem is preventable and
90 efforts were already under way to reduce it, much remained to be done. Global statistics [1]
91 indicate that most cases of violence against children, women and elderly are not reported to
92 authorities or service providers. This emphasizes the need of the health sector to have a more
93 active role in documenting and reporting cases of violence.

94 The Eastern Mediterranean Region which includes Arab countries has one of the
95 highest prevalence of intimate partner violence, the most extensively surveyed of all types of
96 violence, among the six WHO regions (37%). Comprehensive information about violence
97 against children and the elderly is not available [1]. Arab countries are more defined by their
98 shared culture than by being a specific race [2]. Given that what constitutes violence depends
99 on contextual and cultural norms, what would be labelled as violence against women or
100 children in western countries, may be culturally acceptable or may be considered a private
101 matter in Arab countries [3]. Because of this, studies related to violence management that
102 were conducted in western countries may not apply in Arab countries.

103 Dental care settings are often the primary contact point for violence victims since head
104 and face injuries are sites with common manifestation of physical violence [4]. Like all health
105 care professionals, dentists' main goal is to protect human life and the wellbeing of their
106 patients [5] and therefore, they can play an important role in identifying and reporting victims
107 of violence. However, we know little about Arab dentists' willingness to report cases of
108 violence. A review of literature showed that there were few studies that were conducted

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3 109 among dentists in Arab countries and that they focused on children abuse; in Jordan [6,7],
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5 110 Saudi Arabia [8, 9] and the United Arab Emirates [10]. However, none of these studies
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7 111 investigated dentists' intention to report suspicion of violence among adults.
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9 112 Based on the limited number of studies addressing the issue, there is a need to assess
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11 113 the willingness of dentists in Arab countries to report suspected violence. Such information
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13 114 helps inform public health policy, laws and future intervention programs targeting prevention
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15 115 and management of violence. The hypothesis of the study was that dentists' intention to report
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17 116 violence can be explained by the theory of planned behavior [11] where dentists would be
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19 117 more willing to report if they perceive that the health care system requires them to report
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21 118 (normative beliefs), if they have favorable professional attitude toward reporting (behavioral
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23 119 beliefs) and if they think they are able to identify victims of violence (control beliefs). The
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25 120 aims of this study were to 1) assess the intention of dentists in eight Arab countries to report
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27 121 cases of suspected violence and to 2) identify factors associated with this intention.
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33 123 **Methods**

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35 124 Data for this cross-sectional study was collected from April to December 2016 after
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37 125 obtaining the approval of the research ethics committee; the Research Unit in the College of
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39 126 Dentistry, University of Dammam, Saudi Arabia (EA216008) and in accordance with the
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41 127 guidelines of the Helsinki Declaration. Dentists were targeted in eight Arab countries;
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43 128 Algeria, Egypt, Jordan, Kuwait, Libya, Palestine, Saudi Arabia and Yemen. To assess the
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45 129 prevalence of intention to report, sample size was calculated
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47 130 (<http://www.nss.gov.au/nss/home.nsf/pages/Sample+size+calculator>) using the following
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49 131 assumptions: confidence level= 95%, confidence interval= 5%, total number of dentists in
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51 132 each country [12] with an estimated percentage of reporting suspected violence= 32% [10].
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3 133 The number was increased by 25% to allow for non-response. The minimum required sample
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5 134 size per country ranged from 300 to 470 dentists.

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7 135 Participants were selected using convenience sampling including dentists affiliated
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9 136 with professional groups, or from regions where they would be clustered such as capitals and
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11 137 big cities and from different areas in each country to ensure geographic coverage. Because of
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13 138 the war situation in Libya, data collection was restricted only to Eastern Libya. In Algeria,
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15 139 only the city of Annaba was included and the respondents were alumni of Annaba University.

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17 140 Dentists were invited to participate if they 1) had a bachelor of dentistry or equivalent
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19 141 degree and 2) were practicing in one of the eight Arab countries. In the beginning, dentists
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21 142 were included only if they were nationals of the country. Later on, this criterion was dropped
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23 143 due to the presence of a considerable percentage of expats in some countries so that the
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25 144 sample would reflect the profession profile in the participating countries.

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28 145 Data was collected using a questionnaire that was developed based on previous studies
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31 146 [9, 10, 13] ([supplementary file](#)). It consisted of five sections including 20 close-ended
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33 147 questions. The first section sought information about personal background (age in years,
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35 148 gender (male or female) and having children (yes or no)). The 2nd section inquired about
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37 149 professional background including specialization (general practitioner or specialist/
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39 150 consultant), type of practice (private, public or academic sectors), receiving training (yes or
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41 151 no) and perceived ability to identify victims of violence (yes or no). The 3rd section assessed
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43 152 perception of mandated reporting of suspected violence. Participants were asked to indicate
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45 153 how much they considered each of six statements was true of the place they worked on a scale
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47 154 from not true at all (1) to very true (10). The statements were all negatively phrased and
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49 155 indicated that reporting was not required by law, not enforced, not a rule of the place one
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51 156 worked, not the dentist's job to do, not culturally acceptable and that there was no specific
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54 157 authority to report to. The 4th section assessed respondents' attitude toward reporting violence
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3 158 using 6 statements to which they were asked to indicate agreement on a scale from completely
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5 159 disagree (1) to completely agree (10). The statements indicated that reporting was the right
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7 160 thing to do, was the dentist's responsibility, that the dentist would always document the
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9 161 manifestations of suspected violence (positive) in addition to statements indicating that the
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11 162 dentist was too busy with patients to report, that the issue of violence was a family's business
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13 163 where nobody should interfere and that it was embarrassing to check about violence
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15 164 (negative). In the 5th section, respondents were asked whether they would report suspected
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17 165 violence to the police, social services agencies/ Ministry of Social Affairs, Ministry of Health,
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20 166 non- governmental organizations (NGOs) or others. The questionnaire was pilot tested and
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22 167 culturally adapted in each country.
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24 168 The questionnaire was preceded by a brief explanation of the study purpose and
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26 169 explained that by responding, the dentist indicated consent to join the study. It took about ten
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28 170 minutes to complete and was self-administered, in Arabic and English, as printed and
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30 171 electronic versions. A respondent received the questionnaire by hand or a link to the
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32 172 electronic version was sent to an email list or by WhatsApp message. The investigator issued
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34 173 three reminders over a period of three months in case of non-response.
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37 174 Analysis

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39 175 The internal consistency of the statements of perception and attitude was assessed
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41 176 using Cronbach alpha. Overall scores of the two constructs were developed by averaging the
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43 177 items' scores after reverse coding negative attitude statements. Higher perception score thus
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45 178 indicated less (negative) perception so that dentists considered themselves were not mandated
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47 179 to report and higher attitude score indicated more positive professional attitude. Separate
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49 180 logistic regression models were developed to assess the association between intention to
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51 181 report suspected violence (dichotomous outcome: yes vs no) and each of (a) perception of
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53 182 mandated reporting (norms) (measured on a scale from 1 to 10), (b) professional attitude
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183 toward reporting (measured on a scale from 1 to 10) and (c) perceived ability to identify
 184 victims of violence (control) (yes vs no) in addition to personal and professional factors (all
 185 were categorical variables except age). Countries were considered to have protective services
 186 for children or adults based on the WHO report whether these services were limited, partial or
 187 full [1]. All factors were included in a multivariable model where they were simultaneously
 188 adjusted after removing the factors whose estimates showed correlation. All models were
 189 adjusted for country of practice. Odds ratios, 95% confidence intervals and p values were
 190 calculated for all models and so was the percentage of correctly classified cases for the model
 191 including all variables.

193 Results

194 The overall response rate was 65.2% ranging from 51% in Palestine to 78% in Yemen
 195 (Table 1). Some nationalities practiced in their own countries and in other countries included
 196 in the study (Egyptians 28.1% vs 29.9%, Jordanians 11.8% vs 12.6% and Yemenis 9.9% vs
 197 10.4%). The majority of expats were from Asian (5.4%) or other Arab countries not included
 198 in the study (3.1%). Protective services for victims of violence were not documented in
 199 Kuwait, Libya and Palestine.

201 Table 1: Response rate, presence of protective services and intention to report by country

Country	Response rate	Documented presence of protective services	Intention to report N (%)
Algeria	110/ 175= 62.9%	Yes	88 (80%)
Egypt	826/ 1271= 65%	Yes	505 (61.1%)
Jordan	347/ 475= 73.1%	Yes	271 (78.1%)
Kuwait	449/ 632= 71%	No	305 (67.9%)

Libya	225/389= 57.8%	No	159 (70.7%)
Palestine	380/ 745= 51%	No	326 (85.8%)
Saudi Arabia	308/ 446= 69.1%	Yes	190 (61.7%)
Yemen	291/ 373= 78%	Yes	175 (60.1%)
Total	2936/ 4506= 65.2%		2019 (68.8%)

202

203 The mean (SD) age in years was 31.0 (9.2), 56.7% were females and 53.7% had no
 204 children (Table 2). Most respondents were general practitioners (70.9%) working in the public
 205 (43.9%) or private sectors (34.2%). Only 19.3% reported receiving training to manage victims
 206 of violence and 52.2% claimed that they can identify them. Protective services for victims of
 207 violence were present in the countries of practice of 64.1% of the respondents.

208

209 Table 2: Personal and professional background of participants

Factor		N (%)
Age	Mean (SD)	31.0 (9.2)
Gender	Male	1268 (43.3%)
	Female	1659 (56.7%)
Has no children		1571 (53.7%)
Specialization	General practitioner	2047 (70.9%)
	Specialist/ Consultant	839 (29.1%)
Type of practice	Private sector	976 (34.2%)
	Public sector	1257 (43.9%)
	Academic sector	623 (21.9%)
Received training		565 (19.3%)
Perceived ability to identify victims of violence		1445 (52.2%)

Presence of protective services for children or adults in country of practice	1882 (64.1%)
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211 The majority of respondents indicated their intention to report suspected violence
 212 (2019, 68.8%); mainly to the police (933, 31.8%), or social affairs agencies (842, 28.7%)
 213 followed by the Ministry of Health (303, 10.3%) and NGOs (132, 4.5%). There was a
 214 significant difference among countries in the percentage of dentists indicating intention to
 215 report ranging from 60.1% in Yemen to 85.8% in Palestine ($P < 0.0001$, Table 1).

216 Figure 1 shows that the highest mean negative perception item score was for
 217 perceiving that reporting was not enforced (6.5) followed by perceiving that there was no
 218 authority to report to (6.2). The internal consistency of perception statements was acceptable
 219 (Cronbach alpha = 0.68, 95% CI= 0.66, 0.70, $P < 0.0001$) and the mean (SD) equals 5.3 (2.1).
 220 The highest mean score for statements of attitude toward reporting (Figure 2) was for
 221 indicating that it was the right thing to do (8.7) and the lowest was for the negative statement
 222 indicating that the respondent was too busy treating patients to report (mean= 3.2). The
 223 internal consistency of the statements was good (Cronbach alpha = 0.72, 95% CI= 0.70, 0.74,
 224 $P < 0.0001$) and the mean (SD) equals 7.5 (1.9).

225 Dentists who practiced in countries where there were protective services for violence
 226 victims had significantly higher negative perception and lower attitude scores than those
 227 without such services ($P < 0.0001$ and 0.02). Dentists who reported being able to identify
 228 violence victims had significantly lower negative perception and higher attitude scores than
 229 those who did not ($P < 0.0001$, Table 3). There was a significant moderate negative correlation
 230 between perception and professional attitude (Pearson $r = -0.32$, $P < 0.0001$).

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233 Table 3: Association of perception and attitude with presence of protective services and
 234 ability to identify victims of violence

	Score: mean (SD)		P value
	Protective services in country of practice	No protective services in country of practice	
Negative perception	5.50 (2.13)	4.87 (2.11)	<0.0001*
Positive professional attitude	7.41 (1.94)	7.59 (1.87)	0.02*
	Able to identify victims of violence	Not able to identify victims of violence	
Negative perception	4.98 (2.17)	5.56 (2.06)	<0.0001*
Positive professional attitude	7.72 (1.85)	7.25 (1.99)	<0.0001*

235 *: statistically significant at $P < 0.05$

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237 Table 4 shows that attitude, perception and reported ability to identify violence
 238 victims were significantly associated ($P < 0.0001$) with intention to report in the separate
 239 models (model 1) in addition to gender ($P < 0.0001$), age ($P = 0.004$) and presence of
 240 protective services ($P < 0.0001$). In the multivariable model 2, higher odds of intention to
 241 report were significantly associated with higher professional attitude score (OR= 1.08, 95%
 242 CI= 1.03, 1.14) and reported ability to identify victims of violence (OR= 1.76, 95% CI= 1.45,
 243 2.12). Lower odds of intended reporting were significantly associated with higher score of
 244 negative perception (OR= 0.89, 95% CI= 0.85, 0.94). In addition, the presence of protective
 245 services was associated with significantly lower odds of intention to report (OR= 0.34, 95%
 246 CI= 0.22, 0.50). The multivariable model 2 correctly classified 71.6% of dentists based on
 247 intention to report suspected violence.

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249

250 Table 4: Factors associated with intention to report suspected violence

Factors	Model 1		Model 2	
	OR (95% CI)	P value	OR (95% CI)	P value
Higher attitude score by one point	1.10 (1.06, 1.15)	<0.0001*	1.08 (1.03, 1.14)	0.002*
Higher negative perception score by one point	0.88 (0.84, 0.92)	<0.0001*	0.89 (0.85, 0.94)	<0.0001*
Ability to identify victims of violence vs not	1.80 (1.52, 2.14)	<0.0001*	1.76 (1.45, 2.12)	<0.0001*
Male vs female	1.74 (1.47, 2.06)*	<0.0001*	1.85 (1.52, 2.25)	<0.0001*
Older dentist by one year	1.01 (1.004, 1.02)	0.004*	1.01 (0.99, 1.02)	0.36
Has children vs does not have children	1.14 (0.97, 1.35)	0.12	-	-
General practitioner vs specialist/ consultant	0.99 (0.83, 1.19)	0.93	-	-
Working in public vs private sector	0.95 (0.77, 1.18)	0.66	1.11 (0.87, 1.42)	0.40
Working in academic vs private sector	0.83 (0.66, 1.05)	0.11	0.88 (0.68, 1.15)	0.37
Presence of protective services in country of practice vs not	0.25 (0.17, 0.36)	<0.0001*	0.34 (0.22, 0.50)	<0.0001*

251 Model 1: includes individual factors adjusted for country of practice

252 Model 2: includes all factors adjusted for country of practice

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3 253 OR: odds ratio, CI: confidence interval, *: statistically significant at $P < 0.05$. Percent
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5 254 correctly classified by multivariable model: 71.6%.

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9 256 **Discussion**

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11 257 Our results indicated a moderate level of dentists' intention to report suspected
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13 258 violence with significant difference among the eight Arab countries. The findings supported
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15 259 the hypothesis and showed that the theory of planned behavior [11] correctly classified most
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17 260 dentists regarding their intention to report suspected violence. A combination of dentist's
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19 261 professional attitude, perceived ability to identify victims of violence and perception of
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21 262 mandatory rules and regulation were associated with intention to report. The presence of
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23 263 protective services in the country of practice was associated with less intention to report.

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25 264 Most dentists in the present study (68.8%) indicated they intended to report violence.
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27 265 This finding is similar to those of previous studies in Arab countries such as Jordan [6] and
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29 266 Saudi Arabia [8,9] and western countries such as Scotland [14] and Brazil [15]. However, less
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31 267 intention to report was shown in some studies from Italy [16], Brazil [17] and France [5].

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33 268 Even with the most favorable intentions, dentists will not report violence if they
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35 269 cannot identify its signs. In the present study, 52.2% of the respondents reported being able to
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37 270 identify victims of violence. Previous studies showed differences in dentists' perceived ability
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39 271 to identify victims of violence across countries [5,6, 8, 16-18] which might be attributed to
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41 272 variations in training requirements and opportunities across countries.

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43 273 Our definition of subjective norms was based on dentists' perception of mandated
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45 274 reporting in the workplace. We used this definition instead of focusing on significant others
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47 275 since the mobility of dentists across countries meant that the values shared by these others
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49 276 may differ from those prevailing in country of practice. The approach we followed was
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51 277 similar to the definition of Ben Natan et al [19] where they focused on those who educated
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3 278 nursing students. In the present study, the mean score of negative perception was 5.3/ 10
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5 279 indicating that, on average, no clear message was received by dentists from their work place
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7 280 whether or not to report suspected violence. This was more because dentists felt the law was
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9 281 not enforced than their perception that reporting was not mandated (mean = 6.5 and 3.8). This
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11 282 agrees with Adair et al [20] who concluded that the likelihood of intending to report suspected
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13 283 violence was greater if dentists recognized that they were legally mandated to report.
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15 284 Negative perception in the current study was also related to perceiving that there was no
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17 285 authority to report to and the absence of clear rules. Similar perceptions were reported in
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19 286 previous studies addressing child abuse in Arab countries such as Saudi Arabia [8,9] and in
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21 287 other countries including India [13], United States [21], Brazil [15] and Northern Ireland [22].
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23 288 This inadequate knowledge of how or who to report to might be due to the presence of several
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25 289 potential recipients of violence reports [10] or recent enactment of laws [9].

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29 290 In the present study, the presence of protective services was associated with lower
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31 291 odds of intention to report (OR= 0.34), greater negative perception and less positive
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33 292 professional attitude. This might be attributed to dentists not perceiving these services as
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35 293 indicative of real change in social and cultural norms or health care system perspective
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37 294 regarding reporting. Alternatively, they might have considered that care of violence victims
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39 295 was shifted to these services so that they would be ethically justified not to report violence.
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41 296 However, studies using qualitative research techniques are needed for further investigation.

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44 297 In our study, respondents had positive professional attitude toward reporting violence
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46 298 (mean= 7.5/ 10) which agrees with previous studies from Saudi Arabia concerning reporting
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48 299 suspected child abuse [9] and domestic violence [23]. It also agrees with the positive attitude
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50 300 expressed by dentists toward their role in managing child abuse in India [24], Scotland [14],
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52 301 Jordan [6], Brazil [18] and Greece [25] as well as domestic violence reporting in Brazil [15],
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54 302 India [26] and France [5]. Such positive professional attitude - similar to dentists' attitude in

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3 303 other countries- might differ from some negative attitudes and practices in Arab societies that
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5 304 are seen in violence statistics [1]. The predominance of professional attitude over societal
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7 305 practices agrees with a study showing that cultural differences between Arab and Jewish
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9 306 nursing students in Israel did not affect the intention to screen for domestic violence due to
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11 307 the similarity of their education [19]. It also agrees with a study from Taiwan, a country with
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13 308 eastern cultural values, which showed that nurses did not accept the cultural belief that
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15 309 parents can physically discipline their children because these nurses were exposed to mixed
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17 310 cultural influences from the east and west [27]. The young age of nurses in that study was
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19 311 similar to that of our participants and might explain the similarity between the two studies.
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21 312 However, the professional attitude in our study disagrees with Usta et al [28] who reported
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23 313 that Lebanese physicians considered domestic violence a social problem not a medical one
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25 314 and were ready to intervene only when there was actual physical injury. The difference
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27 315 between that study and ours might be because most of the physicians were in private practice
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29 316 and more likely to be worried about the implications on practice income if their local
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31 317 community resented their intervention. Most of the participants in our study, on the other
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33 318 hand, were in the public or academic sectors.

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37 319 Female dentists in our study were less likely to intend reporting suspected violence.
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39 320 The impact of dentist gender in the issue of suspected violence varied among studies. At the
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41 321 level of knowledge of rules and regulation, female dentists in Saudi Arabia were better than
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43 322 males [9]. However, actual reporting of suspected violence was more likely among male
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45 323 dentists in Jordan [7]. Similarly, among Brazilian nurses, of whom 86% were female, under-
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47 324 reporting of violence was noticed and was attributed to conforming to cultural norms [29].
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49 325 Future studies using qualitative research techniques may help elucidate this gender difference
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51 326 and whether it is due to cultural expectations of how females- including dentists- should act or
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53 327 because they are less involved with victims of violence.
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3 328 In our study, the theory of planned behavior correctly classified most dentists based on
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5 329 intention to report violence. Previously, the theory predicted the intention of 28% of Israeli
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7 330 nurses to report child abuse [30, 31] and 32% of their intention to screen for domestic
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9 331 violence where attitudes and subjective norms were significant predictors (regression
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11 332 coefficients= 0.15 and 0.05) [19]. Similarly, Feng and Wu [32] explained Taiwanese nurses'
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13 333 intention to report child abuse using the same theory. Greater association with the outcome
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15 334 was attributed to professional attitude than subjective norms. The least impact was for
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17 335 perceived control which was attributed to the inadequate instructions of how to report.

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20 336 There are some limitations to this study that should be considered. We assessed the
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22 337 intention to report which might differ from actual reporting [5] and future studies are needed
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24 338 to assess these differences. Self-reporting and social desirability could have affected our
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26 339 estimates of intention to report. We also assessed the intention to report regardless of the type
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28 340 of violence (physical, verbal or otherwise) or victim background (age or gender) and there is a
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30 341 need to investigate how these factors might affect the intention to report. In addition, our
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32 342 estimate of intention to report might have been affected by the under representation of dentists
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34 343 in private practice compared to those in the public and academic sectors. Our results need to
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36 344 be interpreted with caution due to the convenience sample we used.
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42 346 **Conclusions**

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44 347 Our study included about 3,000 dentists out of 59.5 thousand dentists [12] (5%) caring
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46 348 for 213 million in eight Arab countries [33]. Their intention to report violence was associated
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48 349 with professional attitudes, perceptions and perceived abilities which were similar to those of
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50 350 dentists in other countries [34, 35] but never the less, showed differences by country of
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52 351 practice. Our findings have implications for training to improve the reporting of suspected
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54 352 violence by developing dentists' abilities to identify diagnostic signs, fostering favorable
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353 attitude and increasing awareness of already existing rules and regulations. There is a need to
354 develop shared training resources, policies and clear guidelines that allow consistent
355 professional practices and at the same time acknowledge cultural diversity across countries.

For peer review only

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3 454 **Authors' contribution**

- 4
5 455 • Maha El Tantawi, Maha Abdelsalam and Balgis Gaffar developed the study idea and questionnaire.
6
7 456 • Maha El Tantawi developed the study methods.
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9 457 • Arheiam Arheiam, Wafaa AbdelAziz, Ola B. Al-Batayneh, Mansor Alhowiti, Sadeq Al-Maweri, Mai
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12 459 Abdullah Aldhelai, Omar Abd El Sadek El Meligy, Jehan AlHumaid and Fahad Al-Harbi collected
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16 461 • Maha El Tantawi, Arheiam Arheiam and Wael Sabbah analyzed and interpreted the results.
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18 462 • Maha El Tantawi, Arheiam Arheiam, Wael Sabbah, Arwa I. Owais, Omar Abd El Sadek El Meligy,
19 463 Sadeq Al-Maweri and Wafaa AbdelAziz drafted the manuscripts.
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21 464 • All authors read and approved the final manuscript.
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3 465 **Figure legends**

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5 466 Figure 1: Negative perception of mandated reporting, mean (SD)= 5.3 (2.1), range= 1-10

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7 467 Figure 2: Professional attitude toward reporting, mean (SD)= 7.5 (1.9), range= 1-10 (*:

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9 468 negatively phrased statement)

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Dentists' intention to report suspected violence: a cross-sectional study in eight Arab countries

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	MANAGEMENT, ETHICS (see Medical Ethics), Human resource management < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, MEDICAL ETHICS, PRIMARY CARE, PUBLIC HEALTH

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3 **1 Dentists' intention to report suspected violence: a cross-sectional study in eight Arab**
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34 **Abstract**

35 **Objectives**

36 This study assessed dentists' intention in eight Arab countries to report suspected exposure to
37 violence among patients and factors associated with this intention based on the theory of
38 planned behavior.

39 **Methods**

40 A cross-sectional study was conducted in 2016 including a convenience sample of dentists
41 practicing in public, private and academic sectors in Algeria, Egypt, Jordan, Kuwait, Libya,
42 Palestine, Saudi Arabia and Yemen. Respondents answered a self-administered questionnaire
43 collecting information about personal and professional background and perceived ability to
44 identify victims of violence. The questionnaire assessed (on a scale from 1 to 10 using 6
45 negative statements) dentists' perception of healthcare system mandated reporting of
46 suspected violence. Six statements were used to assess professional attitude toward reporting
47 suspected violence. Logistic regression was used to assess the association between intention
48 to report suspected violence and perceived ability, perception and attitude adjusting for
49 confounders.

50 **Results**

51 The response rate was 65.2% (n= 2,936/ 4506) from general practitioners (70.9%) of mean
52 age= 31 years with 56.7% females. Of those, 68.8% intended to report and 52.2% considered
53 themselves able to identify violence victims. The mean (SD) negative perception score=
54 5.3/10 (2.1) and the mean (SD) professional attitude score= 7.5/10 (1.9). In multivariate
55 regression, intention to report was associated with professional attitude (OR= 1.08, 95%CI=
56 1.03, 1.14), ability to identify violence victims (OR= 1.76, 95%CI=1.45, 2.12) and negative
57 perception that reporting is not mandated (OR= 0.89, 95%CI=0.85, 0.94). Significant
58 differences existed among countries in intention to report.

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3 59 **Conclusion**

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5 60 Most dentists intended to report suspected violence and their intention could be explained by
6
7 61 the theory of planned behavior which offers a framework for professional development to
8
9 62 support violence victims. Sharing of training resources, policies and guidelines is needed to
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11 63 ensure that practices similar to international guidelines are consistently adopted by dentists
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13 64 across Arab countries.
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65 **Strengths and limitations**

- 66 • We included dentists from eight Arab countries which increases the geographic
67 representativeness of our findings and fills a knowledge gap about the intended
68 practices of dentists in this region.
- 69 • The theory of planned behavior provides a framework to explain the intention to
70 report and helps in planning professional development activities to better prepare
71 dentists to help their patients.
- 72 • Social desirability might have affected our estimates of dentists' intention to report
73 suspected violence.
- 74 • Dentists in private practice were under represented compared to dentists from the
75 public and academic sectors.

77 **Funding statement**

78 This research received no specific grant from any funding agency in the public,
79 commercial or not-for-profit sectors.

81 **Competing interest statement**

82 None declared.

84 **Data sharing statement**

85 The dataset will be made available from the corresponding author.

86 **Introduction**

87 In 2014, the World Health Organization (WHO) issued the first report on the global
88 status of violence prevention [1]. The report defined interpersonal violence as violence that
89 occurs between family members, intimate partners, friends, acquaintances and strangers and
90 includes child maltreatment, intimate partner violence and elder abuse in addition to some
91 other forms of violence. The report showed that although the problem is preventable and
92 efforts were already under way to reduce it, much remained to be done. Global statistics [1]
93 indicate that most cases of violence against children, women and elderly are not reported to
94 authorities or service providers. This emphasizes the need of the health sector to have a more
95 active role in documenting and reporting cases of violence.

96 The Eastern Mediterranean Region which includes Arab countries has one of the
97 highest prevalence of intimate partner violence, the most extensively surveyed of all types of
98 violence, among the six WHO regions (37%). Comprehensive information about violence
99 against children and the elderly is not available [1]. Arab countries are more defined by their
100 shared culture than by being a specific race [2]. Given that what constitutes violence depends
101 on contextual and cultural norms, what would be labelled as violence against women or
102 children in western countries, may be culturally acceptable or may be considered a private
103 matter in Arab countries [3]. Because of this, studies related to violence management that
104 were conducted in western countries may not apply in Arab countries.

105 Dental care settings are often the primary contact point for violence victims since head
106 and face injuries are sites with common manifestation of physical violence [4]. Like all health
107 care professionals, dentists' main goal is to protect human life and the wellbeing of their
108 patients [5] and therefore, they can play an important role in identifying and reporting victims
109 of violence. However, we know little about Arab dentists' willingness to report cases of
110 violence. A review of literature showed that there were few studies that were conducted

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3 111 among dentists in Arab countries and that they focused on children abuse; in Jordan [6,7],
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5 112 Saudi Arabia [8, 9] and the United Arab Emirates [10]. However, none of these studies
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7 113 investigated dentists' intention to report suspicion of violence among adults.
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9 114 Scientific evidences [11, 12] show the importance of studying this topic for the dental
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11 115 community, but there is still the need to assess the willingness of dentists in Arab countries to
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13 116 report suspected violence, considering there are only a few studies performed in this region.
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15 117 Such information helps inform public health policy, laws and future intervention programs
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17 118 targeting prevention and management of violence. The hypothesis of the study was that
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19 119 dentists' intention to report violence can be explained by the theory of planned behavior [13]
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21 120 where dentists would be more willing to report if they perceive that the health care system
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23 121 requires them to report (normative beliefs), if they have favorable professional attitude toward
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25 122 reporting (behavioral beliefs) and if they think they are able to identify victims of violence
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27 123 (control beliefs). The aims of this study were to 1) assess the intention of dentists in eight
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29 124 Arab countries to report cases of suspected violence and to 2) identify factors associated with
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31 125 this intention.
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37 127 **Methods**

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39 128 Data for this cross-sectional study was collected from April to December 2016 after
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41 129 obtaining the approval of the research ethics committee; the Research Unit in the College of
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43 130 Dentistry, University of Dammam, Saudi Arabia (EA216008) and in accordance with the
44
45 131 guidelines of the Helsinki Declaration. Dentists were targeted in eight Arab countries;
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47 132 Algeria, Egypt, Jordan, Kuwait, Libya, Palestine, Saudi Arabia and Yemen. To assess the
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49 133 prevalence of intention to report, sample size was calculated
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51 134 (<http://www.nss.gov.au/nss/home.nsf/pages/Sample+size+calculator>) using the following
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53 135 assumptions: confidence level= 95%, confidence interval= 5%, total number of dentists in
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3 136 each country [14] with an estimated percentage of reporting suspected violence= 32% [10].
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5 137 The number was increased by 25% to allow for non-response. The minimum required sample
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7 138 size per country ranged from 300 to 470 dentists.

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9 139 Participants were selected using convenience sampling including dentists affiliated
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11 140 with professional groups, or from regions where they would be clustered such as capitals and
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13 141 big cities and from different areas in each country to ensure geographic coverage. Because of
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15 142 the war situation in Libya, data collection was restricted only to Eastern Libya. In Algeria,
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17 143 only the city of Annaba was included and the respondents were alumni of Annaba University.

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20 144 Dentists were invited to participate if they 1) had a bachelor of dentistry or equivalent
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22 145 degree and 2) were practicing in one of the eight Arab countries. In the beginning, dentists
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24 146 were included only if they were nationals of the country. Later on, this criterion was dropped
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26 147 due to the presence of a considerable percentage of expats in some countries so that the
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28 148 sample would reflect the profession profile in the participating countries.

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31 149 Data was collected using a questionnaire that was developed based on previous studies
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33 150 [9, 10, 15] (supplementary file). It consisted of five sections including 20 close-ended
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35 151 questions. The first section sought information about personal background (age in years,
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37 152 gender (male or female) and having children (yes or no)). The 2nd section inquired about
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39 153 professional background including specialization (general practitioner or specialist/
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41 154 consultant), type of practice (private, public or academic sectors), receiving training (yes or
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43 155 no) and perceived ability to identify victims of violence (yes or no). The 3rd section assessed
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45 156 perception of mandated reporting of suspected violence. Participants were asked to indicate
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47 157 how much they considered each of six statements was true of the place they worked on a scale
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49 158 from not true at all (1) to very true (10). The statements were all negatively phrased and
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51 159 indicated that reporting was not required by law, not enforced, not a rule of the place one
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53 160 worked, not the dentist's job to do, not culturally acceptable and that there was no specific
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3 161 authority to report to. The 4th section assessed respondents' attitude toward reporting violence
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5 162 using 6 statements to which they were asked to indicate agreement on a scale from completely
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7 163 disagree (1) to completely agree (10). The statements indicated that reporting was the right
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9 164 thing to do, was the dentist's responsibility, that the dentist would always document the
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11 165 manifestations of suspected violence (positive) in addition to statements indicating that the
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13 166 dentist was too busy with patients to report, that the issue of violence was a family's business
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15 167 where nobody should interfere and that it was embarrassing to check about violence
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17 168 (negative). In the 5th section, respondents were asked whether they would report suspected
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19 169 violence to the police, social services agencies/ Ministry of Social Affairs, Ministry of Health,
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21 170 non- governmental organizations (NGOs) or others. The questionnaire was pilot tested and
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23 171 culturally adapted in each country.
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26 172 The questionnaire was preceded by a brief explanation of the study purpose and
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28 173 explained that by responding, the dentist indicated consent to join the study. It took about ten
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30 174 minutes to complete and was self-administered, in Arabic and English, as printed and
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32 175 electronic versions. A respondent received the questionnaire by hand or a link to the
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34 176 electronic version was sent to an email list or by WhatsApp message. The investigator issued
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36 177 three reminders over a period of three months in case of non-response.
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39 178 Analysis

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41 179 The internal consistency of the statements of perception and attitude was assessed
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43 180 using Cronbach alpha. Overall scores of the two constructs were developed by averaging the
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45 181 items' scores after reverse coding negative attitude statements. Higher perception score thus
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47 182 indicated less (negative) perception so that dentists considered themselves not mandated to
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49 183 report and higher attitude score indicated more positive professional attitude. Separate logistic
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51 184 regression models were developed to assess the association between intention to report
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53 185 suspected violence (dichotomous outcome: yes vs no) and each of (a) perception of mandated
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186 reporting (norms) (measured on a scale from 1 to 10), (b) professional attitude toward
 187 reporting (measured on a scale from 1 to 10) and (c) perceived ability to identify victims of
 188 violence (control) (yes vs no) in addition to personal and professional factors (all were
 189 categorical variables except age). Countries were considered to have protective services for
 190 children or adults based on the WHO report whether these services were limited, partial or
 191 full [1]. All factors were included in a multivariable model where they were simultaneously
 192 adjusted after removing the factors whose estimates showed correlation. All models were
 193 adjusted for country of practice. Odds ratios, 95% confidence intervals and p values were
 194 calculated for all models and so was the percentage of correctly classified cases for the model
 195 including all variables.

197 Results

198 The overall response rate was 65.2% ranging from 51% in Palestine to 78% in Yemen
 199 (Table 1). Some nationalities practiced in their own countries and in other countries included
 200 in the study (Egyptians 28.1% vs 29.9%, Jordanians 11.8% vs 12.6% and Yemenis 9.9% vs
 201 10.4%). The majority of expats were from Asian (5.4%) or other Arab countries not included
 202 in the study (3.1%). Protective services for victims of violence were not documented in
 203 Kuwait, Libya and Palestine.

204
 205 Table 1: Response rate, presence of protective services and intention to report by country

Country	Response rate	Documented presence of protective services	Intention to report N (%)
Algeria	110/ 175= 62.9%	Yes	88 (80%)
Egypt	826/ 1271= 65%	Yes	505 (61.1%)
Jordan	347/ 475= 73.1%	Yes	271 (78.1%)

Kuwait	449/ 632= 71%	No	305 (67.9%)
Libya	225/389= 57.8%	No	159 (70.7%)
Palestine	380/ 745= 51%	No	326 (85.8%)
Saudi Arabia	308/ 446= 69.1%	Yes	190 (61.7%)
Yemen	291/ 373= 78%	Yes	175 (60.1%)
Total	2936/ 4506= 65.2%		2019 (68.8%)

206

207 The mean (SD) age in years was 31.0 (9.2), 56.7% were females and 53.7% had no
 208 children (Table 2). Most respondents were general practitioners (70.9%) working in the public
 209 (43.9%) or private sectors (34.2%). Only 19.3% reported receiving training to manage victims
 210 of violence and 52.2% claimed that they can identify them. Protective services for victims of
 211 violence were present in the countries of practice of 64.1% of the respondents.

212

213 Table 2: Personal and professional background of participants

Factor		N (%)
Age	Mean (SD)	31.0 (9.2)
Gender	Male	1268 (43.3%)
	Female	1659 (56.7%)
Has no children		1571 (53.7%)
Specialization	General practitioner	2047 (70.9%)
	Specialist/ Consultant	839 (29.1%)
Type of practice	Private sector	976 (34.2%)
	Public sector	1257 (43.9%)
	Academic sector	623 (21.9%)
Received training		565 (19.3%)

Perceived ability to identify victims of violence	1445 (52.2%)
Presence of protective services for children or adults in country of practice	1882 (64.1%)

214

215 The majority of respondents indicated their intention to report suspected violence
 216 (2019, 68.8%); mainly to the police (933, 31.8%), or social affairs agencies (842, 28.7%)
 217 followed by the Ministry of Health (303, 10.3%) and NGOs (132, 4.5%). There was a
 218 significant difference among countries in the percentage of dentists indicating intention to
 219 report ranging from 60.1% in Yemen to 85.8% in Palestine ($P < 0.0001$, Table 1).

220 Figure 1 shows that the highest mean negative perception item score was for
 221 perceiving that reporting was not enforced (6.5) followed by perceiving that there was no
 222 authority to report to (6.2). The internal consistency of perception statements was acceptable
 223 (Cronbach alpha = 0.68, 95% CI= 0.66, 0.70, $P < 0.0001$) and the mean (SD) equals 5.3 (2.1).
 224 The highest mean score for statements of attitude toward reporting (Figure 2) was for
 225 indicating that it was the right thing to do (8.7) and the lowest was for the negative statement
 226 indicating that the respondent was too busy treating patients to report (mean= 3.2). The
 227 internal consistency of the statements was good (Cronbach alpha = 0.72, 95% CI= 0.70, 0.74,
 228 $P < 0.0001$) and the mean (SD) equals 7.5 (1.9).

229 Dentists who practiced in countries where there were protective services for violence
 230 victims had significantly higher negative perception and lower attitude scores than those
 231 without such services ($P < 0.0001$ and 0.02). Dentists who reported being able to identify
 232 violence victims had significantly lower negative perception and higher attitude scores than
 233 those who did not ($P < 0.0001$, Table 3). There was a significant moderate negative correlation
 234 between perception and professional attitude (Pearson $r = -0.32$, $P < 0.0001$).

235

236

237 Table 3: Association of perception and attitude with presence of protective services and
 238 ability to identify victims of violence

	Score: mean (SD)		P value
	Protective services in country of practice	No protective services in country of practice	
Negative perception	5.50 (2.13)	4.87 (2.11)	<0.0001*
Positive professional attitude	7.41 (1.94)	7.59 (1.87)	0.02*
	Able to identify victims of violence	Not able to identify victims of violence	
Negative perception	4.98 (2.17)	5.56 (2.06)	<0.0001*
Positive professional attitude	7.72 (1.85)	7.25 (1.99)	<0.0001*

239 *: statistically significant at $P < 0.05$

240

241 Table 4 shows that attitude, perception and reported ability to identify violence
 242 victims were significantly associated ($P < 0.0001$) with intention to report in the separate
 243 models (model 1) in addition to gender ($P < 0.0001$), age ($P = 0.004$) and presence of
 244 protective services ($P < 0.0001$). In the multivariable model 2, higher odds of intention to
 245 report were significantly associated with higher professional attitude score (OR= 1.08, 95%
 246 CI= 1.03, 1.14) and reported ability to identify victims of violence (OR= 1.76, 95% CI= 1.45,
 247 2.12). Lower odds of intended reporting were significantly associated with higher score of
 248 negative perception (OR= 0.89, 95% CI= 0.85, 0.94). In addition, the presence of protective
 249 services was associated with significantly lower odds of intention to report (OR= 0.34, 95%
 250 CI= 0.22, 0.50). The multivariable model 2 correctly classified 71.6% of dentists based on
 251 intention to report suspected violence.

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Table 4: Factors associated with intention to report suspected violence

Factors	Model 1		Model 2	
	OR (95% CI)	P value	OR (95% CI)	P value
Higher attitude score by one point	1.10 (1.06, 1.15)	<0.0001*	1.08 (1.03, 1.14)	0.002*
Higher negative perception score by one point	0.88 (0.84, 0.92)	<0.0001*	0.89 (0.85, 0.94)	<0.0001*
Ability to identify victims of violence vs not	1.80 (1.52, 2.14)	<0.0001*	1.76 (1.45, 2.12)	<0.0001*
Male vs female	1.74 (1.47, 2.06)*	<0.0001*	1.85 (1.52, 2.25)	<0.0001*
Older dentist by one year	1.01 (1.004, 1.02)	0.004*	1.01 (0.99, 1.02)	0.36
Has children vs does not have children	1.14 (0.97, 1.35)	0.12	-	-
General practitioner vs specialist/ consultant	0.99 (0.83, 1.19)	0.93	-	-
Working in public vs private sector	0.95 (0.77, 1.18)	0.66	1.11 (0.87, 1.42)	0.40
Working in academic vs private sector	0.83 (0.66, 1.05)	0.11	0.88 (0.68, 1.15)	0.37
Presence of protective services in country of practice vs not	0.25 (0.17, 0.36)	<0.0001*	0.34 (0.22, 0.50)	<0.0001*

255 Model 1: includes individual factors adjusted for country of practice

256 Model 2: includes all factors adjusted for country of practice

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3 257 OR: odds ratio, CI: confidence interval, *: statistically significant at $P < 0.05$. Percent
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5 258 correctly classified by multivariable model: 71.6%.

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8 9 260 **Discussion**

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11 261 Our results indicated a moderate level of dentists' intention to report suspected
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13 262 violence with significant difference among the eight Arab countries. The findings supported
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15 263 the hypothesis and showed that the theory of planned behavior [13] correctly classified most
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17 264 dentists regarding their intention to report suspected violence. A combination of dentist's
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19 265 professional attitude, perceived ability to identify victims of violence and perception of
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21 266 mandatory rules and regulation were associated with intention to report. The presence of
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23 267 protective services in the country of practice was associated with less intention to report.

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25 268 Most dentists in the present study (68.8%) indicated they intended to report violence.
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27 269 This finding is similar to those of previous studies in Arab countries such as Jordan [6] and
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29 270 Saudi Arabia [8,9] and western countries such as Scotland [16] and Brazil [17]. However, less
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31 271 intention to report was shown in some studies from Italy [18], Brazil [19] and France [5].

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33 272 Even with the most favorable intentions, dentists will not report violence if they
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35 273 cannot identify its signs. In the present study, 52.2% of the respondents reported being able to
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37 274 identify victims of violence. Previous studies showed differences in dentists' perceived ability
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39 275 to identify victims of violence across countries [5,6, 8, 18-20] which might be attributed to
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41 276 variations in training requirements and opportunities across countries.

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43 277 Our definition of subjective norms was based on dentists' perception of mandated
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45 278 reporting in the workplace. We used this definition instead of focusing on significant others
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47 279 since the mobility of dentists across countries meant that the values shared by these others
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49 280 may differ from those prevailing in country of practice. The approach we followed was
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51 281 similar to the definition of Ben Natan et al [21] where they focused on those who educated

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3 282 nursing students. In the present study, the mean score of negative perception was 5.3/ 10
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5 283 indicating that, on average, no clear message was received by dentists from their work place
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7 284 whether or not to report suspected violence. This was more because dentists felt the law was
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9 285 not enforced than their perception that reporting was not mandated (mean = 6.5 and 3.8). This
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11 286 agrees with Adair et al [22] who concluded that the likelihood of intending to report suspected
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13 287 violence was greater if dentists recognized that they were legally mandated to report. Our
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15 288 finding agrees with previous studies concluding that the presence of laws per se does not
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17 289 necessarily improve the awareness of mandated reporting. For example, Katner and Brown
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19 290 [23] reported that all 50 American states require dentists to report suspected violence among
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21 291 their patients. Nevertheless, surveys assessing US dentists' knowledge of mandated reporting
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23 292 showed that respondents were not aware of this legal obligation [24]. The same situation was
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25 293 also reported among Brazilian dentists [19, 20]. Negative perception in the current study was
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27 294 also related to perceiving that there was no authority to report to and the absence of clear
28
29 295 rules. Similar perceptions were reported in previous studies addressing child abuse in Arab
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31 296 countries such as Saudi Arabia [8,9] and in other countries including India [15], United States
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33 297 [25], Brazil [17] and Northern Ireland [26]. This inadequate knowledge of how or who to
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35 298 report to might be due to the presence of several potential recipients of violence reports [10]
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37 299 or recent enactment of laws [9].
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41 300 In the present study, the presence of protective services was associated with lower
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43 301 odds of intention to report (OR= 0.34), greater negative perception and less positive
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45 302 professional attitude. This might be attributed to dentists not perceiving these services as
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47 303 indicative of real change in social and cultural norms or health care system perspective
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49 304 regarding reporting. Alternatively, they might have considered that care of violence victims
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51 305 was shifted to these services so that they would be ethically justified not to report violence.
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53 306 However, studies using qualitative research techniques are needed for further investigation.
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3 307 In our study, respondents had positive professional attitude toward reporting violence
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5 308 (mean= 7.5/ 10) which agrees with previous studies from Saudi Arabia concerning reporting
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7 309 suspected child abuse [9] and domestic violence [27]. It also agrees with the positive attitude
8
9 310 expressed by dentists toward their role in managing child abuse in India [28], Scotland [16],
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11 311 Jordan [6], Brazil [20] and Greece [29] as well as domestic violence reporting in Brazil [17],
12
13 312 India [30] and France [5]. Such positive professional attitude - similar to dentists' attitude in
14
15 313 other countries- might differ from some negative attitudes and practices in Arab societies that
16
17 314 are seen in violence statistics [1]. The predominance of professional attitude over societal
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19 315 practices agrees with a study showing that cultural differences between Arab and Jewish
20
21 316 nursing students in Israel did not affect the intention to screen for domestic violence due to
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23 317 the similarity of their education [21]. It also agrees with a study from Taiwan, a country with
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25 318 eastern cultural values, which showed that nurses did not accept the cultural belief that
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27 319 parents can physically discipline their children because these nurses were exposed to mixed
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29 320 cultural influences from the east and west [31]. The young age of nurses in that study was
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31 321 similar to that of our participants and might explain the similarity between the two studies.
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33 322 However, the professional attitude in our study disagrees with Usta et al [32] who reported
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35 323 that Lebanese physicians considered domestic violence a social problem not a medical one
36
37 324 and were ready to intervene only when there was actual physical injury. The difference
38
39 325 between that study and ours might be because most of the physicians were in private practice
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41 326 and more likely to be worried about the implications on practice income if their local
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43 327 community resented their intervention. Most of the participants in our study, on the other
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45 328 hand, were in the public or academic sectors. Some negative attitudes reported in our study -
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47 329 such as dentists' embarrassment to intervene or considering violence as a family matter- were
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49 330 also reported by 51% of American dentists in one study [33], and cited by 75% of another
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3 331 group of American dentists as a barrier to reporting [34]. This shows the global prevalence of
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5 332 the problem that may transcend geographical barriers and cultural backgrounds.

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7 333 Female dentists in our study were less likely to intend reporting suspected violence.

8
9 334 The impact of dentist gender in the issue of suspected violence varied among studies. At the

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11 335 level of knowledge of rules and regulation, female dentists in Saudi Arabia were better than

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13 336 males [9]. However, actual reporting of suspected violence was more likely among male

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15 337 dentists in Jordan [7]. Similarly, among Brazilian nurses, of whom 86% were female, under-

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17 338 reporting of violence was noticed and was attributed to conforming to cultural norms [35].

18
19 339 Future studies using qualitative research techniques may help elucidate this gender difference

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21 340 and whether it is due to cultural expectations of how females- including dentists- should act or

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23 341 because they are less involved with victims of violence.

24
25 342 In our study, the theory of planned behavior correctly classified most dentists based on

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27 343 intention to report violence. Previously, the theory predicted the intention of 28% of Israeli

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29 344 nurses to report child abuse [36, 37] and 32% of their intention to screen for domestic

30
31 345 violence where attitudes and subjective norms were significant predictors (regression

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33 346 coefficients= 0.15 and 0.05) [21]. Similarly, Feng and Wu [38] explained Taiwanese nurses'

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35 347 intention to report child abuse using the same theory. Greater association with the outcome

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37 348 was attributed to professional attitude than subjective norms. The least impact was for

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39 349 perceived control which was attributed to the inadequate instructions of how to report.

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41 350 There are some limitations to this study that should be considered. We assessed the

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43 351 intention to report which might differ from actual reporting [5] and future studies are needed

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45 352 to assess these differences. Self-reporting and social desirability could have affected our

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47 353 estimates of intention to report. We also assessed the intention to report regardless of the type

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49 354 of violence (physical, verbal or otherwise) or victim background (age or gender) and there is a

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51 355 need to investigate how these factors might affect the intention to report. In addition, our

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3 356 estimate of intention to report might have been affected by the under representation of dentists
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5 357 in private practice compared to those in the public and academic sectors. Our results need to
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7 358 be interpreted with caution due to the convenience sample we used. One of the strengths of
8
9 359 our study is the large sample size of 3,000 dentists which helps in extrapolating the findings
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11 360 to 59.5 thousand dentists [14] caring for 213 million individuals in eight Arab countries [39].
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13 361 Additionally, the diversity of nationalities and locations helps in reporting on a group of
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15 362 professionals with shared background and allows for wider generalizability.
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364 **Conclusions**

365 In the present study, dentists' intention to report violence was associated with
366 professional attitudes, perceptions and perceived abilities which were similar to those of
367 dentists in other countries but never the less, showed differences by country of practice. Our
368 findings have implications for training to improve the reporting of suspected violence by
369 developing dentists' abilities to identify diagnostic signs, fostering favorable attitude and
370 increasing awareness of already existing rules and regulations. There is a need to develop
371 shared training resources, policies and clear guidelines that allow consistent professional
372 practices and at the same time acknowledge cultural diversity across countries.

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3 **483 Authors' contribution**

- 4
5 484 • Maha El Tantawi, Maha Abdelsalam and Balgis Gaffar developed the study idea and questionnaire.
6
7 485 • Maha El Tantawi developed the study methods.
8
9 486 • Arheiam Arheiam, Wafaa AbdelAziz, Ola B. Al-Batayneh, Mansur Alhoti, Sadeq Al-Maweri, Mai A.
10 487 Dama, Mounir Zaghez, Khalid Saddiq Hassan, Mona Al-Sane, Fatma Abdelgawad, Thiyezen Abdullah
11 488 Aldhelai, Omar Abd El Sadek El Meligy, Jehan AlHumaid and Fahad Al-Harbi collected data.
12
13
14 489 • Maha El Tantawi, Arheiam Arheiam and Wael Sabbah analyzed and interpreted the results.
15
16 490 • Maha El Tantawi, Arheiam Arheiam, Wael Sabbah, Arwa I. Owais, Omar Abd El Sadek El Meligy,
17 491 Sadeq Al-Maweri and Wafaa AbdelAziz drafted the manuscripts.
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19 492 • All authors read and approved the final manuscript.
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3 493 **Figure legends**

4
5 494 Figure 1: Negative perception of mandated reporting, mean (SD)= 5.3 (2.1), range= 1-10

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7 495 Figure 2: Professional attitude toward reporting, mean (SD)= 7.5 (1.9), range= 1-10 (*:

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9 496 negatively phrased statement)
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For peer review only

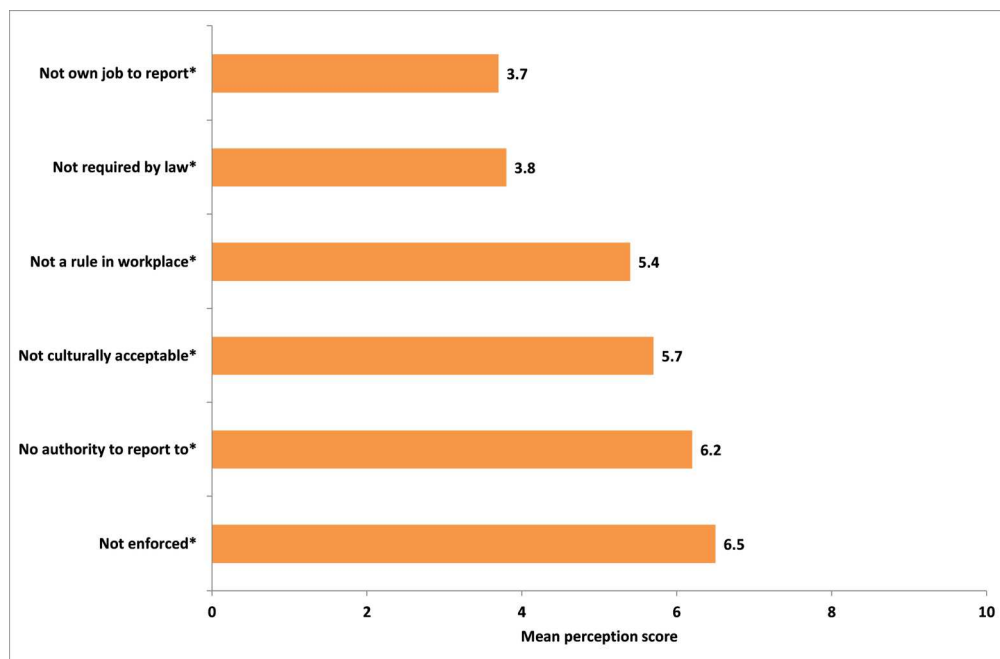


Figure 1: Negative perception of mandated reporting, mean (SD)= 5.3 (2.1), range= 1-10

168x110mm (300 x 300 DPI)

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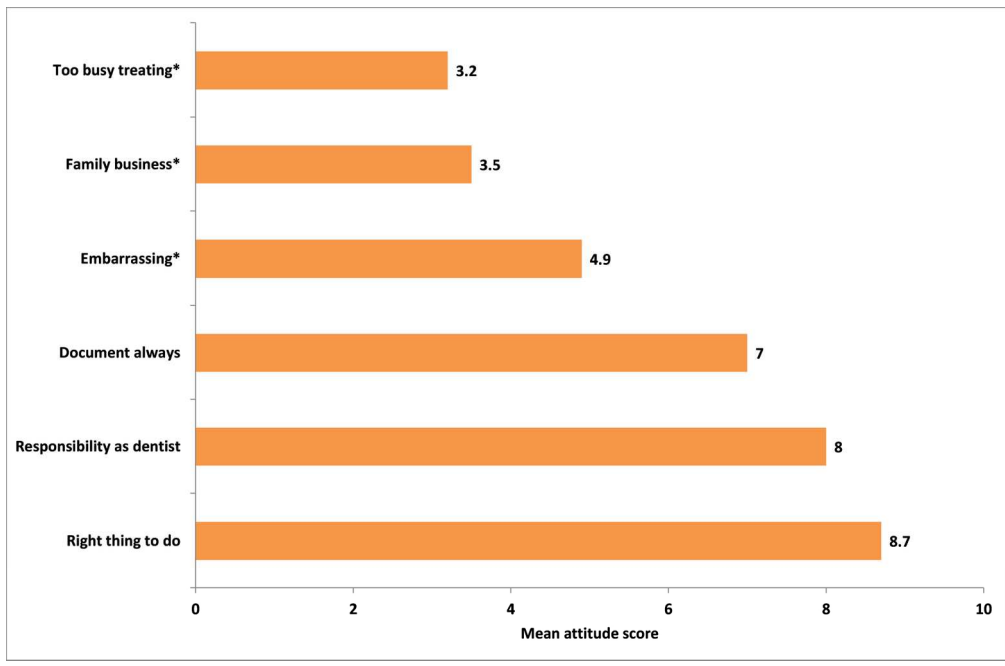


Figure 2: Professional attitude toward reporting, mean (SD)= 7.5 (1.9), range= 1-10 (*: negatively phrased statement)

168x110mm (300 x 300 DPI)

ABUSE MANAGEMENT IN DENTAL PRACTICE

This study is conducted to investigate the role of dentists in abuse management. The questionnaire takes 10 minutes. Kindly answer all questions. All information you provide is confidential and will only be used for research purposes.

I- Personal Information

1. Gender	<input type="checkbox"/> Male	<input type="checkbox"/> Female
2. Age	
3. Has children	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Nationality	
Country where you are currently practicing	

II- Professional background

4. Specialization	<input type="checkbox"/> General Practitioner	<input type="checkbox"/> Specialist/ Consultant	
5. Type of practice	<input type="checkbox"/> Private sector	<input type="checkbox"/> Public sector	<input type="checkbox"/> University clinic/ hospital
6. Did you have any training in abuse management?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
7. Do you think you can identify signs of abuse in your patients?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	

III- Perception of abuse reporting in clinical practice

How much, on a scale of **1** (not true at all) to **10** (very true), in your opinion is the following true about abuse reporting where you practice?

8. Reporting abuse is not required by law.	
9. Reporting abuse is not enforced.	
10. Reporting abuse is not a rule of the place where I work.	
11. There is no specific authority to report to.	
12. It is not my job to report abuse.	
13. Reporting abuse is not culturally accepted	

IV- Attitudes towards abuse reporting

Select the response that represents your attitude on a scale from **1** (completely disagree) to **10** (completely agree) for each of the following

14. Reporting abuse is the right thing to do	
15. It is my responsibility as a dentist to report abuse	
16. I am too busy treating patients to report abuse	
17. I would document abuse manifestations even if not relevant to treatment	
18. If abuse is suspected within a family, it is their business; no one should interfere	
19. It is embarrassing to interfere with others to check about suspected abuse	

20. Which of the following would be your first choice to report abuse to?

<input type="checkbox"/> Police	<input type="checkbox"/> Social Service Agencies / Ministry of Social Affairs	<input type="checkbox"/> Ministry of Health
<input type="checkbox"/> Non-governmental Organizations	<input type="checkbox"/> Others (specify.....)	<input type="checkbox"/> I do not know

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(a) Indicate the study’s design with a commonly used term in the title or the abstract	1
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	5& 6
Objectives	3	State specific objectives, including any prespecified hypotheses	6
Methods			
Study design	4	Present key elements of study design early in the paper	6
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	7
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	7& 8
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	7& 8
Bias	9	Describe any efforts to address potential sources of bias	-
Study size	10	Explain how the study size was arrived at	6
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	8
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	8
		(b) Describe any methods used to examine subgroups and interactions	-
		(c) Explain how missing data were addressed	-
		(d) If applicable, describe analytical methods taking account of sampling strategy	-
		(e) Describe any sensitivity analyses	-
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed	9

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		eligible, included in the study, completing follow-up, and analysed	
		(b) Give reasons for non-participation at each stage	-
		(c) Consider use of a flow diagram	-
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	9& 10
		(b) Indicate number of participants with missing data for each variable of interest	-
Outcome data	15*	Report numbers of outcome events or summary measures	11&12
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	12& 13
		(b) Report category boundaries when continuous variables were categorized	-
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	-
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	-
Discussion			
Key results	18	Summarise key results with reference to study objectives	14
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	17
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	14-17
Generalisability	21	Discuss the generalisability (external validity) of the study results	17
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	4

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.