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Reactions and Barriers to Workplace Violence and Sexual Harassment Among European Dental Hygienists

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Abstract

Objective

This study aimed to identify the primary perpetrators of workplace violence (WPV) against European dental hygienists and to explore responses and underlying reasons after WPV incidents.

Methods

An online questionnaire was administered to a non-probabilistic sample of dental hygienists affiliated with associations that are members of the European Dental Hygiene Federation (EDHF). A total of 24 associations were contacted to help disseminate the questionnaire amongst their members.

Results

A total of 215 participants from 13 European countries participated in the study. Patients and their accompanying persons were the primary perpetrators of WPV, followed by dentists. The most common reaction to WPV was to ignore the incident (54.7%). The main reasons for not reporting WPV included the belief it was a waste of time (51.2%) and lack of knowledge regarding reporting procedures (45.1%). Less than one third of participants have witnessed a colleague suffer from WPV (32.1%) and the most common reaction was to ignore it (46.4%). More than half (59.9%) of dental hygienists lack the knowledge of the existence of an authority to report WPV, and more than half (40.0%) are unaware of the mechanisms to report WPV.

Conclusions

Patients and their companions are the primary perpetrators of WPV against European dental hygienists. Underreporting is highly prevalent and is mainly driven by perceptions that complains are a waste of time and lack of knowledge regarding reporting pathways. These findings highlight the urgent need for structured educational initiates and the development of reporting systems within dental hygiene healthcare settings.

Introduction

According to the World Health Organization (WHO), violence is defined as the intentional use of physical force or power, whether threatened or actual, against oneself, another person, or a group or community, which results in, or is likely to result in, injury, death, psychological harm, impaired development, or deprivation. [1] Since 1996 that violence is considered a significant and escalating public health issue and should be a priority for public health research.[2]

Workplace violence (WPV) is hard to define in a unanimous way due to overlapping of specific interpretations and terminology, and variations based on the country, culture, or situation.[3–5] However, one of the most accepted and recent definition was introduced in 2019 during the General Conference of the International Labour Organization (ILO) and published in the Violence and Harassment Convention (Convention No 190). ILO categorizes “violence and harassment at work” as a range of unacceptable behaviours, actions or threats, occurring once or repeatedly, that aim, result in or are likely to result in physical, psychological, sexual or economic harm.[6]

According to the Convention No 190, violence and harassment at work covers all workers irrespective of their contractual status, the working sector, economy and geographic areas.[6] The convention also encompasses all situations occurring in the course of, linked with or arising out of work.[6]

There are various types of abuse covered within the topic of WPV, often overlapping and resulting in difficulties in studying the phenomenon.[3–5, 7] The literature proposes that the various terms can be categorized into the three most common terms related to violence:[3, 4, 7–11]

- Physical violence: single or repeated unwanted behaviour that can cause harm by using physical force; can include beating, kicking, slapping, punching, stabbing, pushing, biting, among others.
- Verbal violence: single or repeated unwelcome behaviour that can cause harm by using verbal language; can include threats, shouts, bullying, mocking, racial discrimination, among others.
- Sexual harassment: single or repeated unwelcome behaviour that can cause harm by using physical force or verbal language with sexual nature; can include touching, groping, pinching, inappropriate comments of sexual nature, invites of sexual nature, among others.

In recent years, the phenomenon of WPV has escalated significantly, becoming a global issue and a human rights concern, affecting millions of workers worldwide.[6, 9] WPV prompts severe consequences for the wellbeing of the victim, as well as for the work company and society.[6, 9, 12]

The repercussions of WPV on the victim can manifest in both physical and emotional suffering, possibly leading to sickness, accidents, abuse of substances and even death. Additionally, it may lead to diminished motivation and confidence.[1, 3, 4] Companies are not immune to its impact, as WPV can undermine work performance, reduce service quality, and damage the organization's reputation.[1, 3, 4] The broader community also bears the burden through the costs associated with rehabilitating victims and the potential increase in unemployment.[1, 3, 4] As WPV persists, the symptoms tend to worsen.[1, 3, 4]

The health sector is often identified as highly susceptible to exposure to violent acts, primarily due to its frequent interactions with the public.[4, 6, 13] Within this sector, there is evidence of a moderate to high prevalence of WPV against professionals [8, 13–15], however, studies also suggest that many incidents go unreported, implying that the actual rates might be significantly higher. [13]

Regarding the experiences of WPV of dental hygienists, there are still few studies on the matter [7, 16–18], however, a recent study indicates that 80% have encountered WPV at least once in their careers. Verbal violence was the most frequent experienced form of WPV (72.1%), followed by sexual harassment (45.6%) and physical violence (23.7%).[19]

WPV carries significant consequences for the mental and physical well-being of dental hygienists, influencing their productivity and [7], consequently, the standard of care they deliver.[3, 4] It is imperative to perceive this matter not solely as an individual-level challenge but as a broader social issue.[3, 4, 17]

It's crucial to study the experiences of WPV of dental hygienists, as it is the initial stage to develop and implement interventions against WPV, to establish a good working environment and optimise patient care.[7, 8, 17]

The primary aims of this research are to identify the primary perpetrators of WPV against European dental hygienists and to identify the reactions and underlying reasons for those reactions after such incidents.

Methodology

This study was conducted following a cross-sectional methodology amongst dental hygienists registered in dental hygiene associations that are members of the European Dental Hygiene Federation (EDFH) and currently working in WHO region of Europe.[20] The approximate population is estimated to be around 38.000 dental hygienists. The sample was obtained using a non-probabilistic method, by distributing the online questionnaire to all members of the dental hygiene associations. An a priori power analysis was conducted using G*power to determine the required sample size. Assuming a medium effect size (0.3), an alpha level of 0.05, desired power of 0.090 and 1 degree of freedom for the effect, the analysis indicated a total sample size of 145.[21]

The survey was initiated in November 2023 by contacting 24 dental hygiene associations to disseminate the questionnaires amongst their members. Each association was contacted several times, to ensure widespread distribution of the questionnaire before the closing of the survey in February 2024. The questionnaire was accessible online through *Google Forms* and was shared within each dental hygiene association via email or their respective social media groups.

All dental hygienists registered in the dental hygienists' associations were invited to take part in the study, regardless of age, years of practice or practice type. Only dental hygiene students were excluded from this study.

The questionnaire used for this study was created and validated by the researchers in another study, which is currently awaiting publication. The questionnaire was created in English and ensured appropriateness of language and ease to complete. The questionnaire was divided in 3 parts. The first part had 10 questions collecting sociodemographic data (gender, age, higher school level attained, years

of practice, country of practice, practice location, type of practice, if accompanied while working, working schedule and employment status). The second had 21 questions to evaluate the prevalence of experiences of violence and sexual harassment of dental hygienist at work by either patients or accompanying person, dentists, dental hygienists, dental assistants, management staff, other professional or if ever witnessed another dental hygienist suffer from violence or sexual harassment. The third and last part collected data about how the participants dealt with their own experiences of violence and harassment or the those witnessed, and their awareness of the subject of WPV.

Participation in this study was voluntary, and individuals could terminate their participation at any time without consequences. Participants were not required to provide written informed consent, as their response to the questionnaire was considered implicit consent.

Approval for the study was obtained from the ethics council of Faculdade de Medicina Dentária da Universidade de Lisboa (CE-FMDUL202339).

All the statistical analyses, descriptive and inferential, were run on IBM SPSS Statistic version 29.0.0.0.

The Kolmogrov-Smirnov test was used to evaluate the distribution of the data collected. The Mann-Whitney test was employed to compare the distributions of the independent variables, while the Kruskal-Wallis test was utilized to assess statistical significance across three or more independent groups. The Chi-square test of independence with Bonferroni correction was used to examine associations between categories.

Results

The final sample comprised 215 individuals from 13 countries. After contacting 24 dental hygienists' associations, no participation was obtained from the Czech Republic, Denmark, Estonia, Germany, Ireland, Malta, Norway, Poland, Russia, Slovenia, and Switzerland. Most participants were from Portugal (29.3%), followed by the United Kingdom (27.9%), Italy (20.0%). The remaining individuals (22.8%) were distributed across Austria, Belgium, Finland, Israel, Latvia, Lithuania, the Netherlands, the Slovak Republic, Spain, and Sweden. The 215 participants constitute approximately 0.57% of the 38000 dental hygienists represented by the EDHF. A post hoc sensitivity analysis was conducted using G*Power for a chi-square goodness-of-fit test. With alpha = 0.05, power = 0.90, df = 1 and a total sample size of N = 215, the analysis indicated that the minimum detectable effect size was w = 0.22. According to Cohen, this corresponds to a small to medium effect, suggesting that the sample size was adequate to detect meaningful deviations from the expected distribution.[21, 22] Most participants were female (90.7%), with a mean age of 39.52 (± 11.83) years, ranging from 22 to 66 years old. The majority held a bachelor’s degree or equivalent (47.0%) as their highest educational attainment, with an average of 14.23 (± 11.79) years of practice. (Table 1)

Regarding workplace characteristics, the majority exclusively worked in private clinical practices (69.8%), primarily in urban areas (66.5%), on a full-time basis (60.9%). Self-employment was the prevailing

employment status (47.0%), and approximately one-fourth always worked accompanied by another professional in the same physical space (25.6%). (Table 1)

The data regarding the experiences of violence at work, shows that 80.0% (n = 172) individuals have experienced any type of WPV at least once in their career as dental hygienists'. The most frequently experienced type of WPV was verbal violence (72.1%), followed by sexual harassment (45.6%) and physical violence (23.7%).

When examining the prevalence of various forms of aggressors, data indicates that dental hygienists are more likely to encounter aggressions from patients or their accompanying person, followed by dentists. Specifically, 15.3% of participants reported experiencing physical violence, 60.5% reported encountering verbal violence, and 36.7% reported facing sexual harassment, all from patients or accompanying person. From the total participants, 9.3% reported experiencing physical violence, 43.3% reported encountering verbal violence, and 20.5% reported facing sexual harassment from dentists. Data also shows that dental hygienists are less likely to be victims of WPV perpetuated by fellow dental hygienists, with 3.7% experiencing physical violence, 14.0% suffering verbal violence and 1.4% suffering sexual harassment from their peers. (Table 2)

Results show that, of the total individuals who have suffered WPV (N = 172), most participants (54.7%) ignored the event. Only 33.1% made a complaint to the clinical director and 8.7% made an official complaint. Less than a third (30.8%) talked to a family member or friend, 26.7% asked a colleague for help, 11.6% resigned from work and only 5.2% asked for professional psychological help, representing the least employed strategy for addressing the situation.

Statistical significance was found showing that individuals with bachelor degrees tend to ignore the event more than those with professional degrees ($p = 0.037$), individuals aged between 41 and 50 are more likely to make a complaint to the clinical director than all other participants ($p = 0.043$) and the same happens for individuals who have been working between 16 and 25 years ($p = 0.038$). Regarding talking to a family member or friend as a result of a WPV experience, statistical significance was found showing that woman tend to do it more than man ($p = 0.045$), individuals younger than 30 years old tend to do it more than the rest ($p = 0.012$) and the same happens for individuals working for less than 5 years ($p = 0.022$). statistical significance was also found showing that individuals working part time tend to resign from work more than those working full time after experiencing WPV ($p = 0.034$). (Table 3)

Of all individuals that made a complaint after experiencing WPV (N = 66), either to the clinical director or official complaint, 21.2% are sure there were consequences for the aggressor, 33.3% were sure there weren't consequences for the aggressor and 45.5% remained uncertain.

For the individuals who opted to not file a complaint after being a victim of WPV (N = 106), the reasons varied. The majority (51.2%) avoided it because it was perceived as a waste of time and 45.1% didn't know what to do, 28.0% thought the procedures were unclear, 20.7% lack trust in the competent authorities, 19.5% were afraid people wouldn't believe them, 14.6% were afraid of punishment, 14.6%

were also afraid for their reputation and 8.5% were afraid people would find out. 29.9% of victims who didn't make a complain didn't provide reasons as to why they didn't do it.

Statistical significance was found showing that women have less knowledge of what to do compared to men *(p* = 0.012), individuals working for more than 26 years are more afraid for their reputation than the others (*p* = 0.026), individuals working in the public health service think the procedures are unclear more than private and mixed practices (*p* = 0.041) and employees are less likely to think that making a complaint is a waste of time more than self-employees, both or unemployed participants (*p* = 0.026).

Approximately one third (32.1%) of respondents reported witnessing a peer experience WPV at least once, with verbal violence (28.8%) being the most frequently observed, followed by sexual harassment (10.2%) and physical violence (6.0%). (Table 5)

Participants who witnessed another dental hygienist suffer WPV (N = 69), show that the most common reaction was to ignore the event (46.4%) followed by persuading the victim to make a complain to the clinical director (31.9%). Less than a quarter of participants (23.2%) persuaded the victim to make an official complain, 10.1% persuade the victim to ask for professional psychological help and 4.3% made a complaint to the clinical director for the victim. Making an official complaint on behalf of the victim was the least reported reaction (2.9%), followed by encouraging the victim to resign (2.9%).

Table 6 shows the most common reactions after witnessing WPV by each characteristic. Statistical significance was only found between different working conditions, however some of the groups didn't have the minimum participants for fair comparison.

Most participants (59.1%) don't know if there's any national competent authority to report WPV and 47.0% are sure there isn't any initiative to educate on WPV at their workplace. More than half of participants (55.8%) said they are aware about the topic of WPV, 40.0% said they are aware of the mechanisms to report WPV and 56.7% are aware of the signs to identify WPV. (Table 7)

Discussion

WPV represents has become an increasingly recognised occupational hazard in healthcare settings, negatively affecting both healthcare professionals and the quality of care delivered to patients and communities. [3, 4, 6, 9, 23, 24] The present study contributes to the limited literature regarding WPV among dental hygienists by exploring behavioural responses, reporting patterns and perceptions surrounding WPV among European dental hygienists.

The 215 participants represent around 0.57% of the EDHF membership population, which compromise a total of 38000 memberships. Although the response proportion was limited, similar sample sizes have been reported in previous studies involving dental hygienists.[25–28]

Consistent with previous literature on WPV in healthcare settings, patients and their accompanying persons were identified as the primary perpetrators of violence against dental hygienists. [7, 15, 17, 29]

Dentists represented the second most common source of aggression, potentially reflecting hierarchical power dynamics within dental settings, where dental hygienists frequently work under the supervision of dentists and WPV often originates from individuals in positions of authority. [30–32] These findings reinforce the importance of implementing preventive protocols and workplace policies specifically targeting interactions with patients and accompanying persons, while also addressing hierarchical dynamics within dental teams.

Following experiences of WPV, the most common reaction among participants was to ignore the incident, with more than half reporting this response. Only approximately one-third reported the episode to their clinical director, further reinforcing the persistent problem of underreporting described in the literature.[8, 9, 14, 17, 18, 23, 29] underreporting represents a major obstacle to effectively addressing WP, as it may contribute to the normalisation of violent behaviours within healthcare environments and reinforce the perception that violence is unavoidable.[33] The third most common reaction was to talk to a family member or friend, which may provide emotional support and contribute to psychological recovery following exposure to WPV.[9, 34, 35]

Statistically significant associations indicated that older individuals and those with more years of practice were more likely to discuss incidents of WPV with a clinical director, whereas younger participants with fewer years of experience were more likely to seek support from family members or friends. Greater reporting among older and more experienced professionals may reflect increased professional confidence, greater familiarity with institutional procedures or a stronger perception of legitimacy when engaging formal complaint pathways. Contrarily, younger individuals may rely more heavily on informal social support networks when dealing with stressful or adverse events, as previously suggested in the literature.[7]

Statistical significant assocations also shows that individuals working full-time were less likely to report resigning following an episode of WPV compared with those working part-time. One possible explanation is that leaving a full-time position may entail a greater financial risk due to the loss of a stable and primary source of income. Additionally, the employment relationship between a worker and an employer may be stronger in full-time positions, potentially making resignation a less feasible or less attractive option.

Furthermore, individuals working within public healthcare services were more likely to perceive reporting procedures as unclear compared with those working in private or mixed practice settings. This difference may stem from variations in organisational structures and administrative processes across different healthcare systems. The effectiveness of reporting systems is likely influenced by multiple organisational, political, and social factors, all of which should be considered when developing strategies aimed at improving WPV reporting practices.[33]

The survey further revealed that the primary reasons for dental hygienists refraining from filing a complaint were perceiving the process to be a waste of time and a lacking knowledge on what to do, findings that have been frequently acknowledge in previous literature. [8, 9, 14, 36] Such perceptions may

discourage formal reporting and further contribute to the cycle of underreporting surrounding WPV. These findings highlight the necessity of educating workers on WPV and strengthening reporting mechanisms.[3, 8, 15, 29] A lack of education and prevention measures regarding WPV may leave dental hygienists more vulnerable to violent situations and limit their access to practical tools capable of protecting them in the workplace.[18]

Statistical significance additionally demonstrated that employees were less likely to consider making a complaint to be a waste of time. This perception may be related to the existence of formal employment contracts, which could provide a greater sense of institutional protection and organisational support when reporting incidents.

Less than one-third of participants reported witnessing WPV against another dental hygienist, indicating a comparatively lower witnessing rate relative to personally experienced WPV. This finding may suggest that episodes of violence frequently occur in situations where victims are relatively isolated from peer observation.

After witnessing a peer suffer from WPV, the most common reaction for dental hygienists was to ignore the event, followed by encouraging the victim to file a complaint with the clinical director. These behavioural patterns closely mirror the responses observed following personally experienced WPV. Although limited literature exists regarding reactions to witnessing experiences of WPV against colleagues, the present findings once again highlight the persistence of underreporting behaviours within healthcare environments. [8, 9, 14, 17, 23, 29] Failure to report witnessed incidents may further contribute to the normalisation and institutional invisibility of WPV, ultimately limiting opportunities for preventive action and organisational intervention.[33]

When participants were questioned regarding the existence of competent authorities to report WPV or educational initiatives addressing WPV within their workplaces, nearly half indicated lacking knowledge about these resources. This finding highlights both insufficient worker awareness and the limited implementation of institutional initiatives aimed at addressing WPV. [3, 8, 15, 29] Although most participants expressed confidence in their ability to recognise signs of WPV, the majority simultaneously reported being unaware of formal reporting procedures. This discrepancy suggests that recognising WPV alone may be insufficient if workers do not possess the knowledge, institutional support, or practical tools necessary to respond effectively. Reporting systems and reporting platforms should therefore be accessible, safe, confidential, transparent, and perceived as trustworthy in order to encourage workers to report incidents consistently and without fear of negative consequences.[33] The present findings further support existing literature emphasising the urgent need to strengthen educational initiatives and develop effective reporting systems capable of supporting healthcare workers exposed to WPV. [3, 8, 15, 29]

Certain statistically significant associations identified in this study should be interpreted cautiously due to the limited sample size of some subgroups and the low frequency distribution across certain response categories, which may have affected the robustness of the assumptions underlying the chi-

square analyses. Not all assumptions required for the chi-square test may have been fully satisfied in every comparison, as this statistical test is sensitive to low expected frequencies within contingency table cells. Nevertheless, given the exploratory and descriptive nature of this study, and considering the complexity and limited existing research surrounding WPV among dental hygienists, all potentially relevant associations were explored and presented to provide a broader overview of possible behavioural and professional patterns related to WPV. Consequently, these findings should not be considered conclusive but rather interpreted as preliminary observations that may guide future research involving larger and more representative samples.

As far as researchers are aware, this is the first study to analyse the attitudes and behavioural responses of European dental hygienists following experiences of WPV. Although statistically significant associations were identified, the available literature provides limited insight into the underlying reasons behing these findings. The scarcity of studies examining the relationship between sociodemographic and professional characteristics and individuals' responses to WPV restricts the possibility of drawing broader comparisons. Further research is therefore necessary to expand the evidence base and support the development of effective preventive strategies, educational initiatives, and reporting systems aimed at reducing WPV and improving support mechanisms for dental hygienists. Particular attention should be given to the creation of reporting environments that are accessible, confidential, supportive, and trusted by healthcare professionals, as these characteristics may be essential to reducing underreporting and preventing the normalisation of WPV.

Conclusion

Patients and their companions are the most common perpetrators of WPV against European dental hygienists, followed by dentists. These findings should be considered when developing targeted preventive policies and workplace safety protocols within dental settings, particularly those involving patient interaction and hierarchical professional relationships.

The present study highlights a high level of underreporting of WPV incidents, primarily driven by perceptions that reporting is ineffective and by a lack of knowledge regarding reporting procedures. This underreporting may hinder institutional recognition of WPV and limit the development of effective preventive strategies.

There is an urgent need to implement educational interventions aimed at improving dental hygienists' awareness of WPV reporting mechanisms, as well as to strengthen reporting systems to ensure they are accessible, confidential, and perceived as trustworthy by healthcare professionals.

Declarations

Authors contributions: M.S. and S.G. conceived the idea and the questionnaire, M.S., V.A. and S.G. analysed the data, M.S. led the writing, V.A. and S.G. revised the full text.

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Conflict of interest: There were no conflicts of interest present.

Data Availability Statement: The data supporting the findings of this study can be obtained from the corresponding author upon reasonable request.

Clinical Trial Number: Not applicable.

Ethical approval & Accordance: Approval for the study was obtained from the Ethics Council of Faculdade de Medicina Dentária da Universidade de Lisboa with approval reference CE-FMDUL202339. All procedures performed in this study were conducted in accordance with the ethical standards of the Declaration of Helsinki and complied with the CIOMS guidelines. Informed consent was obtained from all participants prior to their inclusion in the study.

Consent to participate: Participation was voluntary. At the beginning of the nline questionnaire, participants were provided with an informed consent declaration. Progression to the survey was permitted only after participants indicated their informed consent by selection "I understand and I agree to participate".

Consent to publish: The consent form specified that the findings of the study may be disseminated via scientific publications and presentations, using participants' anonymised data for these purposes.

References

1. Krug EG, Dahlberg LL, Mercy JA, et al. World report on violence and health. Geneva: World Health Organization; 2002.
2. World Health Organization Global Consultation on Violence and Health. (1996) Violence: a public health priority. Geneva.
3. International Labour Office, International Council of Nurses, World Health Organization, Public Services International. Framework Guidelines for Addressing Workplace Violence in the Health

Sector. Geneva: International Labour Office; 2002.

4. Di Martino V, International Labour Office. (2003) Relationship Between Work Stress and Workplace Violence in the Health Sector. Geneva.
5. Milczarek M, European Agency for Safety and Health at Work. Workplace Violence and Harassment: a European Picture. Pubications Office of the European Union; 2010.
6. International Labour Organization. Eliminating Violence and Harassment in the World of Work Convention No. 190, Recommendation No. 206, and the accompanying Resolution. ILO; 2019.
7. Ghoneim A, Parbhakar KK, Farmer J, Quiñonez C. Healthy and Respectful Workplaces: The Experiences of Dental Hygienists in Canada. JDR Clin Trans Res. 2022;7:194–204. https://doi.org/10.1177/23800844211001827.
8. Binmadi NO, Alblowi JA. Prevalence and policy of occupational violence against oral healthcare workers: Systematic review and meta-analysis. BMC Oral Health. 2019;19. https://doi.org/10.1186/s12903-019-0974-3.
9. International Labour Organization, Lloyd's Register Foundation. Experiences of Violence and Harassment at Work: A Global First Survey. Geneva: ILO; 2022.
10. Al-Qadi MM. (2021) Workplace violence in nursing: A concept analysis. J Occup Health 63.
11. Lei no 7/2009. Código do Trabalho - CT - Artigo 29º. Diário da República n.º 30/2009, Série I de 2009-02-12.
12. U.S. Department of Labour DOL Workplace Violence Program. https://www.dol.gov/agencies/oasam/centers-offices/human-resources-center/policies/workplace-violence-program. Accessed 29 Mar 2024.
13. U.S. Dept. of Labor, Occupational Safety and Health Administration (2015) Guidelines for Preventing Workplace Violence for Healthcare and Social Service Workers.
14. Rosenthal LJ, Byerly A, Taylor AD, Martinovich Z. Impact and Prevalence of Physical and Verbal Violence Toward Healthcare Workers. Psychosomatics. 2018;59:584–90. https://doi.org/10.1016/j.psym.2018.04.007.
15. Liu J, Gan Y, Jiang H, et al. Prevalence of workplace violence against healthcare workers: a systematic review and meta-analysis. Occup Environ Med. 2019;76:927–37. https://doi.org/10.1136/oemed-2019-105849.
16. Candell A, Engström M. Dental hygienists' work environment: motivating, facilitating, but also trying. Int J Dent Hyg. 2010;8:204–12. https://doi.org/10.1111/j.1601-5037.2009.00420.x.
17. Won SE, Choi MI, Noh H, et al. Measuring workplace violence for clinical dental hygienists. Int J Dent Hyg. 2021;19:340–9. https://doi.org/10.1111/idh.12527.
18. Capodi L, Boyd LD, Smallidge D, Vineyard J. Workplace Sexual Harassment From Employers, Supervisors and Co-Workers Towards Dental Hygienists. Int J Dent Hyg. 2025;23:655–64. https://doi.org/10.1111/idh.12913.

19. Santos M, Graça S, Assunção V. Experiences of Violence and Sexual Harassment of European Dental Hygienists at Work. Faculdade de Medicina Dentária da Universidade de Lisboa; 2024.
20. World Health Organization World Health Organization Countries Classification. https://www.who.int/countries. Accessed 26 Feb 2024.
21. Erdfelder E, FAul F, Buchner A, Lang AG. Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. Behav Res Methods. 2009;41:1149–60. https://doi.org/10.3758/BRM.41.4.1149.
22. Cohen J. Statistical Power Analysis for the Behavioral Sciences. Routledge; 1988.
23. Eurofound. Sixth European Working Conditions Survey – Overview report (2017 update). Publications Office of the European Union; 2017.
24. Zhong XF, Shorey S. Experiences of workplace violence among healthcare workers in home care settings: A qualitative systematic review. Int Nurs Rev. 2023;70:596–605.
25. International Federation of Dental Hygienists (IFDH). (2022) Elderly Patient Practices Survey.
26. International Federation of Dental Hygienists (IFDH). (2022) Sustainable Dentistry Survey.
27. International Federation of Dental Hygienists (IFDH). (2023) Oral Hygiene Instruction Practices Survey.
28. Meyer VM, Benjamens S, El Moumni M, et al. Global Overview of Response Rates in Patient and Health Care Professional Surveys in Surgery A Systematic Review. Ann Surg. 2022;275:E75–81. https://doi.org/10.1097/SLA.0000000000004078.
29. Yusoff HM, Ahmad H, Ismail H et al. (2023) Contemporary evidence of workplace violence against the primary healthcare workforce worldwide: a systematic review. Hum Resour. Health 21.
30. European Commission Mutual evaluation of regulated professions. Overview of the regulatory framework in the health services sector – dental hygienists and related professions.
31. Torres A, Costa D, Sant'Ana H, et al. Assédio Sexual e Moral no Local de Trabalho. Lisboa: Comissão para a Igualdade no Trabalho e no Emprego (CITE); 2016.
32. De Ascenção AJ, Eiró-Gomes M. Campanha de Comunicação-Violência no Trabalho. Campanha de Comunicação para a Associação Portuguesa de Apoio à Vítima Trabalho de Projeto. Escola Superior de Comunicação Social – Instituto Politécnico de Lisboa; 2013.
33. Abreu AR, Gonçalves F, Oliveira S, Ribeiro I. Workplace violence against healthcare workers: a scoping review of reporting practices, barriers to reporting and institutional responses (2020–2025). BMC Health Serv Res. 2026. https://doi.org/10.1186/s12913-026-14244-4. 26:.
34. Zhang J, Zheng J, Cai Y, et al. Nurses' experiences and support needs following workplace violence: A qualitative systematic review. J Clin Nurs. 2021;30:28–43.
35. Kelly EL, Fenwick KM, Brekke JS, Novaco RW. Sources of Social Support After Patient Assault as Related to Staff Well-Being. J Interpers Violence. 2021;36:NP1003–28. https://doi.org/10.1177/0886260517738779.

36. Dafny HA, Beccaria G. I do not even tell my partner: Nurses' perceptions of verbal and physical violence against nurses working in a regional hospital. J Clin Nurs. 2020;29:3336–48. https://doi.org/10.1111/jocn.15362.

Tables

Tables 1 to 7 are available in the Supplementary Files section.

Supplementary Files

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