ANAMT Technical Guideline (DT 07): epidemiological mapping and preventive interventions against workplace violence

Diretriz Técnica da ANAMT (DT 07): mapeamento epidemiológico e intervenção preventiva para violência no trabalho

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ABSTRACT | Workplace violence has potentially high prevalence, in addition to positive correlation with risk of physical and mental disorders, absenteeism, high turnover rates, impaired productivity and poorer organizational climate. Workplace violence is embedded in the work routine, while its manifestations are heterogeneous and vary according to the local culture, work activities and organization. The scientific evidence for the efficacy of interventions to reduce the prevalence of violent incidents is insufficient to ground general recommendations applicable to any occupational activity. Consensus among organizational actors about notions, relevance, prevalence and risk factors associated with workplace violence, based on epidemiological mappings, is necessary, given the subjective and cultural nature of this problem, and also to enable organizational actors to jointly design pilot solutions. This approach is based on methods used in experimental studies and seeks to promote greater adherence to changes.
Keywords | workplace violence; practice guideline; primary prevention.

RESUMO | Violência em ambiente de trabalho potencialmente ocorre em prevalência importante, com associação de risco positiva para adoecimento físico e mental, absenteísmo, aumento de rotatividade, diminuição da produtividade e piora do clima organizacional. A expressão da violência no trabalho é incrustada no cotidiano profissional e heterogênea na cultura, atividade e organização de trabalho locais. Há insuficiência de evidências científicas que atestem a eficácia das intervenções em reduzir a prevalência dos eventos de violência de forma a permitir recomendações generalizáveis para qualquer atividade de trabalho. A natureza subjetiva e cultural do problema torna necessária a criação de um consenso com os membros da empresa quanto aos conceitos, importância, prevalência e fatores de risco da violência ocupacional a partir da apresentação do mapeamento epidemiológico. O desenho conjunto de soluções piloto pelos membros da empresa surge após esse consenso. Essa abordagem segue a metodologia dos estudos experimentais sobre o tema e busca promover maior aderência a mudanças.
Palavras-chave | violência no trabalho; guia de prática clínica; prevenção primária.

CONCEPTUAL INTRODUCTION

Workplace violence is difficult to conceptualize, classify and handle, because these goals demand identifying perpetrators and victims, recognizing and sorting the types of workplace violence and designing measures to effectively reduce its prevalence, in addition to appropriate management of treatment and receptivity from organizational and government justice.

The workplace violence classifications currently available in the literature are complex and heterogeneous. In *Code of practice on workplace violence in services sectors and measures to combat this phenomenon*[1], the International Labor Organization (ILO) defined workplace violence as "any action, incident or behavior that departs from reasonable conduct in which a person is assaulted, threatened, harmed, in the course of, or as a direct result of, his or her work," and categorized it as:

- Internal workplace violence: that which takes place between workers, including managers and supervisors;
- External workplace violence: that which takes place between workers (and managers and supervisors) and any other person present in the workplace.

The Occupational Safety and Health Administration (OSHA)[2] describes four types of workplace violence according to perpetrator and nature of aggression. This classification is commonly cited in observational and experimental studies, and includes:

- Type 1: Violent acts with criminal intent by workers or other people who enter the workplace to commit a robbery or other crime;
- Type 2: Violence directed at employees by customers, clients, patients, etc. to whom the employer provides a service, for instance, patient physical or verbal aggression against healthcare workers;
- Type 3: Violence against coworkers, supervisors or managers. Examples include bullying and moral and sexual harassment between workers;
- Type 4: Violence in the workplace by someone who is known to, or has personal relationship with, an employee.

In the present guideline, we only considered OSHA types 2 and 3.

For being embedded in relationships, personal communication, the occupational routine and organization, and the individual subjectivity of the involved parties, moral harassment in the workplace is difficult to investigate and to map, and consequently also to conceptualize and identify. In *Assédio moral, assédio sexual e discriminação* (*Moral harassment, sexual harassment and discrimination*)[3], the Brazilian Federal Prosecutor Office (FPO) defined moral harassment as a form of

> "abusive conduct (gestures, words, behavior, attitude) that by virtue of repetition or systematization disrespects the dignity or the physical or mental integrity of a person, threatens their job or degrades the work climate."

The FPO instructions cite some of the notions and authors dealt at length in the book *Assédio moral interpessoal e organizacional: um enfoque interdisciplinar* (*Interpersonal and organizational moral harassment: an interdisciplinary approach*)[4], published by LTR and authored by Dr. Lys Esther Rocha and several law experts. The authors described in detail the aspects that characterize moral and organizational harassment, as well as incidents which cannot be considered as such. Other sources with useful contributions to the contextualization of notions and the subtle characteristics of moral harassment are *Saúde mental no trabalho: da teoria à prática* (*Mental health at work: from theory to practice*)[5], edited by Dr. Lys Esther Rocha and Debora Miriam Raab Glina, and *Patologia do trabalho* (*Pathology of work*[6]), edited by Dr. Rene Mendes.

Some authors consider terms mobbing and bullying to be synonyms[4,5]. The defining characteristics of moral harassment include: progressive nature, high frequency and long duration (not a single incident), target specificity, power imbalance (yet victims may also be hierarchical superiors) and intentionality (to cause job termination or induce victims to transgress cultural or organizational rules through deliberate deterioration of the working conditions, isolation and denial of communication, disrespect of personal dignity, and verbal or physical violence, etc.)[3,4].

The FPO instructions[3] also describe situations which cannot be characterized as moral harassment: eventual incidents, job demands (provided they do not threaten the workers' identity, physical or mental integrity), conflict and poor working conditions (provided they are not meant to deliberately mar a worker's reputation).

The aforementioned book, *Saúde mental no trabalho: da teoria à prática*, mentions aspects of moral harassment also cited by several other authors[5]:

- Repetitive and persistent nature: direct or indirect, verbal, physical, behavioral or other types of violent actions carried out to deliberately cause discomfort, scare and intimidate victims. By themselves, none of such actions is harmful, but they become so when they are repetitive;
- Harmful/devastating effects on victims, resulting in social, psychological and psychosomatic problems;
- Focus on effects on victims: the perpetrator's intention can be hardly investigated, but is merely presumed.

Organizational moral harassment is defined in the book *Assédio moral interpessoal e organizacional: um enfoque interdisciplinar*[4] as

> A continuously hostile process, configured on the basis of organizational or managerial policies, which immediate goal is to increase productivity, reduce costs, strengthen control or exclude workers the employer no longer wants to keep. It might indiscriminately target an entire group, or just some specific targets within a given profile (e.g. all pregnant employees, all the workers the employer wants to dismiss without paying compensation for termination without cause). Consequences might be the same as those of interpersonal harassment: (physical and mental) health disorders, changes in the employment status (termination, leave, self-requested or not transfer) or job reallocation.

Workplace sexual harassment is characterized in the FPO instructions as[3]:

> Offending actions which violate the sexual availability of a person by disrespecting their sexual freedom, i.e. the right to autonomy over their own body, or not to be forced to participate in an undesired sexual act. Such actions represent offenses against honor and sexual dignity, understood as a feeling of personal dignity and as the right to determine, define and perform sexual activities within the boundaries of the public morality. In the case of workplace sexual

harassment, the dignity of the labor relations is directly affected, considering that such relations are protected legal goods, since they guarantee freedom, equality, self-determination and the right to non-discrimination in the workplace.

The FPO instructions further reproduce the Penal Code article 216-A, which states: "To coerce someone to obtain sexual favors or advantages based on the perpetrator's status of hierarchical superior or influence inherent to their job or position."[3]

Workplace discrimination is defined in the FPO instructions[3] as:

> Any form of differentiation, exclusion, restriction or preference based on sex, gender, sexual orientation, disability, religious belief or philosophical or political conviction, race, skin color, ancestry or national or ethnical origin, which goal is to deprive or restrict the recognition, enjoyment or exercise, in equal conditions, of human rights and fundamental political, economic, social, cultural or any other freedoms in public or private life.

An appropriate understanding and typology are relevant for the purpose of mapping workplace violence and enabling dialogue on this subject.

EVIDENCE FOR THE PREVALENCE OF VIOLENCE AND ASSOCIATED RISK OF ILLNESS

According to international epidemiological data, the prevalence of workplace violence is considerably high among some occupational categories and work environments, including: surgical workplaces[7], nurses[8], emergency departments[9], firefighters[10], police officers[11] and teachers[12,13]. These categories therefore represent risk factors for significantly higher prevalence of physical and mental comorbidities, with impact on occupational outcomes.

The scientific procedure to establish causal links between risk factors and diseases is a historical process of repeated comparisons between populations exposed and non-exposed to a given risk factor by means of cohort and case-control

studies. Such comparisons might yield strong indications of the existence of a causal relationship, which is then confirmed by clinical trials which show that controlling the analyzed risk factor does reduce the occurrence of the corresponding disease.

There is considerable evidence for the association between risk of violence and mental disorders. A systematic review with meta-analysis performed in 2015, which included three cohort studies to a total of 15,173 participants, found moderate positive correlation between occupational exposure to bullying and depression symptoms, odds ratio (OR) 2.82 (95% confidence interval–95%CI 2.21–3.59)[14].

Another systematic review, also conducted in 2015, analyzed evidence provided in cross-sectional studies (n=115,783) and found positive correlation between mental disorders and occupational bullying, standardized Pearson's product-moment correlation coefficient r=0.28 (95%CI 0.23–0.34) for depression, r=0.34 (95%CI 0.29–0.40) for anxiety, and r=0.37 (95%CI 0.30–0.44) for stress-related complaints. The authors also analyzed evidence from prospective studies (n=54,450) and found significant association between mental disorders and bullying, r=0.21 (95%CI 0.13–0.21)[15].

In a systematic review performed in 2019, the evidence for a relationship between occupational bullying and suicidal ideation was weak and restricted to cross-sectional studies only; nevertheless the results were significant[16].

In regard to physical comorbidities, a meta-analysis conducted in 2018 of four cohort studies performed in Europe, to a total of 49,905 participants, found positive correlation between diabetes and bullying, hazard ratio (HR) 1.46 (955CI 1.23–1.74) and between diabetes and exposure to violence or threats of violence, HR 1.26 (95%CI 1.02–1.56)[17].

Another meta-analysis from 2018, of three cohort studies conducted in Europe, to the total of 79,201 participants, found that the prevalence of exposure to bullying in the previous year was 9% and that of workplace violence 13%. There was positive correlation between cardiovascular disease and bullying at work, HR 1.59 (95%CI 1.28–1.98) and workplace violence, HR 1.25 (95%CI 1.12–1.40). The population attributable risk was 5.0% for workplace bullying and 3.1% for workplace violence[18].

A systematic review performed in 2015 found significant association between bullying or interpersonal violence and sleep disorders, OR 1.44 (95%CI 1.18–1.76)[19].

For occupational outcomes, a 2016 systematic review with meta-analysis of 10 studies found moderate association between bullying and absenteeism, OR 1.58 (95%CI 1.39–1.79)[20]. Evidence from cross-sectional studies indicated positive correlation between bullying and presenteeism[21-23] and impaired productivity[24–27].

Therefore, workplace violence has potentially high prevalence, and is associated with considerable risk of physical and mental health problems and unfavorable occupational outcomes. To prepare the present guideline, we analyzed scientific evidence for the efficacy of workplace interventions to reduce and control this risk factor.

RESULTS

Figure 1 summarizes the literature search; methods and selected studies are described in detail in the appendixes provided at the end of the guideline (Appendixes 1, 2 and 3). We initially retrieved 16,781 studies, 16,680 from MEDLINE and 101 from other databases and sources of information (Figure 1). A total of 16,625 studies did not meet the eligibility criteria and were excluded from analysis. Fifty-five studies were subjected to full-text analysis, and 10 were included in the final sample (Appendix 2). Four studies were randomized clinical trials[28-31], one a cohort study[32], two before-after comparisons of effects[33,34], and three systematic reviews[35-37].

The total number of participants was 611 in primary studies and 5,803 in systematic reviews. In two cases, the authors did not inform the absolute number of participants: one analyzed a pool of 41 hospital units[31], and the other was a systematic review[37], which authors merely stated that 54% of the analyzed population corresponded to healthcare workers and 11% to retail industry workers — the studies on the latter addressed type 1 external violence, which is outside the scope of the present review.

One hundred percent of the participants in the analyzed primary studies were healthcare workers, and the victims of patient violence were usually nurses or home caregivers. Four primary studies[28,30,32] investigated preventive interventions against patient violence (type 2), and three studies[29,33,34] violence between coworkers (type 3). The preventive measures against type 2 violence (patient/worker) described in the analyzed primary studies

consisted in educational actions to facilitate the identification of incidents and their type, enhance (verbal, physical and subjective) communication skills and develop the ability to handle and cope with imminent or actual violence[28,30,32]. Another group corresponded to multilevel interventions, including environmental, administrative and behavioral measures individually designed for each particular hospital area[31].

Arnetz et al.'s study[31], which involved a multilevel intervention, also included standardized violence mapping, identification of high-risk areas and severity of type 2 violence, visits to workstations, or short meetings with three or four people, including managers or supervisors and other

involved actors. Maps of violence in the past three years were presented as graphics and discussed in these meetings, and the involved managers and employees were thus jointly empowered to develop multilevel individualized solutions. The results indicated significant reduction of violence by comparison to the control group, incidence rate ratio (IRR) 0.48 (95%CI 0.29–0.80) after six months and IRR 0.37 (95%CI 0.17–0.83) after 24 months.

None of the other analyzed studies[28,30,32] reported significant reduction of violence by comparison to controls.

The clinical trial performed by Baby et al.[28] compared the effects of four sessions of communication skill training versus mindfulness training, but did not find significant difference in terms of benefits between the groups.

Baig's[32] quasi-experimental study compared the effects of four-hour communication skill and violence de-escalation training versus no training; no significant difference in the frequency of incidents was detected between the groups.

The clinical trial by Glass et al.[30] compared the effects of combined computer-based (CBT) and in-person training versus CBT alone, but did not find difference in regard to the control group. CBT focused on aspects of workplace violence, legislation, communication techniques, handling and de-escalation of violence. Topics for in-person training were communication techniques, violence de-escalation and practical simulations.

All in all, the studies which included educational actions reported subjective secondary benefits in terms of improved self-confidence to identify and handle violent incidents.

A systematic review[37] of all types of workplace violence, from 2009, subjected the results of 14 systematic reviews, 11 cohort, seven case-control and 35 cross-sectional studies to qualitative analysis. The authors could not locate any clinical trial having specifically addressed type 2 violence, and the interventions implemented in the primary studies consisted in educational actions only. The authors concluded that the quality of the evidence was insufficient to enable general measures against type 2 violence.

The preventive measures specifically targeting type 3 violence (between coworkers) described in the analyzed primary studies consisted in educational actions[29,33,34].

In the clinical trial by Kang et al.[29], nine scenarios of workplace bullying were validated by nurses with variable hierarchical level and communication professionals. These were
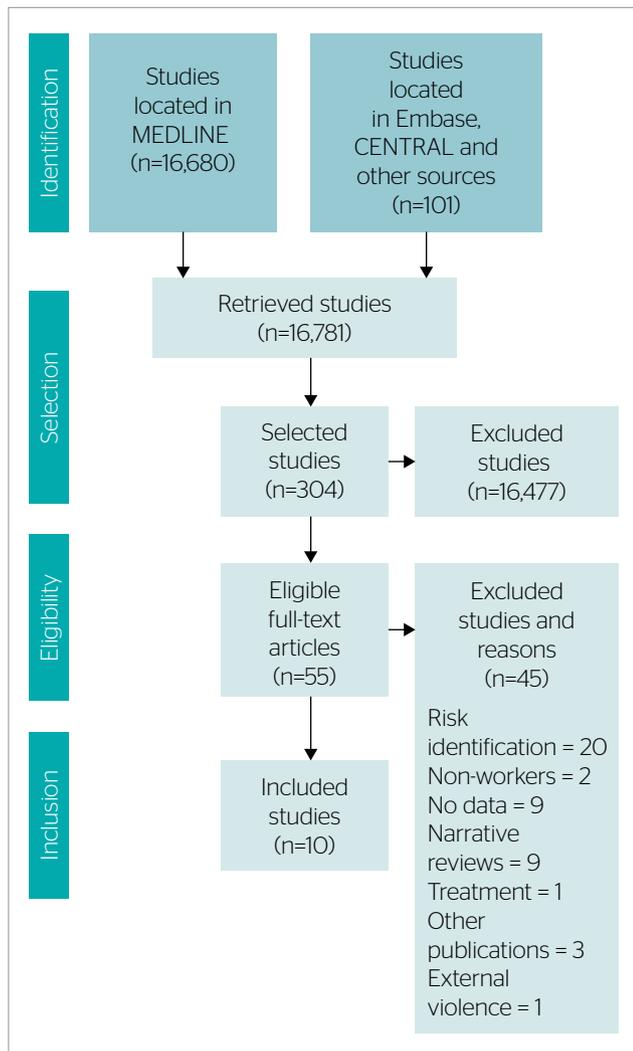

Figure 1. Flowchart of articles selection and inclusion. São Paulo (SP), Brazil, 2019.

then acted out by the participating nurses in role-playing. The full experience was discussed within a safe environment to promote self-knowledge on the emotions triggered by violent incidents, aiming at overcoming destructive emotions and thus break repetitive cycles of bullying. Sessions included re-role playing to train non-violent communication skills. Outcome measures were reduction of turnover intention and quality of interpersonal relationships. The results indicated no effect on the prevalence of bullying and depression symptoms. Questionnaires used were Negative Acts Questionnaire-Revised, Relationship Change Scale, Brief Symptom Inventory 18 and a nurse turnover intention tool.

The observational studies by Lasater et al.[33] and Nikstaitis and Simko[34] analyzed interventions consisting in similar educational modules to raise awareness on the relevance of civility in the workplace, case studies on incivility, role-playing of incivility situations, and communication and violence handling skill training. Lasater et al.'s study[33] reported benefits in terms of reduced perceived incivility and improved self-confidence when handling violent situations. Nikstaitis and Simko[34] found increased perceived incivility, which they interpreted as a sign of higher awareness. Questionnaires used were Nurse Incivility Scale (NIS), New General Self-Efficacy Scale (NGSE) and Workplace Collective Efficacy Scale (WCES).

Two systematic reviews analyzed the efficacy of interventions targeting type 3 violence, Armstrong[35] with a population of nurses, and Gillen et al.[36] with unspecific worker populations. The resulting evidence was rated insufficient to make general recommendations in either case.

In their systematic review, Gillen et al.[36] analyzed the effectiveness of interventions against bullying reported in five studies. One intervention consisted in an organizational and cultural program entitled Civility, Respect and Engagement in the Workforce (CREW)[38], initially implemented at Veterans Health Administration hospitals. This program was developed in response to employee feedback that low levels of civility affected their level of job satisfaction. CREW resulted from a growing understanding among institutional top leaders that civility was a high priority, after several internal studies showed that lack of civility was a common reason from resignation and that the prevalence of verbal abuse was high.

The basic assumption underlying CREW is that instead of preset programs, cultural and behavioral changes and solutions to eliminate civility barriers should originate in the motivation and natural perception of people. The aim of CREW is to help employers understand the current state of affairs, needs, motivations and their ability for decision-making in regard to incivility. This program does not define needs, directions or plans a priori, since they are expected to emerge naturally from the involved people. Activities include weekly meetings to discuss problems and interpersonal support. Results are individualized solutions, which are suggested and implemented by the program clients.

Gillen et al.'s[36] systematic review analyzed the effectiveness of CREW in two studies of low methodological quality, with 2,969 participants in total. The results indicated increased civility, reduced incivility and lower number of days absent from work. Other analyzed interventions were two experimental studies without control group and one clinical trial, which consisted in:

• Expressive writing—emotions and work perceptions;
• Cognitive behavioral intervention for workers with mild to moderate cognitive impairments;
• Multilevel intervention including combinations of policy communication, stress management training and incivility awareness training.

None of these studies reported measurable benefits in terms of reduction of bullying victimization. The quality of the resulting evidence was rated poor and insufficient to make general recommendations.

In her systematic review, Armstrong[35] analyzed 10 non-controlled experimental studies performed at healthcare facilities, six were quasi-experimental and four before-after studies. Two quasi-experimental studies analyzed the effects of CREW on nurses. The results indicated positive effects in terms of recognition, management and adjustment to incivility, as well as social support in the workplace. The other eight studies included heterogeneous interventions to raise the awareness on the relevance of workplace (in)civility, simulations of incivility situations and training of communication techniques for handling incivility. The results indicated positive effects in terms of recognition of incivility, self-confidence to handle incivility and available support. Despite the low methodological quality of the studies, the author manifested to be favorable, on qualitative grounds, to interventions consisting in educational actions on incivility for nurses.

DISCUSSION

Following analysis, we rated the quality of the gathered scientific evidence, described in Appendix 3, insufficient to make a general recommendation. This conclusion should not be seen as inaction from employers and occupational physicians in the face of violence, but as lack of scientific certainty in regard to the effectiveness of actions tested in primary studies to reduce the prevalence of workplace violence. Our conclusion is thus consistent with the results of systematic reviews on this subject[35-37]. We should observe that the methods described in the primary studies indicate the conditions needed to design and implement pilot programs.

The available scientific evidence points to the need for a multifactorial and broad encompassing approach to workplace violence. A consistent design of pilot interventions requires information and structured actions, i.e. conditions similar to those of experimental studies[31,38]:

- Well-designed and standardized mapping of the population involved in workplace violence. Such mapping enables recognizing and categorizing incidents, measuring their prevalence, identifying sites at higher risk and with greater severity of violence, and cross-checking results with other occupational outcomes of interest, such as mental symptoms, job dissatisfaction, impaired productivity, absenteeism and high turnover rates. This type of population maps may be the presented to employer representatives to contribute to the definition of priorities;

- Consensus among stakeholders, empowered by local epidemiological evidence, in regard to the meaning and relevance of workplace violence and civility, with identification of perceived (ergonomic, organizational, cultural, etc.) aspects favorable to workplace violence. Based on the aforementioned mapping, consensus and identification of risk factors, stakeholders may design experimental measures for civility promotion;

- Mensuration of the effectiveness, cost and difficulties to implement pilot programs to reduce or handle violence, including secondary qualitative benefits, such as confidence to handle violence, civility, job satisfaction and productivity, among others;

- Appropriate coordination with organizational and governmental justice actions as a function of the severity of identified cases;

- Resizing and readjustment of pilot programs according to their effectiveness.

The methods for population mapping used in most of the analyzed studies consisted in the administration of questionnaires or structured interviews. Standardized, consensus-based records adjusted to local conditions might reduce imprecision and increase the reliability of maps. The *Negative Acts Questionnaire,* which was validated for use in the Portuguese language[39,40], is potentially useful for mapping type 3 violence. A Brazilian instrument validated and partially developed by Bordignon and Monteiro might be useful too, as a function of its broad scope, which includes sexual violence[41]. One further option is the Leymann Inventory of Psychological Terror (LIPT)[42].

The expression of violence might be heterogenous and vary according to job activities, organizational and cultural factors. This situation is illustrated in the study by Kang et al.[29], who investigated type 3 violence among nurses. Among this population of workers, sabotage might be subtle, embedded in the everyday routine and difficult to investigate. Illustrative examples of sabotage are the refusal of more experienced nurses to answer calls by junior nurses they despise, and withholding patient information between nurses allocated to different shifts who despise each other, with consequent impairment of the care provided.

Studying organizational risk factors and generalizing findings pose a scientific challenge, since organizational and cultural structures are considerably heterogeneous among the different companies/occupational activities. This situation increases the odds that one and the same risk factor will have different impacts as a function of the particular occupational activity and presence of synergistic risk factors. This is why identifying and mapping local risks is necessary. The studies selected for the present guideline point to the relevance of prioritizing the perceptions of all the involved actors, no matter what their hierarchical place in the organization might be, about the significance of violence and in the design of pilot solutions, because adherence to change is impossible in the absence of consensus. For instance, in the study by Kang et al.[29], simulated type 3 violence incidents were validated by nurses with different hierarchical status. In CREW programs for civility promotion, solutions and priorities are not established by the consultants, but by the

people in the organization. In the case of type 2 violence, Arnetz et al.[31] sought to empower the involved actors to develop pilot solutions.

Scientific methods may be used to identify perceived organizational risk factors, as illustrated by the following studies.

Gacki-Smith et al.[43] administered a questionnaire to investigate nurses' experiences and perceptions of workplace violence in emergency departments in the United States. The results evidenced significant association between type 2 violence and organizational factors perceived by more than 50% of the participants, to wit: high patient volume, prolonged wait times, psychiatric patients, patients with dementia, patients'/visitor's perception of the nurses' language, attitude or as uncaring. The authors also recorded the nurses' perceptions of barriers to reporting type 2 violent incidents: negative effect on customer service scores/reports, ambiguous violence reporting policies, fear of retaliation by managers, perception that reporting violent incidents is a sign of incompetence or weakness, attitude that violence comes with the job, and idea that reporting does not lead to effective preventive actions.

In their cross-sectional study with 5,727 workers from 19 organizations in Belgium, Notelaers et al.[44] found significant association between perceived effort-reward imbalance and exposure to bullying. The results enabled a theoretical hypothesis: workers who report low perceived reward and injustice at work engage in norm-breaking behavior and also signal low social standing to others, thereby eliciting negative behaviors from coworkers.

To conclude, workplace violence is a multifactorial phenomenon that involves individual, organizational, cultural, circumstantial and relational aspects of organizations. Therefore, multifaceted approaches are needed in pilot programs jointly designed by all interested parties.

RECOMMENDATION

The available evidence is uncertain and insufficient to ground preventive measures against workplace violence, since it has low strength overall and was almost exclusively investigated by means of qualitative methods. As a result, the actual effectiveness of interventions designed to reduce the risk of workplace violence cannot be established.

Some benefits were reported for selected occupational categories, of healthcare workers in particular, as well as for some outcomes related to the handling and consequences of violence for victims. However, no interventions or exposures were standardized or systematically tested in a way they might be generalized, not even for selected occupational categories.

Therefore, no general intervention might be recommended to reduce the risk or number of workplace violence incidents, not even in high-risk sites or corresponding to types 2 or 3. Nevertheless, this situation should not lead to inaction, but to the various groups in organizations to design jointly pilot programs grounded on local epidemiological data and considering possible secondary benefits, in addition to reducing the prevalence of violent incidents.

Ongoing initiatives, and others derived from the present guideline, especially in work environments known to be at high risk for violence, should be duly tested and analyzed to provide grounds for future investment in general standard recommendations likely to effectively to reduce the risk of violence.

REFERENCES

1. International Labor Organization. Sectoral Activities Program. Code of practice on workplace violence in services sectors and measures to combat this phenomenon. Geneva: International Labor Organization; 2003.
2. Occupational Safety and Health Administration: Enforcement Procedures for Investigating or Inspecting Workplace Violence Incidents. Directive Number: CPL 02-01-052. Washington, D.C.: U.S. Department of Labor; 2011.
3. Brasil. Ministério Público Federal. Assédio moral, assédio sexual e discriminação: saiba mais sobre essas distorções de conduta no ambiente de trabalho. Brasília: Ministério Público Federal; 2016.
4. Soboll LAP, Thereza CG. Assédio moral interpessoal e organizacional: um enfoque interdisciplinar. São Paulo: LTr; 2009.
5. Glina DMR, Rocha LE. Saúde mental no trabalho: da teoria à prática. São Paulo: Roca; 2016.
6. Mendes R. Patologia do Trabalho. 3ª ed. São Paulo: Atheneu; 2013.

7. Halim UA, Riding DM. Systematic review of the prevalence, impact and mitigating strategies for bullying, undermining behaviour and harassment in the surgical workplace. Brit J Surg. 2018;105(11):1390-7. https://doi.org/10.1002/bjs.10926

8. Cavalcanti AL, Belo EDR, Marcolino EC, Fernandes A, Cavalcanti YW, de Carvalho DF et al. Occupational violence against Brazilian nurses. Iran J Public Health. 2018;47(11):1636-43.

9. Pourshaikhian M, Gorji HA, Aryankhesal A, Khorasani-Zavareh D, Barati A. A systematic literature review: workplace violence against emergency medical services personnel. Arch Trauma Res. 2016;5(1):e28734. https://doi.org/10.5812/atr.28734

10. Pinto CM, Radon K, van Dijk F. Violence at Work and Mental Distress among Firefighters in Guatemala. Ann Glob Health. 2018;84(3):532-7. https://doi.org/10.29024/aogh.2306

11. Svedberg P, Alexanderson K. Associations between sickness absence and harassment, threats, violence, or discrimination: A cross-sectional study of the Swedish Police. Work. 2012;42(1):83-92. https://doi.org/10.3233/WOR-2012-1333

12. Tiesman H, Konda S, Hendricks S, Mercer D, Amandus H. Workplace violence among Pennsylvania education workers: Differences among occupations. J Safety Res. 2013;44:65-71. https://doi.org/10.1016/j.jsr.2012.09.006

13. Gluschkoff K, Elovainio M, Hintsa T, Pentti J, Salo P, Kivimäki M, et al. Organisational justice protects against the negative effect of workplace violence on teachers' sleep: A longitudinal cohort study. Occup Environ Med. 2017;74(7):511-6. https://doi.org/10.1136/oemed-2016-104027

14. Theorell T, Hammarström A, Aronsson G, Bendz LT, Grape T, Hogstedt C, et al. A systematic review including. meta-analysis of work environment and depressive symptoms. BMC Public Health. 2015;15:738. https://doi.org/10.1186/s12889-015-1954-4

15. Verkuil B, Atasayi S, Molendijk ML. Workplace bullying and mental health: a meta-analysis on cross-sectional and longitudinal data. PloS One. 2015;10(8):e0135225. https://doi.org/10.1371/journal.pone.0135225

16. Leach LS, Poyser C, Butterworth P. Workplace bullying and the association with suicidal ideation/thoughts and behaviour: a systematic review. Occup Environ Med. 2017;74(1):72-9. https://doi.org/10.1136/oemed-2016-103726

17. Xu T, Hanson LLM, Lange T, Starkopf L, Westerlund H, Madsen IE, et al. Workplace bullying and violence as risk factors for type 2 diabetes: a multicohort study and meta-analysis. Diabetologia. 2018;61(1):75-83. https://doi.org/10.1007/s00125-017-4480-3

18. Xu T, Magnusson Hanson LL, Lange T, Starkopf L, Westerlund H, Madsen IE, et al. Workplace bullying and workplace violence as risk factors for cardiovascular disease: a multi-cohort study. Eur Heart J. 2019;40(14):1124-34. https://doi.org/10.1093/eurheartj/ehy683

19. Linton SJ, Kecklund G, Franklin KA, Leissner LC, Sivertsen B, Lindberg E, et al. The effect of the work environment on future sleep disturbances: a systematic review. Sleep Med Rev. 2015;23:10-9. https://doi.org/10.1016/j.smrv.2014.10.010

20. Nielsen MB, Indregard AMR, Øverland S. Workplace bullying and sickness absence: a systematic review and meta-analysis of the research literature. Scand J Work Environ Health. 2016;42(5):359-70. https://doi.org/10.5271/sjweh.3579

21. Neto M, Ferreira AI, Martinez LF, Ferreira PC. Workplace bullying and presenteeism: The path through emotional exhaustion and psychological wellbeing. Ann Work Expo Health. 2017;61(5):528-38. https://doi.org/10.1093/annweh/wxx022

22. Conway PM, Clausen T, Hansen ÅM, Hogh A. Workplace bullying and sickness presenteeism: cross-sectional and prospective associations in a 2-year follow-up study. Int Arch Occup Environ Health. 2016;89(1):103-14. https://doi.org/10.1007/s00420-015-1055-9

23. Janssens H, Clays E, de Clercq B, de Bacquer D, Casini A, Kittel F, et al. Association between psychosocial characteristics of work and presenteeism: A cross-sectional study. Int J Occup Med Environ Health. 2016;29(2):331-44. https://doi.org/10.13075/ijomeh.1896.00588

24. Cho YS, Park JB, Lee KJ, Min KB, Baek CI. The association between Korean workers' presenteeism and psychosocial factors within workplaces. Ann Occup Environ Med. 2016;28(1):41. https://doi.org/10.1186/s40557-016-0124-1

25. Terzioglu F, Temel S, Uslu Sahan F. Factors affecting performance and productivity of nurses: professional attitude, organisational justice, organisational culture and mobbing. J Nurs Manag. 2016;24(6):735-44. https://doi.org/10.1111/jonm.12377

26. Lewis PS, Malecha A. The impact of workplace incivility on the work environment, manager skill, and productivity. J Nurs Adm. 2011;41(1):41-7. https://doi.org/10.1097/NNA.0b013e3182002a4c

27. Bambi S, Foà C, De Felippis C, Lucchini A, Guazzini A, Rasero L. Workplace incivility, lateral violence and bullying among nurses. A review about their prevalence and related factors. Acta Biomed. 2018;89(Suppl. 6):51-79. https://doi.org/10.23750/abm.v89i6-S.7461

28. Baby M, Gale C, Swain N. A communication skills intervention to minimize patient perpetrated aggression for healthcare support workers in New Zealand: A cluster randomised controlled trial. Health Soc Care Community. 2019;27(1):170-81. https://doi.org/10.1111/hsc.12636

29. Kang J, Kim JI, Yun S. Effects of a Cognitive Rehearsal Program on Interpersonal Relationships, Workplace Bullying, Symptom Experience, and Turnover Intention among Nurses: A Randomized Controlled Trial. J Korean Acad Nurs. 2017;47(5):689-99. https://doi.org/10.4040/jkan.2017.47.5.689

30. Glass N, Hanson GC, Anger WK, Laharnar N, Campbell JC, Weinstein M, et al. Computer-based training (CBT) intervention reduces workplace violence and harassment for homecare workers. Am J Ind Med. 2017;60(7):635-43. https://doi.org/10.1002/ajim.22728

31. Arnetz JE, Hamblin L, Russell J, Upfal MJ, Luborsky M, Janisse J, et al. Preventing Patient-to-Worker Violence in Hospitals: Outcome of a Randomized Controlled Intervention. J Occup Environ Med. 2017;59(1):18-27. https://doi.org/10.1097/JOM.0000000000000909

32. Baig L, Tanzil S, Shaikh S, Hashmi I, Khan MA, Polkowski M. Effectiveness of training on de-escalation of violence and management of aggressive behavior faced by health care providers in a public sector hospital of Karachi. Pak J Med Sci. 2018;34(2):294-9. https://doi.org/10.12669/pjms.342.14432

33. Lasater K, Mood L, Buchwach D, Dieckmann NF. Reducing incivility in the workplace: results of a three-part educational intervention. J Contin Educ Nurs. 2015;46(1):15-24. https://doi.org/10.3928/00220124-20141224-01

34. Nikstaitis T, Simko LC. Incivility among intensive care nurses: the effects of an educational intervention. Dimens Crit Care Nurs. 2014;33(5):293-301. https://doi.org/10.1097/DCC.0000000000000061

35. Armstrong N. Management of Nursing Workplace Incivility in the Health Care Settings: A Systematic Review. Workplace Health Saf. 2018;66(8):403-10. https://doi.org/10.1177/2165079918771106

36. Gillen PA, Sinclair M, Kernohan WG, Begley CM, Luyben AG. Interventions for prevention of bullying in the workplace. Cochrane Database Syst Rev. 2017;(1):CD009778. https://doi.org/10.1002/14651858.CD009778.pub2

37. Wassell JT. Workplace violence intervention effectiveness: A systematic literature review. Safety Science. 2009;47(8):1049-55. https://doi.org/10.1016/j.ssci.2008.12.001

38. Osatuke K, Moore SC, Ward C, Dyrenforth SR, Belton L. Civility, respect, engagement in the workforce (CREW) nationwide organization development intervention at Veterans Health Administration. J Appl Behav Sci. 2009;45(3):384-410. https://doi.org/10.1177%2F0021886309335067

39. Maciel RH, Gonçalves RC. Pesquisando o assédio moral: a questão do método do Negative Acts Questionnaire (NAQ) para o Brasil. In: Soboll LAP, ed. Violência psicológica e assédio moral no trabalho. São Paulo: Casa do Psicólogo; 2008. p. 167-85.

40. Silva IV, de Aquino EM, Pinto ICDM. Características psicométricas do Negative Acts Questionnaire para detecção do assédio moral no trabalho: estudo avaliativo do instrumento com uma amostra de servidores estaduais da saúde. Rev Bras Saúde Ocup. 2017;42:e2. http://dx.doi.org/10.1590/2317-6369000128715

41. Bordignon M, Monteiro MI. Validade aparente de um questionário para avaliação da violência no trabalho. Acta Paul Enferm. 2015;28(6):601-8. http://dx.doi.org/10.1590/1982-0194201500098

42. Bradaschia CA. Assédio moral no trabalho: a sistematização dos estudos sobre um campo em construção [MA dissertation]. São Paulo: Fundação Getúlio Vargas; 2007.

43. Gacki-Smith J, Juarez AM, Boyett L, Homeyer C, Robinson L, MacLean SL. Violence against nurses working in US emergency departments. J Nursing Adm. 2009;39(7-8):340-9. https://doi.org/10.1097/NNA.0b013e3181ae97db

44. Notelaers G, Törnroos M, Salin D. Effort-reward imbalance: a risk factor for exposure to workplace bullying. Front Psychol. 2019;10:386. https://dx.doi.org/10.3389%2Ffpsyg.2019.00386

45. Hultcrantz M, Rind D, Akl EA, Treweek S, Mustafa RA, Iorio A, et al. The GRADE Working Group clarifies the construct of certainty of evidence. J Clin Epidemiol. 2017;87:4-13. https://doi.org/10.1016/j.jclinepi.2017.05.006

46. Oxford Centre for Evidence-based Medicine. Oxford Centre for Evidence-based Medicine: Levels of Evidence [Internet]. Oxford: Oxford Centre for Evidence-based Medicine; 2009 [cited 13 April 2019]. Available at: https://www.cebm.net/2009/06/oxford-centre-evidence-based-medicine-levels-evidence-march-2009

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Appendix 1. Methods.

The present study evolved along the following steps: formulation of the research question, definition of eligibility criteria for inclusion and exclusion of studies, search in primary databases and corresponding (virtual) search strategies, selection of criteria to analyze risk of bias and strength of evidence, data extraction and analysis, and final recommendation.

Research question
Which preventive measures reduce the occurrence of workplace violence?

Structured question
P: Adult patient at a workplace with or without current violence
I: Preventive measures
C: No or after preventive measures
O: Incidence of violence

Eligibility criteria

Inclusion
• PICO components
• Randomized clinical trials, observational cohort studies, before-after studies, systematic reviews with or without meta-analysis
• No language or time restrictions
• Full-text or abstract with the required data available

Exclusion
• Outside the working environment
• Studies on treatments for violence
• Risk identification or diagnostic studies
• External violence

Searched databases
MEDLINE, Embase, Cochrane Central Register of Controlled Trials (CENTRAL); manual search and gray literature.

Search strategies

MEDLINE
#1: (Worker OR Workplace OR Workplaces OR Work OR Job OR Worksite OR Employment OR Occupation* OR Occupational OR Industry OR Occupational diseases) AND (violence OR Bullying OR Incivility OR Physical Abuse)
#2: AND random*
#3: AND ((epidemiologic methods OR comparative study OR comparative studies OR Therapy/broad[filter]) AND (prevention and control))
#4: AND ((epidemiologic methods OR comparative study OR comparative studies OR Therapy/broad[filter] OR (prevention and control))
#5: #1 OR #2 OR #3 OR #4

Embase
Workplace AND violence AND prevention
Cochrane Central Register of Controlled Trials (CENTRAL)Workplace violence

Risk of bias and strength of evidence
Risk of bias of randomized clinical trials was assessed according to the following criteria: randomization, allocation concealment, blinding, losses, prognostic factors, outcomes, intention to treat, sample size calculation and early interruption, among others.
    Risk of bias of cohort studies was analyzed according to exposure, comparability and outcomes. Risk of bias is not analyzed for before-after studies, because they are considered to be case series.
    In the case of systematic reviews, risk of bias is assessed according to that of the included studies, type of analysis performed and methodological quality.

Appendix 1. Continuation.

Strength of evidence was established following *Grades of Recommendation, Assessment, Development and Evaluation* (GRADE)[45] when meta-analysis of outcomes was possible. Alternatively, according to *Oxford Centre for Evidence-based Medicine: Levels of Evidence*[46]; the considered levels were A, B and C.

Data extraction, measurements and methods of analysis
The data considered were: author and year of publication, population, type of implemented preventive measures (intervention or exposure) and corresponding comparison, analyzed outcomes and follow-up duration.

For quantifiable outcomes, measurements included: calculation of means, difference between means, median and standard deviation for continuous variables, and absolute risk, risk difference and 95%CI for categorical variables.

We performed meta-analysis for each quantifiable outcome analyzed in more than one study using software Cochrane RevMan 5.3; detailed explanations are provided in the Results section when applicable.

Recommendation
The final recommendation was formulated by the National Association of Occupational Medicine (Associação Nacional de Medicina do Trabalho–ANAMT) Guidelines Committee, based on the located evidence, experts' experience with workplace violence and the values of Brazilian workers.

The recommendation was graded based on the methods described above and the criteria for determining the strength of evidence.

Appendix 2. Summary of the selected studies: prevention of workplace violence.

Author/ Year	Design	Population	Intervention/Exposure	Comparison	Outcomes/Results	Time
Baby et al. (2019)[28]	RCT	Mental healthcare providers (n=127)	Communication skill training sessions (4) (n=64)	Mindfulness (n=63)	Drop in the rate of aggression over time from 10.37 (9.16)to 6.07 (6.93) on POPAS-NZ across both intervention and control. Increased psychological well-being and communication competence and decreased distress with both interventions. No difference between groups.	6 months
Kang et al. (2017)[29]	RCT	Nurses (n=44)	Cognitive rehearsal program (n=22)	No program (n=22)	Difference in interpersonal relationships and turnover intention between groups. No difference in bullying or symptom experience	1 month
Glass et al. (2017)[30]	RCT	Homecare workers (n=306)	(CBT) (n=154)	CBT + peer facilitation (n=152)	Improved confidence to prevent and respond to violence and harassment. Reduction in violence and harassment incidents in both groups, without difference between them	6 months

Appendix 2. Continuation.

Author/Year	Design	Population	Intervention/Exposure	Comparison	Outcomes/Results	Time
Arnetz et al. (2017)[31]	RCT	Hospitals (n=41)	45-min worksite visit to present data and suggest interventions (n=21)	No visit (n=20)	Reduction of violent incidents in the intervention group compared to control, IRR 0.37 (95%CI 0.17–0.83)	24 months
Baig et al. (2018)[32]	Cohort	Healthcare providers (n=141)	Violence de-escalation training (n=71)	No training (n=70)	Improved confidence to handle patient violence. No difference in frequency of violent incidents between groups	4 months
Lasater et al. (2015)[33]	Before-after	Nurses (n=94)	3-part educational intervention (N=94)	After	Reduction of perceived incivility and improved self-efficacy	24 months
Nikstaitis and Simko (2014)[34]	Before-after	ICU nurses (n=26)	Educational sessions (6) (n=26)	After	No significant difference in perceived incivility	3 months
Armstrong (2018)[35]	Systematic review	Nurses (n=1,687)	Workplace incivility education, training in efficacious communication techniques against workplace incivility and active learning strategies to train the recently learned communication techniques	After	Combined interventions were useful for handling and reducing workplace incivility	?
Gillen et al. (2017)[36]	Systematic review	Workers (n=4,116)	1. Civility, Respect and Engagement in the Workforce (CREW) intervention; 2. educational exercises; 3. cognitive behavioral intervention; 4. combinations of policy communication, stress management training and incivility awareness training	Control (no intervention) or after	1. Increase in civility (5%) in 6 to 12 months; decrease in supervisor incivility victimization; reduced absenteeism. 2. Reduction of bullying measured as incivility perpetration; no difference in bullying measured as incivility victimization. 3 and 4. No difference in bullying victimization/perpetration	3 to 12 months
Wassell (2009)[37]	Systematic review	Healthcare industry (54%); retail industry (11%)	1. Worksite interventions (retail); 2. Behavior (health)	With or without control	Reduced frequency of incidents; improved ability to handle violence, confidence and safety	?

RCT: randomized clinical trial; POPAS-NZ: Perception of Patient Aggression Scale—New Zealand; IRR: incidence rate ratio; 95%CI: 95% confidence interval; ICU: intensive care unit.

Appendix 3. Risk of bias of selected studies.

Risk of bias (Table 1) was high for randomized clinical trials (RCT) due to the following reasons: lack of information on randomization method (two studies), lack of double binding (all studies), losses above 20% (one study), no intention-to-treat analysis (three studies) and no sample size calculation (two studies).

The risk of bias of the one observational cohort study was rated low.

Risk of bias was very high for systematic reviews, because despite high-quality Cochrane systematic review standards, all three reviews included very low quality studies and none could perform meta-analysis.

Being case series, before-after studies exhibit high risk of bias.

Table 1. Risk of bias of randomized clinical trials and systematic reviews.

Randomized clinical trials										
Author/Year	Randomization	Allocation concealment	Double blinding	Losses >20%	Outcomes	Prognostic factors	ITT analysis	Stopped early	Sample size	Other
Baby et al. (2019)	Without bias	Without bias	With bias	Without bias	Without bias	Without bias	Without bias	Without bias	Without bias	Without bias
Kang et al. (2017)	Without bias	Without bias	With bias	With bias	Without bias	Without bias	With bias	Without bias	Without bias	Without bias
Glass et al. (2017)	No information	No information	With bias	Without bias	Without bias	Without bias	With bias	Without bias	With bias	Without bias
Arnetz et al. (2017)	No information	No information	With bias	Without bias	Without bias	Without bias	With bias	Without bias	With bias	With bias

ITT: intention to treat

Cohort			
Author/Year	Selection	Comparability	Outcome
Baig (2018)	Without bias	Without bias	Without bias

Systematic reviews			
Author/Year	Includes design	Meta-analysis	Quality
Armstrong (2018)	With bias	With bias	With bias
Gillen et al. (2017)	With bias	With bias	Without bias
Wassell (2009)	With bias	With bias	With bias

Code
Without bias
No information
With bias