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Assessing Workplace Violence: Methodological Considerations

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Summary

The risk of violence is present in all workplaces. It must be accurately assessed to establish prevention and protection measures tailored to the features of each situation. The risk management process requires compliance in a sequential order: i) risk identification, ii) quantitative risk assessment, and iii) impact assessment. Gathering workers' experiences using lists, focus groups, or participatory ergonomics groups is necessary to identify the phenomenon. For risk assessment, spontaneous reporting of events is often insufficient. It may be complemented with two methods: systematic recording of violent events that occurred in the past year during periodic medical examinations of workers and targeted surveys. The epidemiological analysis of data from individual interviews and surveys provides the phenomenon's prevalence, incidence, and evolution. Moreover, reporting the harm suffered by victims of violence allows constructing impact matrices to allocate resources where they are most needed.

1. Introduction

Man is a violent animal. The violent behavior that leads humans to suppress their peers has a robust evolutionary root [1] and is ineradicable. However, the frequency with which it manifests is strongly influenced by the culture and society in which one lives [2]. In his 1651 work "Leviathan"[3], Thomas Hobbes was the first to describe human nature as aggressive and individualistic. The phrases "*Bellum omnium contra omnes*" (war of all against all) and "*Homo homini lupus*" (man is a wolf to his fellow man) succinctly capture this concept. According to Hobbes, the social contract arises precisely from the need to avoid mutual extermination. However, while the social contract repudiates physical violence, it does not exclude other, more insidious forms of violence. Indeed, verbal violence can be more damaging than physical [4, 5], especially if it comes from colleagues or superiors [6-10]. The evolution of civilization requires that even these less overt forms of aggression be identified and prevented.

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Workplace violence is an ancient phenomenon and often goes unpunished [11-13]. A large set of conceptual networks has been proposed to interpret its occurrence [14]. It's so widespread that it is usually accepted as a natural phenomenon or an inevitable part of one's job [15-17]. Only in the late 80s did the concept emerge in the scientific literature that workplace violence needs to be countered [18-20]. Beyond physical violence, the dangers of various forms of verbal violence that sometimes take on characteristics known as bullying, mobbing, and stalking were also highlighted. Today, Italy is one of the few countries in the world that requires employers to assess the risk of violence, prevent it, and protect workers from its effects [21]. Only 32 countries in the world have ratified the ILO Convention on Violence and Harassment [22] and in just 20 of them, including Italy, it is in force [23]. However, in some work sectors, violence assessment is universally required; for example, it's included in The Joint Commission's accreditation standards and is therefore mandatory for health companies worldwide [24].

Assessing violence means following a path that starts from identifying the danger and then measuring the risk or the likelihood of occurrence. The scientific method bases its validity on observation and experimentation. Therefore, it should be founded on workers' experiences, which must be accurately collected and analyzed. Like any physical quantity, the first step is defining the magnitude to be measured. Without a shared definition, the evaluator must clarify at the beginning of the evaluation which type of violence they intend to measure. There are, in fact, numerous forms of violence (assaults, attacks, threats, harassment) and different types of aggressors (customers, colleagues, superiors, strangers). Clarifying the theme is essential.

The concept of measurement presupposes the existence of a unit of measurement and contemplates the possibility of measurement errors. The evaluator must, therefore, indicate the number of violent acts recorded in each timeframe. Impressions, opinions, and beliefs of the one who does the measurement should not be part of it.

Risk assessment is part of a broader professional risk management process, which involves several sequential steps: (i) identification of the hazard or risk factor; (ii) assessment of risk, or the likelihood of occurrence; (iii) analysis of expected harm in the absence of interventions; (iv) development and implementation of prevention and protection measures; (v) verification of the effectiveness of the measures in terms of harm reduction. In this study, we aim to provide a procedure for assessing the risk of workplace violence that meets the criteria of the scientific method. We will, therefore, discuss points 1-3 of the previous list. We will compare the results obtainable with the scientific method with those derived from the practices commonly used to assess violence in risk assessment documents drafted in our country.

2. Definition of Violence

A consistent and universally accepted definition of workplace violence is lacking. The term "violence" is broad and encompasses all forms of abuse that degrade, humiliate, or harm an individual's dignity, worth, or health. Table 1 presents several key definitions and classifications of violence and related phenomena established by research institutions and international bodies.

Acknowledging that physical and verbal violence often overlap, complicating any categorization is essential. Harassment refers to persistent requests, messages, phone calls, or other unwarranted contacts that may cause annoyance, fear, or concern [25]. Bullying [26-29] and mobbing [30-32] involve repeated disruptive behaviors that deteriorate working conditions and compromise an employee's dignity, mental and physical health, and career. Stalking is a prolonged form of persistent harassment that can originate within or outside the workplace and involve the workplace itself [33-35]. An essential characteristic of sustained harassment is its progressive escalation [36-38]. The victim often has limited recourse to resolve the situation and risks exacerbating it, especially if they react emotionally. Such a defensive response could be stigmatized, leading to the perception that the victim is the cause of the issue. However, remaining passive may also be misguided, as it permits the abuse and may result in being labeled uncommitted [39-41]. Prolonged violence can have severe consequences, including quitting work [42-44], absenteeism [45-47], and even suicide [48-50]. The challenging resolution, only

Table 1. Definitions of Workplace Violence and Related Phenomena.

Definition	Description	Source
Workplace violence	The act or threat of violence, ranging from verbal abuse to physical assaults directed toward persons at work or on duty.	National Institute for Occupational Safety and Health (NIOSH) https://www.cdc.gov/niosh/topics/violence/default.html
Workplace violence	Any act or threat of physical violence, harassment, intimidation, or other threatening disruptive behavior that occurs at the work site.	Occupational Safety and Health Administration (OSHA) https://www.osha.gov/workplace-violence
Workplace violence	Any action, incident, or behavior that deviates from reasonable conduct in which a person is assaulted, threatened, harmed, or endangered in their work or as a direct result.	ILO-BIT, Geneva, 2003. Code of practice on workplace violence in services sectors and measures to combat this phenomenon. MEVSWS/2003/11 http://www.ilo.org/wcmsp5/groups/public/@ed_protect/@protrav/@safework/documents/normativeinstrument/wcms_107705.pdf
Workplace violence	An act or threat occurring at the workplace that can include any of the following: verbal, nonverbal, written, or physical aggression; threatening, intimidating, harassing, or humiliating words or actions; bullying; sabotage; sexual harassment; physical assaults; or other behaviors of concern involving staff, licensed practitioners, patients, or visitors.	The Joint Commission https://www.jointcommission.org/resources/patient-safety-topics/workplace-violence-prevention/
Workplace violence	Incidents in which individuals are subjected to abuse, threats, or assaults in work-related circumstances, with an implicit risk to their safety, well-being, and health.	E. Ferrari. Raising awareness on mobbing. An EU perspective. CRAS, European Commission, Brussels 2004. http://ec.europa.eu/justice_home/daphnetoolkit/files/projects/2003_152/mobbing_eu_perspective_cras_2003_152.doc.
Mobbing	Mobbing is a negative behavior among colleagues or between superiors and subordinates in which the targeted individual is repeatedly humiliated and directly or indirectly attacked by one or more individuals with the intention and effect of alienating them.	ACSHW Advisory Committee on Safety, Hygiene and Health Protection at Work of the European Commission "Opinion on Violence at the Workplace", 2001. Reported in: I.L.O. Work-related violence and its integration into existing surveys. 19th International Conference of Labour Statisticians. Geneva, 2-11 October 2013. http://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/meetingdocument/wcms_222231.pdf
Bullying	It differs from other work-related issues in its intent to cause harm to one or more individuals repeatedly over a period of time.	ISTAS Spanish Trade Union Institute of Work, Environment and Health, 2002. Minister for Labour Affairs, EIRE 2001 Report of the Expert Advisory Group on Workplace Bullying. Dublin, 2004. http://www.djei.ie/publications/employment/2005/bullying.pdf

(*continued*)

Table 1. Definitions of Workplace Violence and Related Phenomena. (*continued*)

Definition	Description	Source
Abuse	Behavior that deviates from reasonable conduct and involves the inappropriate use of physical or psychological force. It encompasses all forms of harassment, including sexual harassment, bullying, and mobbing.	European Foundation for the Improvement of Living and Working Conditions (EUFILWC). Di Martino V, Hoel H, Cooper CL. Preventing violence and harassment in the workplace. Luxembourg, 2003. ISBN 92-897-0211-7 http://www.eurofound.europa.eu/pubdocs/2002/109/en/1/ef02109en.pdf
Threat	Threat of death or announcement of an intention to harm a person or their property.	
Assault	Attempt to inflict physical harm or attack a person by causing physical injury.	
Physical violence	The use of physical force against another person or group that results in physical, sexual, or psychological harm.	WHO. ILO/ICN/WHO/PSI, 2000. Joint Programme on Workplace Violence in the Health Sector. MANAGEMENT OF WORKPLACE VIOLENCE VICTIMS. Jon Richards. GENEVA 2003 http://www.who.int/violence_injury_prevention/violence/interpersonal/en/WVmanagementvictimspaper.pdf
Psychological violence	Intentionally using power against another person or group can harm physical, mental, spiritual, moral, or social development.	
Internal violence	Workplace violence occurs among workers, including managers and supervisors.	ILO-BIT, Geneva, 2003. Code of practice on workplace violence in services sectors and measures to combat this phenomenon. MEVSWS/2003/11 http://www.ilo.org/wcmsp5/groups/public/@ed_protect/@protrav/@safework/documents/normativeinstrument/wcms_107705.pdf
External violence	Violence that occurs in the workplace among workers, including managers and supervisors, and any other individuals present at the workplace.	
Type 1 – Intrusive violence	Criminal intent by outsiders, terrorists, mentally ill individuals, those under the influence of drugs, or during protest actions.	United States Department of Labor. OSHA Occupational Safety and Health Administration. Workplace violence. https://www.osha.gov/SLTC/workplaceviolence/ California Division of Occupational Safety and Health Administration (OSHA); Guidelines for Workplace Security Revised March 30, 1995. https://www.dir.ca.gov/dosh/dosh_publications/worksecurity.html EU-OSHA European Agency for Safety and Health at work. Workplace Violence and Harassment: a European Picture. European Risk Observatory Report. Luxembourg 2010. ISSN 1830-5946 ISBN 978-92-9191-268-1 Doi:10.2802/12198 https://osha.europa.eu/en/publications/reports/violence-harassment-TERO09010ENC
Type 2 – Customer violence	Violence perpetrated by consumers/customers/patients (and their family members) against staff, or vice versa.	
Type 3 – Relationship violence	Violence and bullying within the staff; domestic violence in the workplace.	
Type 4 – Organizational violence	Organizational violence against staff or against consumers/customers/patients.	

feasible for those with adequate discretion, involves wholehearted engagement in work without expecting recognition to maintain professional capabilities while awaiting a change in the situation or a new job [51, 52]. Leymann [53] describes a four-stage process: i) the process begins with a conflict triggering a critical incident. The second stage ii) involves various harmful acts and the victim's stigmatization. The third stage iii) entails administrative and disciplinary actions; in the fourth stage iv), the victim is expelled from work. It has been observed that intervening only in advanced phases, with a worker already harmed by prolonged coercion, the institutional safeguards meant to protect employees, such as health surveillance services or medical-legal commissions of the national health service, may be incapable of reconstructing this complex chain of events and may only record health issues and work incapacity, inadvertently facilitating work expulsion [54]. Even the most severe cases of mobbing, bullying, and stalking elude predictions within the scope of risk assessment due to their incidental nature and comprehensive presentation variability, despite their criminal implications that extend beyond the workplace and severely affect private life [55-57]. Consequently, we will not address them in this study, which primarily aims to evaluate repetitive phenomena such as physical assaults, threats, harassment, and uncivil behaviors [58, 59] that underpin these forms of verbal violence. Nonetheless, it's worth noting that vigilant health surveillance of workers' conditions can prompt the identification of cases of ongoing violence and facilitate the implementation of necessary protective measures for employees and efforts to counter the phenomenon.

The scientific literature on workplace violence is vast: the approximately four thousand articles indexed to date on PubMed provide the necessary information on the prevalence and incidence of the phenomenon in different work sectors, determining and moderating factors, and the effects of violence on health and work capacity. Numerous applied studies and systematic analyses on violence prevention measures are also available [5, 18, 19, 60-69]. Risk awareness is of utmost importance for using prevention measures and the victim's perception of an incident as violent. Reporting harassment depends on what the worker considers as harassing behavior and what they deem acceptable. We will not address this complex set of topics here, which is essential for a correct evaluation. Still, we are convinced that the evaluator can quickly formulate the definition of workplace violence that best meets the company's needs. According to EU-OSHA [70], the company approach on workplace violence prevention is based on a shared definition of unaccepted behavior by third parties towards employees. Employees are better able to identify violence when there is a clear definition that is based on a zero-tolerance policy for threats of any kind, including physical and verbal. The company needs to communicate this definition to its employees.

Our discussion will focus on the methods to obtain a reliable risk assessment.

3. Risk Identification

Guidelines on the most appropriate methods for assessing the risk of workplace violence are scarce. There is little doubt that the evaluation should be based on the knowledge of aggressive events and their consequences. The first phase must, therefore, be the identification of the hazard. This hazard identification can be made using various methods. The main ones are: (i) checklist; (ii) focus groups; (iii) participatory ergonomics groups GEP©.

For risk identification, the British Health and Safety Executive (HSE) recommends first asking the workers during site inspections to carefully examine the characteristics of the environments and work procedures, analyze the injury records, and listen to worker representatives [71]. We recommend this approach as it is rational and effective.

In the Risk Assessment Documents (DVRs) of many Italian companies, this first phase of identification is not generally explicit, and it is carried out using lists from which algorithms for evaluation are derived. These lists and their associated algorithms are widely accessible and widely used. None of these methods have been published in peer-reviewed journals. The proposed algorithms are not validated, there is no indication as to why one variable was chosen over another or the score the evaluator can assign to each answer, and there is no established

correlation between the scores of each item or the total score of the questionnaire and the actual occurrence of violent phenomena. The algorithms often adopt incorrect mathematical methods, such as constructing matrices using ordinal numbers.

For this reason, these methods generally do not achieve the goal of providing a semi-quantitative representation of the risk. They can, at most, be used for risk identification, i.e., confirmation that there is a problem. Applying the algorithms leads to the same results that could be achieved by asking the workers, as the HSE suggests, but it requires more effort and is not error-free.

To illustrate this point, we will briefly discuss some of the most used methods in Table 2. The most basic methodology is that of Ballottin et al. [72] (Table 2), which suggests assessing the risk of violence based on five criteria drawn from the indicators of the INAIL method for assessing work-related stress [73]: (i) legal actions for dismissal/demotion/moral or sexual harassment; (ii) presence of an ethical and behavior code in the company; (iii) presence of a reference person for listening to and managing cases of work discomfort; (iv) management of any bullying or illicit behaviors; (v) night or solitary work.

The authors of the method suggest that the risk of workplace violence can easily be derived from existing data. However, it's easy to see that the procedure is ineffective. The first criterion ("legal actions") is far from timely. Criteria 2, 3, and 4 represent attempts to manage violence and, therefore, cannot be considered risk indicators but risk management indicators. As Ballottin et al. [72] suggest, adding the scores of these four questions is nonsensical. Factor 5, finally, is hard to generalize because in all companies, there may be workers who operate in isolation or at night, and it's unclear how this criterium can determine the company's risk of violence; at most, it could be one of many risk factors, but not the only one. We believe that assessing work-related stress according to the INAIL model, which in our country has been authoritatively recommended by the Ministry of Labor [74] but also criticized, does not help assess the risk of workplace violence.

Other entities, such as the Lazio Region [75], suggest more detailed symptom lists. It should be remembered that the subjectivity of the examiner strongly influences all checklists. Additionally, it's essential to keep the evaluation of the frequency of events separate from their severity. Risk assessment must first and foremost know the number of events and their characteristics. It can then separately consider the damage each or their repetition has caused to proceed from risk assessment to evaluate the phenomenon's impact. As we established above, impact assessment is the third act of risk management. It must be preceded by identification and measuring prevalence; it cannot replace these first two steps.

Using unvalidated algorithms has favored the proliferation of risk assessment models. The oldest model was proposed by Dr. Gentile, manager of the Prevention and Protection Service (RSPP) of the Local Healthcare Unit of Cuneo, based on the data collected in the unit between 1996 and 2003 [76]. The accident data were "compared with those available in the literature and from other health companies" and corrected with an *a priori* evaluation by the RSPP. Workplace violence risk was calculated as the product of a value derived from the percentage of time in contact with patients in each homogeneous group (assessed by the RSPP on an ordinal scale from 1 to 4) and the average absence duration from work for each accident in the homogeneous group during the observation years (also in ordinal numbers), corrected for the presence of blunt objects and escape routes. The result of the product between the four ordinal values was transformed into a new ordinal scale, graded from 1 (=negligible risk) to 4 (=high risk). The evaluator had chosen both the values of the factors and those of the cut-off levels, providing no insights on the reasons for his choice. The model developed by the unit of Cuneo is still widely disseminated through training courses for RSPPs and is used by many health companies, which generally omit the phase of collecting accident data and apply the method using the ordinal values that the evaluator deems most appropriate.

Ordinal numbers are parts of an ordered set, such as first, second, third, or low, medium, and high. Mathematical operations with ordinal numbers are invalid because finishing first twice (1+1) doesn't mean finishing second in the overall ranking. When performing operations with ordinal numbers, it should be remembered that it is a non-mathematical

Table 2. Some of the suggested methods for assessing the risk of workplace violence.

Ref.	Title	Link	Procedure	Critical issues
[72]	Prime indicazioni per la prevenzione delle molestie e violenze in occasione di lavoro (2021)	https://siplo.it/wp-content/uploads/2022/02/B_Prime-indicazioni-per-la-prevenzione-delle-molestie-e-violenze-in-occasione-di-lavoro-.pdf	Use 5 questions from the work-related stress assessment model according to Inail, with a final score ranging from 0 to 8.	Subjective assessment is limited to a few aspects of the phenomenon.
[75]	Documento di indirizzo per la prevenzione e la gestione degli atti di violenza a danno degli operatori sanitari (2018)	https://www.regione.lazio.it/sites/default/files/2021-03/Prev-gest-violenza-ooss-2018.pdf	R = P x D, where R is the risk, P is the probability of occurrence, and D is the expected severity of the damage (D). Model for the assessment of the specific risk of violence against healthcare workers. Checklist model for self-assessment of the risk of acts of violence.	The risk is the probability of occurrence. The damage should be used to assess the impact, not the threat. Checklists are subjective.
[76]	Valutazione del rischio aggressione (2004)	http://www.megaitaliamedia.net/puntosicuro/Asl_15_CN_valutazione_rischio%20_aggressione.PDF	The risk is calculated as the product of an ordinal value derived from the percentage of time in contact with patients and the average duration of absences from work for each injury in previous years, adjusted for the presence of blunt objects and escape routes.	It only applies to physical assaults from a patient to a healthcare worker. Numerical data (number of assaults and duration of absences) are converted into ordinal values. Other parameters are subjective. The damage should be used to assess the impact, not the risk.
[77]	Valutazione del rischio aggressione sul lavoro (2018)	https://www.epc.it/Prodotto/Editoria/Riviste/Ambiente-e-Sicurezza-sul-Lavoro/1380	(i) *A priori* risk assessment using the summation of 7 ordinal values (type of activity; context; day/night shift; gender differences; solo work; number of events over three years; time dedicated to risk-prone activity); (ii) Adjustment based on measures implemented; (iii) Conversion into four residual risk classes.	None of the variables used have standard measures.

assessment, therefore a qualitative assessment that is acceptable only if the procedure is logically correct.

More recently, a private company specializing in workplace safety proposed a rather detailed risk assessment method for workplace violence and published it in the gray literature [77]. This method calculates the risk *a priori* by summing up seven ordinal values (type of activity; context; day/night shift; gender differences; solo work; number of events in three years; time dedicated to high-risk activity). Some ordinal values corresponding to implemented safety measures are subtracted from this resulting value, which is transformed into four risk classes. In this case, the definition of the values attributed to the seven factors that make up the index a priori and the correction factors corresponding to the implemented measures are arbitrary. The mathematical operations performed with the ordinal values are also non-standard. We all know a difference between cardinal numbers (1, 2, 3) and ordinal numbers (1=low, 2=medium, 3=high): additions and subtractions are valid if done with the former, not the latter. The authors of this method, however, seem unaware of the fact that ordinal quantities do not obey the fundamental properties of addition and subtraction operations (commutative, associative, dissociative, invariance), and in describing the method, they attribute a "parametric" value to it [78]. Parametric statistics are based on "normal" or Gaussian distribution parameters, verified by the mean, standard deviation, kurtosis, and skewness. There is nothing parametric about these algorithms.

The algorithms are all characterized by being composed of a series of variables whose value is determined by the compiler according to his judgment. Even if this judgment were infallible, the result, although expressed numerically, would always be of an ordinal or semi-quantitative type, indicative of greater or lesser dimensions but not precisely quantified. It should also be remembered that no study has ever been published validating the weight of the algorithm variables or the correspondence of the values resulting from the algorithm with the risk they intend to measure. Finally, due to the use of algorithms, comparing two different companies or even two measurements taken in the same workplace by two other examiners is impossible.

The use of algorithms raises some ethical questions. In the presence of actual data, is it permissible to replace them with ordinal data or categories? Since risk assessment must be made available to workers' representatives and forms the basis of the risk information process, is the loss of data quality that occurs when switching from numerical data to categorical data ethically acceptable? The second ethical question arises from data collection. It may be that the data necessary to construct the variables introduced into the algorithm are not (fully or partially) available, and the evaluator proceeds using the categorical value that he believes is most appropriate. Since this substitution of actual data with an opinion is not officially declared, can we consider it ethically valid, or should not we consider that it irrevocably alters the assessment process and damages the trust relationship between the evaluator and those who benefit from the evaluation? Based on these issues, we recommend giving algorithms only the value of risk identification and its qualitative description but base the risk assessment on observing phenomena. The lack of objective data is the main difficulty in evaluating and managing workplace violence risk. Only a minimal fraction of violent incidents results in physical injuries that can be objectified, and only the most severe cases are reported as accidents [79-81] or, as suggested by Ballottin et al. [72], those that lead to legal proceedings prevents understanding the phenomenon.

The focus group is one of the most used methods to understand the danger of violence. The focus group discussion is a research methodology in which a small group gathers to discuss a specific topic or issue to generate data [82]. The main feature of a focus group is the interaction between the moderator and the group. The interaction among group members is also very significant. The goal is to give the researcher an understanding of the participant's perspective on the discussed topic [83-84]. The focus group technique is beneficial for understanding specific characteristics of workplace violence. For example, it allows identifying the perpetrator of the violence [85] or its causes [86]. The main limitations of the method are the need for highly specialized personnel to conduct the focus groups and the minimal number of people (or "experts") that can be

involved. It is concluded that it can be an effective method to describe a problem that has been somehow already identified because the participants in the focus group or "experts" play a critical role in the phenomenon under study.

A methodology different from focus groups and within the reach of occupational physicians is GEP© [87]. During the workplace visits the doctors must make, they invite workers to describe their work cycle and identify challenges, then seek solutions for each of them. Workplace violence often emerges as a challenge in such discussions, and workers can suggest measures that, in their opinion, could help reduce the frequency or severity of the phenomenon. The most cost-effective and feasible suggestions that meet worker approval are recommended to corporate management. The GEP© method in its most basic form, which is to question workers at the end of the visit to the work environments, has always been part of the heritage of occupational medicine. For example, in 1997 this technique made it possible to observe that workplace violence was, reportedly, the second most important work-related health problem for fuel distribution workers, retail workers and social workers [88]. This straightforward technique makes it possible to identify the main characteristics of the violence phenomenon and get an idea of the most acceptable solution. Naturally, these methods are intended to identify the most prevalent forms of workplace violence, while particular aspects such as mobbing, bullying, stalking, sexual violence require a personalistic approach, through interviews conducted by the competent doctor or targeted investigations. With both focus groups and GEP©, as with checklists and algorithms, it can be done to identify and describe the phenomenon in broad terms but not to measure it. Risk assessment, on the other hand, requires a quantitative approach.

4. Risk Quantification

Identifying the hazard of workplace violence, observing some violent episodes, and analyzing the circumstances that produced them are not enough to assess the risk and predict its recurrence to implement the most appropriate preventive measures. For risk quantification, it's necessary to know the frequency of events and continuously analyze their characteristics. The workplace violence assessment, like any other risk one wants to analyze, must be carried out with scientific rigor. Using a standardized method, such as the ASIA method (assessment, surveillance, information, audit) [89], allows for continuous information collection, continuous measurement of the effectiveness of implemented interventions, and then restart from the assessment in a cycle that repeats over time. Hence, it is essential to structure a continuous detection system of all violent events to understand the phenomenon, analyze its distribution and evolution, trace and assist the victims, implement preventive measures, and verify their effectiveness.

Worker collaboration is indispensable. For this reason, evaluation methods that are confusing and masked by incomprehensible algorithms that hinder participation should be avoided. The risk assessment of violence can be carried out correctly and efficiently based on the responses provided by workers about the frequency of the phenomenon and its consequences. These responses can be collected in various ways: (i) through spontaneous "reporting" by workers; (ii) during periodic medical examinations in the workplace; (iii) through computerized surveys.

As the literature shows, spontaneous reporting of aggressions is generally low and mostly done orally [90], making data processing difficult. Written reporting covers only 15% of controlled studies, and electronic systems 10% of cases [91]. Moreover, victims often express dissatisfaction with how reports are handled [91] and perceive recording aggressions as a stress factor, taking away work time [92]. Efforts to increase reporting, although sometimes initiated [93, 94], are neither frequent nor particularly effective [90]. Therefore, basing risk assessments on workers' spontaneous reporting is a mistake.

Workers' exposure to violence must be systematically investigated. An economical and accessible method is to take advantage of periodic health surveillance visits, which workers exposed to professional risks undergo in the workplace. It will be sufficient to ask workers five questions (Table 3), the first four concerning types of violence suffered in the last year and the fifth one about the perpetrator.

Table 3. Questions that can be posed to workers during all periodic visits to quantify their personal experience of workplace violence.

1. In the past 12 months, have you experienced a **physical assault** while working? (By assault, we mean an attack that may or may not have caused physical harm)			NO ☐	YES ☐
2. In the past 12 months, have you encountered a **threat** while working? (A threat is defined as the intention to cause physical harm)			NO ☐	YES ☐
3. In the last 12 months, have you experienced **harassment** while working? (Harassment refers to any acts, words, attitudes, or actions that create a hostile work environment)			NO ☐	YES ☐
4. In the last 12 months, have you experienced **persistent harassment** (stalking) at work, which includes persistent requests, messages, calls, and other unwanted contacts causing annoyance, concern, or fear?			NO ☐	YES ☐
5. The main perpetrator of this/these aggressions	Visitors ☐	Colleagues ☐	Superiors ☐	Clients ☐

Questions can be posed verbally to all workers, but the written form is advisable, as it saves time and ensures everyone is questioned; it also provides a form that can be archived electronically and processed. In many workplaces, the periodic visit is preceded by compiling a medical history questionnaire, which allows standardizing questions or conducting health promotion actions [95]. Health promotion campaigns integrated into everyday risk prevention activities are favored by companies, as they do not incur additional costs, and by workers and their Safety Representatives for the other benefits that ensue. Including questions about violence in a questionnaire that generally concerns occupational health has the advantage of not overly focusing on the topic, thereby reducing the "bias" that may result from the "social desirability" of the discussed theme. The individual nature of the data collection, which the doctor carries out during the medical examination, has undeniable advantages: it allows maintaining this information confidential within the relationship between doctor and worker and evaluating its health consequences, intervening immediately with support measures for the worker if necessary. The census of workers made during periodic visits is much more effective than questionnaires sometimes offered online or in written form, as it avoids the self-selection typical of such administration methods, which limits the reliability of responses.

The answers collected during periodic visits allow us to know the overall data on the number of workers who remember having been exposed to violent events in the previous year, divided into physical violence (a physical assault that may or may not cause physical harm), threats (the intention to cause bodily harm), or harassment (any act, words, attitudes, annoying or unpleasant actions that create a hostile work environment). They also allow us to know who the main perpetrator of the violence is (a user, a visitor, a colleague). The recall period (one year) is modeled on the common frequency of periodic visits and is like that used in other longitudinal studies of workplace violence [96]. It is not difficult to agree that a worker will remember well the violence suffered in the last year unless the incidents were so minor that they were quickly forgotten. The identification of the worker during the medical visit allows monitoring of violence, especially if of a recurring or persistent type, and its consequences and makes it possible to link the data with other information that can be collected during health surveillance, for example, absences due to illness, work capacity, job satisfaction, anxiety, depression, sleep problems, other symptoms. Data obtained during periodic visits can be grouped based on job category, sector, or work unit, thus providing important information on the distribution of the phenomenon and its evolution [97-99]. The longitudinal comparison of the data collected allows violence monitoring over time, thus verifying the effectiveness of the prevention measures implemented [100].

The main limitation of the investigation conducted during periodic visits is the time needed to collect the information, which is at least one year if the visits are carried out annually. To obtain real-time

data, it is necessary to administer an online questionnaire to all workers. Several computer systems allow confidentially collecting information by activating a link or QR code. Through these systems, it is possible to distribute a questionnaire, for example, in healthcare activities, the Violent Incident Form (VIF) [101], which is one of the most widespread or similar questionnaires in other work sectors. In the electronic form, completing the questionnaire takes 2 to 6 minutes. It provides information not only on the frequency of various forms of violence but also on the characteristics of the aggressor and the consequences of the violence. The weak point of this detection system is workers' participation, which must be substantial enough to make the results reliable. The advantage is the excellent timeliness and the immediate processing of the responses.

When the Health Surveillance Service manages the system, it ensures data confidentiality and their finalization for improving the health and safety of workers. Of course, the system can also be managed by the Prevention and Protection Service, by the Clinical Risk Management officer, or by other company figures; in these cases, it is appropriate for the questionnaires to be administered anonymously.

There are numerous questionnaires to investigate violence suffered by workers systematically. Among these, we note the questionnaire proposed by the World Health Organization for data collection on violence in healthcare activities [102], which has an Italian version [103]. Numerous other examples of questionnaires can be found in the literature [104-108], especially to investigate violence in healthcare activities. The European Agency for Safety and Health at Work (EU-OSHA) has developed the Online Interactive Risk Assessment (OiRA) system [109] to help companies identify and manage occupational risks. As of June 29, 2023, a tool for monitoring violence caused by third parties is available in this system [110].

The systematic collection of workers' experiences of violence through questionnaires that allow us to understand not only the frequency of the phenomenon but also the characteristics of the episode and the consequences for the health of the victims enables an estimation of the impact of workplace violence in different contexts, starting from a risk assessment. Once the prevalence of the risk of violence has been assessed, it is possible to incorporate the concept of harm, which will be quantified according to methods to be defined (e.g., days of absence due to illness following the trauma, number of workers with symptoms of post-traumatic stress, etc.). In this case, one should avoid the commonly used system where the assessor assigns a severity value to the damage without explaining the rationale behind this judgment. The value that results from the product P x D is an ordinal number and, as such, is a qualitative scale, not an actual number. The impact matrix (prevalence x damage) has been applied to indicate to managers which departments of a healthcare company require priority intervention [111].

5. Conclusion

To prevent a pervasive risk like workplace violence, the continuous input of workers' knowledge is essential. The phenomenon must be constantly monitored with tools that allow understanding of both the frequency of events and the modalities of occurrence and the resulting damages. The phenomenon of underreporting discourages limiting oneself to observing the assaults that have been reported. It is preferable to monitor the phenomenon during the periodic health surveillance of workers, asking everyone a few simple questions about the violence suffered and investigating the consequences of the assaults during the medical examination or organizing periodic surveys on violence in the operational units. In this way, in addition to the parametric measurement of violence (number of events, their distribution, and characteristics), it will also be possible to collect data about the resulting damages and thus construct impact matrices, which can guide managers in allocating resources towards the sectors in which the risk of violence causes more significant damage.

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