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Can high workplace social capital buffer the negative effect of high workload on patient-initiated violence? Prospective cohort study

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ABSTRACT

Background: High workload seems to increase the risk of patient-initiated workplace violence (patient-initiated violence). However, the temporal association between workload and violence remains uncertain. Understanding the interplay of factors in the psychosocial working environment and patient-initiated violence is important to future preventive initiatives.
Aim: To assess whether a high workload increases the risk of patient-initiated violence, and whether intraorganizational relationships based on trust, reciprocity, justice and collaboration, known as workplace social capital, moderate this risk.
Method: Baseline survey data on 1823 social educators was collected followed by 12 monthly surveys on patient-initiated violence exposure. Poisson regressions, in mixed models, were conducted to assess the risk of violence at four levels of workload. Further, moderation analyses were conducted to assess the moderating effects of three sub-types of workplace social capital.
Results: High and *very high* workload increased the risk of patient-initiated violence: RR = 1.5 [1.4–1.6], $p < .001$ and RR = 1.4 [1.3–1.4], $p < .001$. All three levels of workplace social capital had a moderating effect on the workload-violence association: *Workload*Workplace social capital* $_{\text{(co-worker)}}$: F (3, 16,712) = 3.4, $p = .017$, *Workload*Workplace social capital* $_{\text{(local management)}}$: F (3, 16,748) = 11.9, $p < .001$, *Workload*Workplace social capital* $_{\text{(general management)}}$: F (3, 16,556) = 5.5, $p < .001$. Only high Workplace social capital $_{\text{(co-workers)}}$ reduced the risk of violence at all levels of workload. Workplace social capital $_{\text{(general management)}}$ reduced the risk of violence at high, medium and low workload, and Workplace social capital $_{\text{(local management)}}$ reduced the risk of violence at medium and low workload.
Conclusion: High workload clearly increases the risk of patient-initiated violence. A high workplace social capital appears to be a viable protective factor and should be investigated further in studies of patient-initiated violence prevention.

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What is already known

- Patient initiated violence is highly prevalent within the health service professions and detrimental to workers health.
- Workload has been associated with increased risk of violence but little is known about the temporal dynamics between workload and violence.
- Workplace violence is a complex phenomenon associated with a variety of risk and protective factors. Assessment of each factor individually is not sufficient to comprehend the risk of workplace violence.

What this paper adds

- High workload prospectively increases the risk of patient initiated violence.
- Workplace social capital reduces the risk of violence in relation to a high workload.
- Leadership should strive to develop and support intraorganizational relationships based on trust, reciprocity, fairness and collaboration, when trying to prevent workplace violence.

1. Introduction

Patient-initiated workplace violence, including threats and physical violence, is a dominant interpersonal stressor within health services. A recent meta-analysis including studies across 30 countries reports that about 19% of all health workers have been exposed to patient-initiated violence within the last year (Li et al., 2020). In Denmark, one of the professions with the highest exposure to violence is social educators who perform support and training that enhances daily social functioning of disabled patients (in some countries this profession is included in the term social care worker or special educator). In this profession, the one-year prevalence of threats is 49%, and the one-year prevalence of physical violence is 36% (Pihl-Thingvad, 2019).

Growing prospective evidence shows that exposure to workplace violence can result in a range of mental health problems such as posttraumatic stress, depression and burnout (Nyberg et al., 2020; Rudkjoebing et al., 2020), and an higher risk of sickness absence (Biering et al., 2018; Friis,et al.,2018; Niedhammer et al., 2013). Patient-initiated violence has further been associated with the negative organizational impact of reduced quality of work, productivity and commitment (Gates et al., 2011). Research on patient-initiated violence has shown that repeated exposure over prolonged periods are central to the detrimental effects of violence (Nyberg et al., 2020; Pihl-Thingvad et al., 2019). Prevention of patient-initiated violence is therefore of the utmost importance and requires an understanding of important factors in the general pattern of violence exposure.

Today, it is recognized that a proper safety climate in health-service organizations includes some form of violence-prevention initiatives, e.g. violence policies, employee training and support as well as rehabilitation initiatives (Gadegaard, 2015; Wassell, 2009). However, workplace violence is a complex phenomenon that is linked to both individual and organizational factors (Camerino et al., 2008; Sharipova et al., 2010). Developing adequate safety measures in high-risk organizations thus entails an understanding of which factors might be essential for the risk of violence and of the possible interplay between these factors and the occurrence of patient-initiated violence. Research on workplace violence has increased in recent decades (Flannery, 1996; HR Gazette, 2021; Piquero et al., 2013), but we still lack sound empirical data that can explain which contextual factors are pivotal in the occurrence of patient-initiated violence (van den Bossche et al., 2013) and more systemic approaches that can assess the interplay between these factors (Bentley et al., 2014; Giannouli, 2018). Two core factors in the work environment are workload and intraorganizational relationships (Harrison and Dawson, 2016; Török et al., 2020). This study focuses on the core working conditions of the quantitative workload and on how it might affect the risk of exposure to patient-initiated violence. The study further investigates whether and how intraorganizational relations in the form of workplace social capital, i.e. work relations based on trust, reciprocity, justice and collaboration, at the level of co-workers, local management and general management, might affect the association between workload and the risk of violence.

2. Background

2.1. Patient-initiated violence in the work of social educators

Workplace violence is broadly defined. The European Commission defines workplace violence as: Both physical and psychological violence: Incidences where staff are abused, threatened or assaulted in circumstances related to their work, including commuting to and from work, involving an explicit or implicit challenge to their safety, well-being and health (Wynne et al., 1997). The Occupational and Health Administration (OSHA) of the United States Department of Labor defines workplace violence as: Any act or threat of physical violence, harassment, intimidation or other threatening or disruptive behavior that occurs at the worksite (Occupational Safety and Health Administration, 2021).

While these similar and broad definitions ensure possible regulations and legislation regarding almost all types of workplace violence, they are less suited to evaluate workplace violence in systematic research and do not support a differentiated understanding of possible detrimental effects and prevention strategies. In research, workplace violence is often categorized into four subtypes of violence based on perpetrators. Type 1 violence, perpetrated with a criminal intent by someone external to the organization, such as bank robbery; type 2 violence, perpetrated by patients or clients to whom the worker provides a service; type 3 violence, committed by a co-worker, supervisor or manager within the organization; and type 4 violence, committed by an outside person known to the victim, e.g. an ex-husband (Lanctôt and Guay, 2014). However, workplace violence is best understood in relation to the profession that is investigated. Social educator is a three and a half-year bachelor-level education. Social educators aim to enhance social functioning and independence in patients with special needs. In Denmark Social educators is not a licensed healthcare profession. Within this profession, the main patient group is mentally or severely physically disabled persons, and non-hospitalized psychiatric patients. In their daily work, social educators interact with their patients in care centers, residential institutions or private homes. Their work is centered on the social relations, with a focus on assessment, planning, development and training of the patient‘s ability to increase his or hers independence in daily life as well as participation in the everyday social life around them. The work is often planned and executed in relation to the patients daily activities such as bathing, dressing, eating, cooking and cleaning, as well as public activities such as shopping, visiting the dentist etc. Here, the social educator works in close proximity to the patient and often assist the patient both practically and with psychological care and support. Social educators have meetings with various patients and with each visit follows a demand of written registration or account of the activities, conclusions or future planning for the patient's development. The social educator often works in collaboration with other health professionals such as doctors' nurses and health assistants, in order to plan activities according to the ongoing treatment.

In this profession, type 2 violence is highly prevalent (Pihl-Thingvad, 2019) and often consists of physical violence or threats

of violence. Patient aggression is often a response to situations the patient perceives as stressful. For example, in situations demanding an extra effort or close bodily contact, and in situations where the patient is reacting due to his or her disability, e.g. a psychosis or reduced cognitive abilities. The violence is often physical, ranging from spitting and pinching to severe and life-threatening attacks (Menckel et al., 2000; Pihl-Thingvad et al., 2019) . This study therefore uses Schatt and Kelloway's (2005) definition of patient-initiated violence as any physical aggression or threat of physical aggression from patients or their relatives.

2.2. Workload and violence

Workload, understood as the overall level of quantitative work demands and time pressure, is a basic working condition. While periodic high workload can motivate workers (Baethge et al., 2018; Crawford et al., 2010), high workload is more often associated with negative effects such as decreased quality of work and increased employee stress, burnout and clinical depression (Aronsson et al., 2017; Holden et al., 2011; Madsen et al., 2017). Today, high workload is considered a serious problem within the health-service industries due to increasing complexity in patient care, increased shifts between patient contact, and productivity demands (Dyrbye and Shanafelt, 2011; Nei et al., 2015). Workload has also persistently been proposed as a core challenge of the psychosocial working conditions (Burchell et al., 2009; Harrison and Dawson, 2016; World Health Organization, 2020). For social educators, a high workload is often the result of a high patient-to-worker ratio combined with increased registration and documentation requirements. The result is time pressure in the patient-worker interaction, increased contacts with different patients per watch, and accumulation of documentation tasks.

A high workload, which can be difficult to reduce when resources are limited, might augment patient-initiated violence. A meta-analysis in general safety research found that workload was negatively associated with workers' safety compliance and participation in safety procedures, and positively associated with accidents and injuries (Christian et al., 2009). Several studies have documented the positive association between increased workload (i.e. external demands such as time pressure and task requirements) and the risk of errors and reduced quality in patient-related tasks (Amalberti and Brami, 2012; Elfering et al., 2006; Holden et al., 2011). Despite the consensus that a high workload impairs workplace safety, none of the above studies focuses on patient-initiated violence as a hazard outcome.

It seems plausible that a high workload in the form of high quantitative demands and time pressure can affect exposure to patient-initiated violence. Viitsara and Menckel (2002) propose a theoretical framework for workplace violence based on workplace safety research. Here, violence is regarded as the end point of processes affected by factors pertaining to different levels of the organizational framework. Their theoretical understanding proposes that analyses of violent incidents could benefit from focusing on three types of factors: *specific factors*, i.e. factors specifically pertaining to a violent incident, such as individual and interpersonal behavior, and the characteristics of the persons involved, i.e. age, gender, experience, mental health etc.; *situational factors*, i.e. factors of the contextual setting that are independent of the specific violent incident but pertain to work processes, such as the general physical and psychosocial work environment, dynamics within the workgroup, etc.; *structural factors*, i.e. a wider, more stable and general set of inherent factors at the organizational level that exist across all situations and functions. The *structural factors* may influence the processes that lead to violence directly or indirectly through *situational* and/or *specific factors*, and encompass economy, visitation standards of the patient group, general government of workers' safety and wellbeing, training, violence policies, etc. (ibid).

Within this framework of understanding, workload is a situational factor influencing the interpersonal behavior in a situation that leads to violence. Workload has been argued to affect the interaction between patient and worker in ways that might cause increased frustration, insecurity and aggression in the patient (Agervold and Andersen, 2006). A high workload is argued to reduce the quality and time used in the caring relation, thus reducing patient satisfaction and sense of safety (van den Bossche et al., 2013). A high workload is also argued to reduce workers' perception of having sufficient time to adhere to safety procedures and to impair assessment of risk situations (Pihl-Thingvad et al., 2019; Turpin et al., 2020). Finally, a high workload is argued to cause workers to experience strain and psychological stress, make them more irritable and less tolerant and forgiving of adverse patient behavior (Turpin et al., 2020; van den Bossche et al., 2013). In total, the arguments indicate that a high workload could cause worker behavior that increases the risk of conflict escalation, aggression and violence in the worker-patient relation.

Indeed, several cross-sectional studies have found a positive association between different aspects of workload and risk of violence across different health service occupations (Agervold and Andersen, 2010; Laschinger and Grau, 2012; Lu et al., 2014; Roche et al., 2010; Viitasara et al., 2003). However, due to the cross-sectional designs, these studies cannot discern between the interplay and temporal dynamics of workload and violence. Only two studies (of the same cohort of workers) have reported on the prospective association between workload and risk of patient-initiated violence (Andersen et al., 2020, 2018). Based on a one-year follow-up study of 3011 employees in four high-risk sectors (psychiatry, elder care, prison and probation services, and special schools), Andersen et al. (2018) found that high quantitative demands caused a significant increase in the risk of threats (Odds Ration 2.0) but not in the risk of physical violence after adjustment for threats and violence at baseline (ibid.). In a subsequent study of the same cohort, Andersen and colleagues reported that quantitative work demands were significantly associated with an increased risk of threats (Odds ratio 1.2) but not physical violence, when assessed over a four-year period and adjusted for violence and threats at baseline (Andersen et al., 2020).

While these studies supplement existing knowledge considerably by adding prospective evidence and indicating possible differences regarding workload and the risk of threats and physical violence respectively, they still leave doubt whether workload is a key factor in general exposure to patient-initiated violence.

Both studies used 12-month retrospective recall items on threats and violence at follow-up and operationalized exposure into a dichotomized response of exposed/non-exposed. A 12-month recall item is linked to a considerable risk of recall bias with the possibility that respondents primarily report exposure within the most recent period or exposure that is explicitly remembered due to special circumstances (Andersen and Mikkelsen, 2008; Menard, 2007). Recall bias is of special concern in connection with patient-initiated violence since extant literature finds a clear tendency of underreporting violence among health-service professionals (Arnetz et al., 2015; Menckel et al., 2000; Morphet et al., 2019). The long recall period of the items might fail to measure the less severe types of violence such as a slap, pulling of hair, scratching, biting etc. Osman et al. (2017) have shown that this type of violence is perceived as less severe than threats of violence, just as it has been shown to have less detrimental effects (blinded for review). Since, the "mild" type of violence have been reported as highly prevalent within the health service profession, a long recall period increases the risk of not detecting this mild and least severe form of violence. This will have an impor-

tant effect on the measurement in regards to the general exposure pattern and proportion of time being exposed to violence, within these high exposed workgroups. Patient-initiated violence is unfortunately often a core working condition in the health sector (Alameddine et al., 2015; Nyberg et al., 2020; Schablon et al., 2012; Tonso et al., 2016). Therefore, an understanding of how work factors affect more general and prolonged exposure to patient-initiated violence is critical to future prevention initiatives.

2.3. Moderating role of workplace social capital

Following the framework of patient-initiated violence suggested by Viitasara and Menckel (2002), it is important to include possible interaction of factors inherent in the general psychosocial work environment in order to understand what is pivotal to prevent patient-initiated violence (Bentley et al., 2014; Giannouli, 2018; Viitasara and Menckel, 2002). An essential part of the psychosocial work environment is intraorganizational relationships described via the concept workplace social capital in the occupational health literature (Framke et al., 2019; Hansen et al., 2018; Jay and Andersen, 2018; Kouvonen et al., 2013; Rugulies et al., 2016; Török et al., 2018). In short, workplace social capital can be defined as the nature of the intraorganizational ties, including shared norms and values concerning trust, reciprocity, justice and collaboration (see for example Oksanen et al., 2008; Kouvonen et al., 2008; Rugulies et al., 2016). Workplace social capital is understood as resources inherent in the organizational structures, which support the ability to work together, create general relational trust and reciprocity and an experience of fairness and respect within the relationships (Nahapiet and Ghoshal, 1998; Oksanen, 2009). Workplace social capital is often operationalized in structural subtypes, capturing the different organizational ties, for example relationships between co-workers in a work unit, between workgroups and the local management, and between workgroups and the general management (Meng et al., 2018; Borg et al., 2014).

Workplace social capital is increasingly accepted as a general work environment factor that shows promising positive effects on workers' health and organizational well-being. Existing studies indicate that workplace social capital is associated with positive health effects (Kouvonen et al., 2008; Murayama et al., 2012; Oksanen et al., 2008), reduced sickness absence (Kiss et al., 2014; Török et al., 2018), reduced perceptions of stress and emotional exhaustion (Boyas and Wind, 2010; Driller et al., 2011; Framke et al., 2019; Gächter et al., 2011; Jay and Andersen, 2018; Liukkonen et al., 2004), increased productivity (Hasle and Møller, 2007; Yuan et al., 2018), improved coordination of work tasks (Gloede et al., 2013), increased work engagement and satisfaction with work (Framke et al., 2019; Kroll et al., 2019), as well as improved quality of care (Strömgren et al., 2016).

Patient-initiated violence is a result of conflict-escalating behavior within the worker-patient relation, possibly due to the experience of strain caused by workload (Turpin et al., 2020). Here, workplace social capital may play a moderating role, alleviating the strains caused by workload, and workplace social capital may be more feasible to work with in practice compared to reducing the workload, as the latter is often strongly dependent on economic resources in terms of more staff. Studies have already indicated that workplace social capital reduces perceptions of stress and increases engagement and work satisfaction. These positive effects of workplace social capital, i.e. colleague and leader support in work performance and appropriate coordination of tasks etc., may also alleviate the perception of workload strain and thereby reduce the negative behavior patterns caused by the strain. Furthermore, the indication that workplace social capital increases productivity (Hasle and Møller, 2007; Yuan et al., 2018) might affect the workload strain. An organizational framework characterized by high workplace social capital indicates an aptitude for collaboration and support, which can function as a buffer against workload strain and decrease conflict-escalating behavior in the worker-patient interaction. However, the expression of workplace social capital can differ across contexts and, more importantly, across specific work problems. Regarding patient-initiated violence, high workplace social capital might express itself as a consensus and shared norm in how to address and set boundaries for aggressive and transgressive behavior, reflected in a shared and supportive adherence to violence policies and procedures of interaction with patients who act with aggression. These shared norms might result in staff exhibiting a more homogenous and uniform behavior towards the individual patient which would limit their opportunity to negotiate the rules of interaction and interpersonal boundaries. This stable and recognizable pattern of interaction across staff members could reduce ambiguity and uncertainty within the worker-patient relation and reduce the risk of aggressive behavior. Support and respect in intraorganizational relationships might also be expressed as extra time and care used in watch shifts, where information on patient status and violence risk assessment are given a higher priority because there is a drive towards protecting each other and keeping the shared workspace safe. These examples of how high workplace social capital may manifest itself in relation to violence are mechanisms that could be expected across workplaces and professions where patient violence is a common phenomenon in daily work.

Even though these hypothetical mechanisms might be plausible, there is a vast empirical knowledge gap regarding the association between workplace social capital and patient-initiated violence. Only one study has investigated this association. A cross-sectional analysis of 30,044 healthcare employees showed a clear dose-dependent relation between workplace social capital and reporting of patient-initiated violence (Török et al., 2020). The study demonstrated a lower risk of violence in work units with medium and high workplace social capital than in work units with low workplace social capital (odds ratios of 0.72 and 0.47 respectively). While this study strongly indicates an association between workplace social capital and violence, the understanding of the possible causal dependency is hampered by the cross-sectional data. Further, the study does not describe the interplay with workplace social capital and other work environment factors, nor does it assess workplace social capital at different organizational levels, which makes it impossible to discern important facets of workplace social capital in relation to patient-initiated violence.

This study therefore investigates whether the experience of workload is prospectively associated with the risk of exposure to patient-initiated workplace violence assessed as months of exposure. To deepen the understanding of the interplay between essential contextual factors, the study investigates whether workplace social capital has a moderating effect on the possible association between workload and the risk of exposure to patient-initiated violence. Based on existing knowledge and theories on workload, workplace social capital and patient-initiated violence, the study proposes the following hypothesis:

H1: A perceived higher workload prospectively increases the risk of exposure to violence.
H2: Workplace social capital moderates the association between workload and risk of violence, reducing the risk of violence at all levels of perceived workload.

3. Methods

The study was conducted on the *"Every Day Violence Cohort"* (Pihl-Thingvad, 2019), i.e. 1823 social educators working with disabled adults. The core work task of a social educator consists of enhancing independence and social interaction in disabled peo-

ple. The current study focused on social educators working with adults. The main part of this population works with mentally disabled adults but also works with non-hospitalized psychiatric patients. The majority of the population works in residential institutions and caring homes in collaboration with health assistants or nurses. Some work in the patients homes. Social educators often have extended relations with their patients lasting from months to years

The data was collected from 2016 to 2017, using e-mail-based surveys for all baseline data consisting of variables measuring demographics, lifestyle, mental and somatic health, as well as general factors of the psychosocial work environment. Further, the study collected data on exposure to threats and violence every month, for 12 months following baseline, using text messaging. Participants were recruited via the Danish Union of Social Educators, which represents around 80% of all social educators in Denmark. Invitations were sent to all members working with adults (N = 12,070). Of the total population, 3212 (27%) chose to participate in the study, and 78% of the baseline sample participated in the follow-up. We excluded participants who had changed job during the survey period, who were in a leadership position, who did not have Danish as their native language, and who answered less than half of the exposure items to be sure to measure general exposure over 12 months. The study sample thus consisted of a cohort of 1823 respondents followed throughout one year.

3.1. Primary outcome: months with exposure to patient-initiated violence

Workplace violence was operationalized based on Schat and Kelloway's definition, including threats of and actual physical aggression (Schat and Kelloway, 2005). We measured exposure to violence every month for 12 months based on survey items adapted from the 17-item violence checklist developed by Menckel et al. (2000) for more detail see (Pihl-Thingvad et al., 2019). Every month, all respondents received four items asking if they had been exposed to violence from a patient or client within the previous month. Each item referred to a specific category of violence, i.e. "threats of violence", "violence in the form of scratching, biting, pinching, pushing, and hitting with the flat of the hand etc.", "violence in the form of kicking or punching to the head or upper body", and "violence in the form of severe assault with or without weapon/weapon-like objects". Each item was answered on a four-point scale where 0 = "never", 1 = "1–3 times", 2 = "4–6 times", and 3 = "more than 6 times".

To assess the risk of being exposed to violence each month, we dichotomized answers into a "violence"/"no violence" category. Three scales were created: one for violence and threats combined ("Threat and violence"), one for physical violence only ("Physical violence"), and one for threats of violence only ("Threats"), each constituted by a count scale from 0 to 12.

3.2. Explanatory variable: perceived workload

Perceived workload is the explanatory variable of interest. Workload has several definitions pertaining to staffing ratios, demands and volume of work tasks, as well as interaction between demands and resources (Holden et al., 2011). In the present study, workload was constructed as a variable pertaining to the experience of the overall amount of work tasks as well as the time pressure under which the daily work tasks were conducted, thus reflecting work level workload as discussed by Holden et al. (2011). The workload scale was calculated based on the "quantitative work demands" scale and the "time pressure" scale from the Copenhagen Psychosocial Questionnaire (COPSOQ II), a widely accepted survey validated across different working populations and nationalities (Bjorner and Pejtersen, 2010; Dupret et al., 2012; Moncada et al., 2014; Nuebling and Hasselhorn, 2010). One scale consists of five items, the other of three, and both are answered on a five-point Likert scale. The scales were summed and converted into a 0–100 scale according to the manual (Pejtersen et al., 2010). The internal consistency for the scale was excellent (Cronbach's alpha = 0.85).

In the initial trend analysis, we used the sum score for workload. In the main analysis, the scale was divided into four categories to better assess the impact of different levels of workload. The four-category scale was based on 25, 50 and 75 percentiles, yielding the categories: 1= "low workload" (lowest 25%), 2 = "medium workload" (between 25 and 50 percentile), 3 = "high workload" (between 50 and 75 percentile), and 4 = "very high workload" (the highest 25%).

3.3. Effect modifiers: workplace social capital

Workplace social capital was measured using the Copenhagen Questionnaire of Workplace Social Capital, measuring group cohesion, respect, and justice at different levels within an organization (Borg et al., 2014). We chose the scales for co-worker social capital "workplace social capital$_{(co\text{-}worker)}$", social capital between co-workers and local management "workplace social capital$_{(local\ management)}$", as well as social capital between co-workers and general management "workplace social capital$_{(general\ management)}$". The workplace social capital$_{(co\text{-}worker)}$ consists of four items with Likert scales from 0 = "never" to 4 = "always". The workplace social capital$_{(local\ management)}$ and workplace social capital$_{(general\ management)}$ scales consist of four and three items respectively, answered on Likert scales from 0 = "never" to 4 = "always". Each scale was summed and normalized to a 0–100 scale according to the manual (ibid.). The scale has been thoroughly validated on different Danish work populations (ibid.), and in the present study yielded excellent Cronbach's alphas: workplace social capital$_{(co\text{-}worker)}$ = 0.85; workplace social capital$_{(local\ management)}$ = 0.93; workplace social capital$_{(general\ management)}$ = 0.81. For the stratified post hoc analyses, we divided each scale into binary categories: 1= "low workplace social capital" (the lowest 75%), and 2 = "high workplace social capital" (the highest 25%).

3.4. Covariates

We included several variables to adjust for possible confounding. Age and gender were included since both have been associated with perceived strain in the work environment (European Agency for Safety and Health at Work, 2009) as well as risk of violence (Hills and Joyce, 2013). Body Mass Index (BMI = kg/m^2) was included because it has been associated with increased risk of violence, possibly because of increased body contact in situations involving patient handling, i.e. bathing, dressing etc. (MASKED FOR REVIEW). We included alcohol consumption (number of drinks per day) since it is associated with reduced work performance (Thørrisen et al., 2019) and risk of workplace violence (McFarlin et al., 2001). Mental health was included since studies indicate that poorer mental health increases the risk of violence (Liu et al., 2015; Magnavita, 2014) and possibly affects the perception of work strain due to reduced work ability (Poulsen et al., 2017). The SCL-10N was used as a measure of general mental health (Rosen et al., 2000). It is a short version of the SCL-92, consisting of 10 items on symptoms related to distress, depression and anxiety. All items were answered on five-point Likert scales from 0 = "not at all" to 4 = "all the time". The items were summed and averaged into a 0–4 scale. The SCL-10N has shown strong construct

and criterion validity (ibid.). In the present study, the scale showed excellent internal consistency (Cronbach's alpha = 0.88).

Somatic health has not been extensively researched in terms of violence and workload. However, somatic health problems are known to decrease level of functioning and work ability (de Vries et al., 2018). In workers with low levels of functioning, the general demands at work would most certainly be perceived as more strenuous, would affect the perceived workload and possibly the risk of violent incidents. Somatic health was measured using the checklist from the Danish "Working environment and health" survey (Clausen et al., 2017), asking respondents whether they had been or were presently being treated for 10 of the most widespread diseases in western society, plus an 11th item asking about other serious or chronic disease. The answers were summed and treated as a scale from 0 to 11.

We included a measure of exposure to workplace violence the year prior to data collection. Exposure to violence has been associated with future risk of violence (Hogh et al., 2008) and with the experience of increased time pressure (Pihl-Thingvad et al., 2019). Prior exposure to violence was measured with COPSOQ items on threats and violence in the past year. Both items were answered on a five-point Likert scale (0= "never" to 5 = "daily"), summed and converted to a scale of 0–100 according to the manual, thus constituting a proxy measure of frequency of violence the year prior to the baseline measurement.

Training was included based on considerations about how training in handling violence might affect the risk of exposure. Although there is no certain evidence that training actually reduces the risk of violence (Lamont and Brunero, 2018; Wassell, 2009), secondary effects of training in the form of experience of control and improved coping strategies might affect work processes and experiences of aggression (ibid). Training was therefore included as a confounder rather than a possible effect modifier. Training in violence handling was measured with two binary items asking respondents whether they had received any training in their current position and whether they had received training in earlier employments. Both items were answered with "yes/no". The two items were summed and dichotomized into either 1= "training" or 0 = "no training".

4. Statistical analysis

4.1. Initial analyses

Attrition analyses were conducted using logistic regression with dropout/no dropout as outcome. Gender, age, somatic and mental health, as well as previous exposure to violence were used as predictors. Critical outliers were assessed based on standard residual analysis, and risk of multicollinearity was assessed based on multivariate regression including calculations of the variance inflation factor. A possible dose-dependent relationship between workload and violence was assessed with multivariate regression, using the violence sum score as outcome and the sum score of workload as main predictor, adjusted for age and gender.

4.2. Main analyses

The main analyses and post hoc analyses were all conducted with Poisson regression with the log link function, which is argued to be the best way to identify risk ratios in binary outcomes (Zou, 2004). All models were computed using generalized mixed models (GENLINMIX) with the unstructured covariance matrix. We applied the robust estimation function to account for the minor variation of dispersion seen in the data (both under- and over-dispersion seen across the different subgroups). We also allowed degrees of freedom to vary across tests, using the Satterthwaite approximation, to accommodate for the complex covariance matrix. A term for the random effect of workload, with the respondent id as subject, allowing for difference in slopes and intercepts and with an unstructured covariance matrix, was included to adjust for violation of the assumption of independence between measures in the repeated measures design (Fitzmaurice et al., 2011).

The first set of analyses assessing the prospective association between levels of workload and risk of violence were conducted with three sets of analyses. One using threats and violence as outcome, one using physical violence as outcome, and one using threats as outcome. First a simple model (model 1) including age and gender was assessed. Then a more elaborate model (model 2), including all covariates, was assessed. Relative risk with 95% confidence intervals was calculated. We then conducted moderation analyses including interaction terms of workload by each workplace social capital measure. The interaction terms were entered separately in the full model for each type of workplace social capital.

Post hoc analyses were conducted to assess the effect of the interactions. Stratified analyses were used where high and low workplace social capital were compared (low set as referent) within each level of workload. Relative risks with 95% confidence intervals were calculated, and the stratified analyses were adjusted for all covariates included in the study.

4.3. Sensitivity analysis

To test for robustness of our models, we ran calculations with the negative binomial distribution as well as without the robust estimation function. Both yielded a poorer fit to data and were discarded. We found an effect of time on exposure (but no time by workload interaction). Analyses of pairwise comparisons showed that the time effect was driven by a higher level of exposure the first month. We therefore ran analyses excluding the first month as well as analyses based on exposure within each quarter of the year. In these models, trends in effects sizes as well as statistical significance were robust.

32 possible outliers were found. We ran all analyses deleting the possible outliers but found no change in effects or statistical significance. All analyses were done in IBM SPSS version 24.0.

5. Study approval

According to Danish law, survey-based studies are not subject to approval by the Scientific Ethics Committee. Respondents where invited through their e-mail, including a written consent of participation. Upon agreement, they entered the survey via a personalized link, which generated a unique id. Only the data managers had access to the original e-mail address and id linkage. The research group had access to a pseudo-anonymized dataset used for the analyses. All study results are presented as overall results, and the respondents are fully anonymized to everyone outside the research team. The project procedure for treatment of sensitive data was approved by the Danish Data Protection Agency, journal # 15/96549.

6. Results

Attrition analyses showed that younger age and poorer mental health at baseline predicted dropout across the 12 months. Both factors were included in the models. There was no indication of multicollinearity with the variance inflation factor ranging from 1.0 to 1.5. The preliminary analysis identified 32 possible outliers with Mahalanobis (13 df) > 27.7. Manual assessment did not indicate response errors, and the respondents remained in the analysis.

Table 1
Descriptive statistics presented as frequency (%) or mean and standard deviation (SD). Descriptive statistics are presented as the total of the whole sample and within each group of perceived workload.

		Total	Very high workload	High workload	Medium workload	Low workload
Gender	Female	78.7%	79.4%	75.9%	80.1%	80.2%
	Male	(N = 1435)	(N = 340)	(N = 334)	(N = 277)	(N = 324)
		21.3%	20.6%	24.1%	19.9%	19.8%
		(N = 388)	(N = 88)	(N = 106)	(N = 69)	(N = 80)
Age		48.8 (9.4)	48.6 (9.1)	49.2 (9.1)	48.7 (9.6)	48.5 (9.6)
Mental health		0.4 (0.5)	0.4 (0.5)	0.4 (0.5)	0.4 (0.5)	0.4 (0.5)
Somatic disease		0.6 (0.8)	0.6 (0.8)	0.6 (0.8)	0.6 (0.8)	0.6 (0.8)
BMI		26.4 (5.0)	26.3 (4.7)	26.5 (5.1)	26.5 (5.1)	26.4 (4.9)
Alcohol		1.0 (0.8)	0.9 (0.8)	1.0 (0.8)	1.0 (0.8)	1.0 (0.8)
Last year exposure to violence		0.7 (0.8)	0.7 (0.8)	0.7 (0.7)	0.8 (0.9)	0.7 (0.9)
Training	No	39.2% (N = 715)	37.1% (N = 159)	40.2% (N = 177)	38.7% (N = 134)	40.1% (N = 162)
	Yes	59.1% (N = 1077)	60.5% (N = 259)	58.0% (N = 432)	59.0% (N = 204)	58.9% (N = 238)
	Missing	1.7% (N = 31)	2.3% (N = 10)	1.8% (N = 8)	2.3% (N = 8)	1.0% (N = 4)
Workplace social capital (co-workers)		68.9 (17.1)	69.2 (18.2)	68.8 (16.8)	69.4 (16.2)	68.8 (16.4)
workplace social capital (local management)		65.0 (22.8)	64.5 (22.4)	65.4 (21.5)	65.2 (24.5)	65.3 (23.4)
Workplace social capital (general management)		61.9 (19.7)	61.4 (19.9)	62.5 (18.9)	52.3 (20.6)	62.3 (19.8)
Workload		52.0 (15.7)	62.0 (20.0)	57.0 (2.8)	48.3 (1.8)	31.5 (8.1)
Exposure months threats and violence total		4.4 (4.0)	5.4 (4.0)	5.0 (4.0)	3.7 (3.8)	3.6 (3.8)
Exposure months physical violence		3.0 (3.7)	3.8 (3.9)	3.4 (3.8)	2.3 (3.3.)	2.4 (3.4)
Exposure months threats of violence		3.5 (3.5)	4.3 (3.7)	3.9 (3.6)	2.9 (3.4)	2.7 (3.2)

Table 1 shows the descriptive statistics of the sample, primarily composed of women (78.7%) and indicating high seniority with a mean age of approximately 49. The overall mean of perceived workload (= 52) indicated that the study sample experienced a workload similar to that of the Danish national workers cohort. In the national workers cohort, four single items are used from the workload scale (two items on time pressure and two items on quantitative demands), with a mean score of 59.4 (The National Ressearchcenter for the Working Environment, 2018). The average proportion of months with exposure to patient-initiated violence was relatively high with a mean of 4.4. There was a tendency of an increasing proportion of exposure months in the groups with perceived higher workload. This tendency was confirmed in the linear trend analysis that also indicated a dose-dependent association between workload and exposure to violence: std. beta = 0.17, $t(3) = 7.3$, $p < .001$

The main analyses showed a significant and considerable increased risk of exposure to violence in the high and very high workload groups compared to the low workload group (Table 2). These effects were robust even when adjusted for several relevant confounders. The same patterns of increased risk were seen in relation to physical violence and threats of violence (Table 2). Thus, H1 was supported.

Moderation analyses showed a significant interaction of all three types of workplace social capital and workload; "workload*workplace social capital$_{(co\text{-}worker)}$": F (3, 16,712) = 3.4, p = .017, "workload*workplace social capital $_{(local\ management)}$": F (3, 16,748) = 11.9, p < .001, "workload*workplace social capital$_{(general\ management)}$": F (3, 16,556) = 5.5, p<.001. Table 3 shows the results from the stratified post hoc analyses. In comparison to respondents with "low workplace social capital$_{(co\text{-}workers)}$", respondents with "high workplace social capital$_{(co\text{-}workers)}$" had a reduced risk of exposure to violence at all four levels of workload. However, the same effect was only seen in "moderate" and "low" levels of workload in relation to "workplace social capital $_{(local\ management)}$". "Workplace social capital$_{(general\ management)}$" only showed statistically significant effects at the "low", "moderate" and "high" levels of workload. In all types of workplace social capital, the effect of high workplace social capital was greater in the "low" and "moderate" workload groups, and data showed a trend where the effect of workplace social capital, based on effect size and level of significance, generally dropped as workload increased. H2 is thereby only partly supported by the data,

7. Discussion

This study adds to the literature on patient-initiated violence with its focus on the importance of and interplay between contextual factors. Based on intensive measures of violence exposure, it is the first study to assess the interaction between perceived workload and workplace social capital and how it affects the risk of patient-initiated violence. The study presents prospective evidence that workload does increase the risk of exposure to violence as shown in several cross-sectional studies (Agervold and Andersen, 2006; Laschinger and Grau, 2012; Roche et al., 2010; Viitasara et al., 2003). The only other 12-month prospective study on workload and violence (Andersen et al., 2018) indicates a similar pattern, but the findings are especially interesting since Andersen et al. (2018) only found that workload significantly increased the risk of threats and not physical violence. This inconsistency could be explained by differences in the items of measurement and working populations. However, the data collection design might be more important in terms of the discrepancy between results. Studies investigating reporting of violence show a tendency to underreport violence, within healthcare, which is argued to partly depend on increasing normalization of violence due to a high frequency and acceptance of patient-initiated violence (Blando et al., 2015; Menckel et al., 2000; Scott et al., 2011). It is possible that less severe violent episodes are especially affected by recall bias as respondents simply forget these common violent incidents when asked to recall violence over longer periods. The fact that this study uses a frequent exposure measure may cause more accurate reporting of violence, including less severe incidents.

As an important qualification of the first findings, we showed that workplace social capital did indeed reduce the risk of violence caused by workload, although only "workplace social capital$_{(co\text{-}worker)}$" had this effect at all levels of workload. No other studies have been conducted on workload, workplace social capital and patient-initiated violence, which prevents direct comparison of results. However, the study on workplace social capital and violence presented by Török et al. (2020) indicated a protective effect of workplace social capital. Our results are also corroborated by the theoretical arguments by Turpin et al. (2020) and van den Bossche et al. (2013), namely that workload affects patient-initiated violence as the experience of strain causes behavior that increases the risk of patient-initiated violence. Studies have shown that workplace social capital alleviates the

Table 2
Prospective associations of different levels of experienced workload and risk of months with exposure to threats and violence presented as a total as well as physical violence only and threats of violence only. Results are presented as risk ratio with 95% confidence intervals (CI).

	Model 1		Model 2	
Physical violence and Threats				
Model specification	$F(5,19,410)=69.7$, $p<.001$		$F(11,16,848) = 28.2$, $p<.001$	
	RR	95% CI	RR	95.CI
Low workload (referent)	–	–	–	–
Medium workload	1.0	[0.97–1.11]	1.0	[0.95–1.09]
High Workload	1.4***	[1.32–1.47]	1.4***	[1.29–1.44]
Very high workload	1.5***	[1.42–1.60]	1.5***	[1.41–1.60]
Physical violence				
Model specification	$F(5,19,410)= 59.4$, $p<.001$		$F(11,16,848) = 25.9$, $p<.001$	
	RR	95% CI	RR	95.CI
Low workload (referent)	–	–	–	–
Medium workload	1.0	[0.89–1.05]	0.9	[0.85–1.01]
High workload	1.4***	[1.33–1.53]	1.4***	[1.27–1.47]
Very high workload	1.6***	[1.49–1.71]	1.5***	[1.43–1.67]
Threats				
Model specification	$F(5,19,410) = 56.6$, $p<.001$		$F(11,16,848) = 22.9$, $p<.001$	
	RR	95% CI	RR	95.CI
Low workload (referent)	–	–	–	–
Medium workload	1.1	[0.97–1.13]	1.0	[0.94–1.10]
High workload	1.4***	[1.34–1.53]	1.4***	[1.29–1.48]
Very high workload	1.6***	[1.46–1.65]	1.5***	[1.43–1.64]

Model 1 adjusted for, age and gender; Model 2 further adjusted for mental and somatic health, alcohol consumption, BMI, training in violence handling and violence exposure the prior year.
*$p<.05$, **$p<.01$, ***$p<.001$.

Table 3
Moderation effect of workplace social capital on the effect of perceived workload on the risk of months of exposure to physical violence and threats. Presented as Relative Risk of months of exposure with 95% confidence intervals, with high workplace social capital compared to low workplace social capital within each of the groups of perceived workload.

	Workplace social capital co-workers		Workplace social capital local management		Workplace social capital general management	
	RR	CI	RR	CI	RR	CI
Very high workload						
High workplace social capital	0.84*	[0.72–0.96]	0.91	[0.80–1.04]	0.92	[0.81–1.07]
Low workplace social capital	–	–	–	–	–	–
High workload						
High workplace social capital	0.78**	[0.67–0.96]	0.89	[0.77–1.01]	0.77**	[0.67–0.89]
Low workplace social capital	–	–	–	–	–	–
Moderate workload						
High workplace social capital	0.75**	[0.63–0.89]	0.74***	[0.63–0.87]	0.74**	[0.63–0.89]
Low workplace social capital	–	–	–	–	–	–
Low workload						
High workplace social capital	0.75**	[0.63–0.90]	0.74***	[0.63–0.87]	0.75***	[0.63–0.89]
Low workplace social capital	–	–	–	–	–	–

Adjusted for, age, gender, mental and somatic health, alcohol consumption, BMI, training in violence handling and violence exposure the prior year.
* $p<.05$.
** $p<.01$.
*** $p<.001$.

experience of stress (Gächter et al., 2011; Jay and Andersen, 2018), which means that stress alleviation is a probable mechanism behind the moderating effect of workplace social capital on the association between workload and patient-initiated violence. It can also be speculated that a high workplace social capital, with well-functioning social relationships between coworkers and between coworkers and management, improves task coordination and work planning (Gloede et al., 2013), increases detection of patient-worker relational problems and prevents violence caused by high workload. Furthermore, the differences between "workplace social capital $_{(co\text{-}worker)}$", "workplace social capital $_{(local\ management)}$" and "workplace social capital $_{(general\ management)}$" suggests variance in what types of workplace social capital might affect patient-initiated violence. Future studies should examine how the causal pathways between workload and different types of workplace social capital may look and affect patient-initiated violence. Finally, the tendency of a decreasing impact of workplace social capital at higher levels of workload indicates that there might be a tipping point beyond which the positive effect of workplace social capital has no practical effect. These limits are important to be aware of in future work to prevent patient-initiated violence.

Overall, the results not only support the relevance of looking at contextual factors together, such as workload and workplace social capital, they also add to Török et al.'s study by showing that different types of workplace social capital have different effects on patient-initiated violence. These findings are highly important in terms of preventing patient-initiated violence in practice. While this study was not designed to discern possible causal mechanisms, the findings underline a need for future studies of the pathways between workload, workplace social capital and patient-initiated violence, to broaden our understanding of the possible role of workplace social capital in future violence-prevention initiatives. One suggestion for future research is the level of stress experienced by workers. Winstanley and Hales (2015) suggest that workers who experience burnout after prolonged stress might develop higher levels of depersonalization and reduced empathy,

which leaves them vulnerable to aggressive behavior from their patients. Increased violence, on the other hand, increases the experience of work strain and the level of prolonged stress reactions. In a prospective study on 698 healthcare workers, Magnavita found this bi-directional association between stress and non-physical violence (Magnavita, 2014), supporting Winstanley and Hales' ideas. It therefore seems important to investigate how the experience of stress and burnout might affect the mechanisms suggested in the present study.

8. Limitations

Despite the use of prospective data with valid and frequent measures on a relatively large sample size, the study has limitations. The 27% response rate of all invited questions the study's generalizability. However, earlier comparisons between respondents and non-respondents on age, gender and primary area of work showed that respondents only differed significantly on age (Pihl-Thingvad, 2019). Further, comparison of the study sample with a smaller but randomized sample of special educators from the 2014 national workers cohort (National Ressearch Center for the Working Environment, 2014) showed similar characteristics regarding the key features of prevalence of physical violence (national cohort = 39%, present sample = 37%), prevalence of threats of violence (national cohort = 48%, present sample = 56%), and mean self-rated health (national cohort = 2.51, present sample = 2.48) (Pihl-Thingvad, 2019). In addition, the sample level of workload was comparable with the mean of the Danish working cohort as described in the results section. While generalization should always be done with caution, the results found in the present study are believed to be worthy of further consideration of workload and workplace social capital as crucial factors of patient-initiated violence.

Another possible bias is attrition over the 12 months. Younger age and poorer mental health at baseline predicted attrition. Although both were adjusted for in the analysis, our results could be affected by a healthy worker bias. Earlier studies have shown that both younger age and poorer mental health increase the risk of violence, and the associations between workload and violence in the present study might therefore be conservative. While this might affect the effect sizes in our results, it does not diminish the general trend in the main findings.

Common method bias is a recurrent issue in survey studies (Podsakoff et al., 2003). We fully acknowledge the risk of inflated associations due to individual preferences, personality factors or perceptions of response categories. However, we are also aware that factors of the psychosocial environment are not purely objective but partly intrapsychic phenomena (Ursin and Eriksen, 2010). Neglecting to include the subjective experience of these phenomena would reduce our understanding and accuracy in modeling their associations. Furthermore, recent studies discuss that it is often unclear how the bias affects statistical results, whether it favors the null or the research hypothesis, and whether it will even reach a substantial impact (George and Pandey, 2017; Kroll et al., 2019). In our study, predictors and outcome measurements were separated in time to accommodate for some of the possible systematic variance caused by the day-to-day personal temperament and global subjective interpretations. Exposure items were formulated very explicitly to reduce the risk of differences based on personal interpretation, just as the study was based on well-validated and often used surveys. The use of random effects in the mixed models, linked to the individual subject, should also accommodate for some of the systematic variance not explained by the response items. Even though common method bias cannot be ruled out, it is unlikely that the study results are a product of this type of bias. Finally, it is important to underline that the interaction effects between workload and workplace social capital will not be biased by a common method variance (Hayes, 2018).

9. Practical implications

Patient-initiated violence is a pressing problem in many workplaces, and there is still a great need to expand our knowledge on factors that may increase or prevent the violence. Generalizations across working populations and countries should be done with care. For example social educators differ in work tasks and professional titles across countries where they are sometime known as social health workers or simply as a subcategory of the broad term social workers (Calderon and Latorre 2011). In many countries e.g. the US. the social educator is not a single profession. Instead, the work tasks of social educators are similar to work tasks or aspects of work tasks of a range of health professions such as learning disability nurses, special needs nurses, recreational therapist, home health aides, health counselors, rehabilitation specialist, nursing assistants and disability support workers. Even though there are differences across countries, in Denmark, the level of exposure to challenging patients within the human health and social work is comparable to the rest of Europe (ESENER, 2021). Also, the social educator shares a range of similarities to the above mentioned professions, and to professions working in nursing homes and residence institutions in general. Time pressure is often a factor inherent in the workload, in these professions, and a high workload increases daily patient to worker contact and reduces the time available in the direct patient contact. Also, in these professions there is often a need to work in close proximity to the patients and, with patients that might react with aggression in perceived stressful situations or due to mental instability. We therefore believe that the main findings of the present study could be of importance to all organizations where work tasks are characterized by support, nursing and assistance to disabled patients, and where patient initiated violence is a problem. The study shows that workers experiencing a high workload have a substantially higher risk of being exposed to violence than employees with a more balanced workload. Organizations therefore need to consider workload if they want to protect their workers from patient-initiated violence. While a reduction in overall work tasks or an increase in staffing might be preferable, it might not be possible due to increased costs. Further, there might not be a direct correlation between manpower and experience of workload. Therefore, a solution is to look into other contextual factors, e.g. workplace social capital, that might buffer the strains from a high workload. The fact that workplace social capital moderates the risk of violence caused by workload indicates that a focus on the broader psychosocial interactions within an organization might prove important. Workplace social capital may be improved without additional economic costs and is likely to lead to better use of existing resources. Workplace social capital among co-workers was shown to moderate the risk of violence at all levels of workload. A good prevention strategy might therefore focus on developing the workplace social capital and supporting a sense of cohesion in the intraorganizational relationships. This could be done by organizing the work in the work units, so that staff with high workloads are able to ask for and get help from their colleagues when needed. This could be organized around short daily meetings between staff and managers, focused on clarification of roles and responsibilities to secure an even workload. Moreover, managers should focus on strengthening the information flows within the organizational relationships to further support the staffs' perception of trust and reciprocity in their daily work. Stable and recognizable patterns of behavior across staff members in relation to the patients could also be supported if managers actively work with shaping the groups perception of the core service. For example, the managers can work to ensure that staff agree on

what is most important in their work tasks and that they recognize each other's contribution to solving the tasks at work. This will enhance workers' trust in their own and the group's capability to do their work and succeed in risk situations with patients. Workplace social capital within the general management also moderated the relationship between workload and violence. To strengthen this type of workplace social capital, managers can involve workers in decisions about changes in patient routines and contacts. Furthermore, it is important that managers in general communicate how they consider the workers needs and points of view when making decisions for example in relation to planning the work shifts or to the organization of watches with patient contact.

Building on Christian et al.'s (2019) concept of workload and safety motivation, a practical suggestion could be to increase workers' focus on safety measures when they perform their tasks, e.g. by highlighting the implemented safety measures and the importance of adhering to safety procedures. Such clarifications should be an integral part of daily routines to reduce the risk of workers' neglect and forgetfulness, but also to secure a legitimacy of increased time consumption in the worker-patient interaction in order to maintain work procedures that protect against violence.

10. Conclusion

The present study contributes to existing research in several ways. Due to the intense prospective measurement of violence, the study renders strong supporting evidence that the experience of a high workload increases the risk of exposure to patient-initiated violence. The study underlines the need to understand the risk of violence in relation to the interplay between workplace contextual factors and shows that workplace social capital can buffer the effect of workload on the risk of violence. Due to the use of a nuanced measurement of workplace social capital, the study suggests that there might be differences in the impact of workplace social capital at different organizational levels, thus underlining the need for further research on different aspects of workplace social capital and patient initiated violence. The results point to new practical solutions regarding violence prevention. Initiatives should consider strengthening organizational relationships pertaining to common goals, reciprocity and trust. The study thus underlines a need for prospective studies and intervention studies that assess the potential positive effect of regulation of workload and workplace social capital in the prevention of the serious interpersonal stressor of patient violence.

Conflict of Interest

None.

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