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# Organizational citizenship behaviour as a protective factor against the occurrence of adverse nursing-sensitive outcomes: A multilevel investigation

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## Abstract

**Aims:** This study aimed to investigate the association between organizational citizenship behaviour enacted by nurses and the occurrence of adverse nursing-sensitive patient outcomes.

**Background:** Managing psychosocial factors (i.e., aspects concerning the work environment) is key to ensure patient safety, to prevent exacerbation of case complexity and to cope with critical shortages in human and financial resources.

**Methods:** Self-report measures of nurses' organizational citizenship behaviour were combined with objective data on the incidence of adverse nursing-sensitive outcomes (i.e., pressure ulcers and restraint use) collected through patients' medical records. Participants were 11,345 patients and 1346 nurses across 52 teams working in 14 Italian hospitals. Data were analysed using multilevel binary logistic regression models.

**Results:** A negative relationship between nurses' organizational citizenship behaviour and restraint use was identified, with an odds ratio of 0.11. Thus, for a one-unit higher organizational citizenship behaviour score, the odds of using restraints shrink to about one eighth of the previous level.

**Conclusions:** Intervention strategies to foster the implementation of organizational citizenship behaviour among nurses may inhibit the occurrence of critical outcomes affecting patients' health and well-being (i.e., using restraint devices).

**Implications for Nursing Management:** In health care organizations, shaping a psychosocial environment encouraging organizational citizenship behaviour can mitigate the occurrence of adverse nursing-sensitive outcomes such as restraint use on patients.

KEYWORDS
health care, nursing-sensitive outcome, organizational citizenship behaviour, quality of care, work environment

## 1 | BACKGROUND

During the last decades, several changes have occurred in the Italian health care system, with a significant reduction in financial resources and hospitals facing considerable nurse shortages. This scenario is in line with a worldwide trend (Aluttis et al., 2014). These substantial changes are combined with the increased complexity of cases, with older patients reporting multiple pathologies. Hence, the requirement to deliver high-quality care that ensures patient health and minimizes costs has become a critical challenge for the health care system. This challenge is particularly pertinent for nurses, the largest group of employees within the hospital setting and are responsible for delivering most of the patient care (Purdy et al., 2010). This became dramatically clear over the last 3 years as the global health system grappled with the Covid-19 pandemic (Fernandez et al., 2020). Traumatic experiences and prolonged stress responses among nurses, who were on the frontlines of emergency management, are going to affect their health for a long time to come (Carmassi et al., 2022).

As a consequence, research has progressively focused on the psychosocial work-related factors (i.e., aspects concerning the work environment), which have the potential to maximize nurses' provision of the best care (Dutra & Guirardello, 2021).

The quality of care provided by nurses is a key antecedent of patient outcomes, such as patient safety and satisfaction (Jarrar et al., 2019). As a result, there has been an increased interest in identifying specific indicators of nursing care quality, the so-called adverse nursing-sensitive outcomes (NSOs). These outcomes are characterized by two primary features: They are relevant, based on nurses' scope and domain of practice, and they are linked to nursing inputs and interventions, on the basis of empirical evidence (Doran, 2003).

Ausserhofer et al. (2013) tested a model of nursing care left undone as part of the RN4CAST project based a sample of 33,659 nurses working for 488 EU hospitals. According to this model, the quality of care provided is influenced by patient factors (e.g., patients' care needs) and activities involved in the patient-to-nurse interface of care process (e.g., direct physical care and monitoring). In line with this theoretical framework, the present study aims to assess how the prevalence of adverse NSOs is affected by patient characteristics (e.g., age, gender and health status) and a specific category of work behaviour enacted by nurses during the care process, that is, organizational citizenship behaviour (OCB).

The adoption of a conduct especially devoted to patients' care may be hypothesized to inhibit the prevalence of NSOs. This assumption is consistent with theoretical perspective suggesting that OCB provides valuable advantages to organizations across different sectors including health care, particularly through the enhancement of organizational effectiveness and, consequently, resulting in higher levels of patient satisfaction (Chahal & Mehta, 2011), but also their health and well-being (Ng et al., 2021). To be specific, empirical evidence indicates that nurses willing to engage fully in clinical work through extra-role behaviour contributing to organizational goals attainment are critical for providing high-quality and safe patient care (Feather et al., 2018; Gou et al., 2021). This relationship could be explained through the adoption of discretionary behaviour among nurses that may enhance patient-oriented behaviour, thus inhibiting the prevalence of adverse NSOs.

Patient-oriented behaviour can be captured under the broader category of OCB, describing all those actions that go beyond prescribed job requirements but, at the same time, may concur to significantly enhance the organizational functioning (Organ et al., 2006) and result in improved social relationships and effectiveness at the individual, group and organizational levels (Podsakoff et al., 2014). Evidence confirms the positive link between nurses' OCB and their performance (Gunawan et al., 2020), sense of empathy (Noh & Yoo, 2016) and levels of family-centred care (Mahooti et al., 2018).

OCB integrates elements such as altruism, courtesy and conscientiousness, which are vital drivers underlying the required high-quality care for fewer adverse NSOs occurrence. Nurse caring behaviours significantly predict activities such as regular changing of patients' positioning in bed, skincare and adequate patient surveillance, which are also the most frequently missed care tasks among nurses (Labrague et al., 2020). Hence, the current study assumes that OCB could be related to the incidence of adverse outcomes that are highly influenced by the approach adopted in performing patient care tasks. In doing so, this research aims to enlarge previous results revealing that the adoption of discretionary behaviour (i.e., OCB) among nurses may result in enhanced patient-oriented behaviour.

Although previous research explored the association between organizational factors and measures of nurses' well-being, on the one hand, and indicators of the quality of care provided (Van Bogaert et al., 2010), the current study was an earlier attempt to investigate this relationship though the implementation of multilevel modelling combined with objective data. Rather than assessing the quality of care using a self-report measured filled out by nurses, the current study was based on the actual incidence of pressure ulcers and restraint use, as they were recorded in patients' medical records.

In particular, we considered two adverse NSOs with a prominent role in the international nursing literature (Doran et al., 2011): pressure ulcers and restraint use. Pressure ulcers, commonly known as bedsores, are defined as a localized injury to the skin and/or underlying tissue, usually situated over a bony prominence, and caused by pressure, or pressure combined with shear (Kottner et al., 2020). Although clinical knowledge of pressure ulcers is consistently credited with playing a key role, a major predictor in the prevention of this specific NSO lies in the proactive and caring attitude of nurses, also when they have limited training on the subject (Demarré et al., 2012). In

other words, the incidence of pressure ulcers is significantly influenced by activities concerning the constant monitoring of patients' skin health and the quality of care provided to patients (Kalisch et al., 2014).

Building on the theoretical framework and research findings illustrated here, we developed the first hypothesis as follows:

> **Hypothesis 1.** Higher levels of OCB by nurses are associated with fewer pressure ulcers among patients treated by those nurses.

Restraint use has been shown to be driven by nurses' affect (e.g., emotions and negative attitudes), rather than knowledge. The experience of negative affect, in turn, is strongly influenced by the perception of the surrounding environment (Walker et al., 2018). This evidence emphasizes the need to further investigate psychosocial work-related factors (i.e., aspects concerning the work environment), which have the potential to influence nurses' behavioural choices. The use of physical restraint entails the application of any manual method, as well as a physical or mechanical device, material or equipment aimed at immobilizing or limiting the patient's capability to move his/her arms, legs, body or head freely (Centers for Medicare and Medicaid Services, 2006). The most commonly used physical restraints include, for instance, straps/belts, bilateral bedrails, vests, wheelchair, limb or waist ties, and mittens. The employment of physical restraints has drawn particular attention in the scientific community, due to its potentially harmful consequences, such as the reduction in bone density, muscle atrophy, infections, incontinence and even death (Bellenger et al., 2018). The magnitude of adverse consequences that can be associated with using physical restraints has led institutions to introduce rigorous guidelines limiting their use to the minimum practicable extent (George, 2020). Earlier research identified empathy as a core predictor of nursing attitudes and behaviours able to prevent the occurrence of restraint use (Yıldırım Üşenmez & Gümüş, 2021). Generally speaking, empathy refers to the ability to understand others' experiences vicariously and identifies it as a crucial component of human adaptive social functioning (Davis, 2017). As empathy is a crucial driver compelling people to engage in prosocial behaviours to benefit others (Hafenbrack et al., 2020), we could expect that enacting OCB would prevent the occurrence of adverse NSOs. Based on this theoretical reasoning and the previous findings, we made the following prediction:

> **Hypothesis 2.** Higher levels of OCB by nurses are associated with lower use of restraints on patients treated by them.

## 2 | METHODS

Objective data on patients' socio-demographic data, health status and the incidence of adverse NSOs were collected by accessing medical records reported in the regional database of the hospital discharge forms. Nurses working in these hospitals were asked to voluntarily fill out an anonymous paper-and-pencil questionnaire that subsequently was stored in ballot boxes that were provided in each health care structure involved. The final sample consisted of 11,345 patients and 1346 nurses working in 52 teams across 14 Italian general hospitals, with a mean of 218.2 patients and 25.9 nurses per team.

### 2.1 | Nurses' characteristics

With reference to the branches of medicine involved, 22.7% worked in the *intensive care* ward ($N = 305$), 21.8% in the *orthopaedics* ward ($N = 293$), 18.4% in the *general medical practice* ward ($N = 248$), 15% in the *long-term* ward ($N = 202$ nurses), 11.1% in the *recovery and rehabilitation* ward ($N = 150$) and 11% in the *geriatric* ward ($N = 148$).

Most of them were women (81.6%) and had a permanent employment contract (88.5%). Concerning their age, 18% of nurses participating in this study were younger than 30 years old, 33.3% were between 31 and 40 years of age, 37.2% were between 41 and 50 years and 11.5% were above 50 years. On average, participants' job tenure was 14.74 years ($SD = 9.26$), and they had worked in their current hospital ward for 9.85 years ($SD = 7.98$).

### 2.2 | Patients' characteristics

Among patients, 30.7% of them were hospitalized in the *orthopaedics* ward ($N = 3481$), 25.6% in the *general medical practice* ward ($N = 2909$), 17.4% in the *geriatric* ward ($N = 1973$), 14% in *long-term* ward ($N = 1590$), 9.5% in the *intensive care* ward and 2.7% in *recovery and rehabilitation* ward ($N = 310$). The slight majority of patients were women (53.2%), and the mean age was 72.88 years ($SD = 17.12$). In addition, the average length of hospitalization in the current sample was 10.1 days ($SD = 9.03$).

### 2.3 | Measures

#### 2.3.1 | Patients' data

*Pressure ulcers and restraint use*

The incidence of the two types of adverse NSOs under investigation was measured as a dichotomous variable (1 = *yes*; 0 = *no*) as reported in the patients' medical records. Regarding pressure ulcers, the current study includes all four stages of wound severity. Moreover, restraint use here refers to the employment of any device among bed rails, wheelchair with table, wrist restraints or lap belt for at least 1 day of their hospitalization.

*Age*

The first variable included at the individual level as a factor potentially associated with the incidence of adverse NSOs was patients' age.

*Health status*

The Charlson comorbidity index was included as a general indicator of patients' ill health because it represents the most popular comorbidity index (Charlson et al., 1987). This index ranges from 0 to 12 and is aimed at predicting 1-year mortality, based on 15 medical conditions: heart failure, cerebrovascular disease, active cancer, diabetes, chronic obstructive pulmonary disease, chronic kidney disease, dementia, peripheral vascular disease, diabetes with complications, acute myocardial infarction, cirrhosis, previous myocardial infarction, ulcer, liver disease and hypertension. Each condition was weighted according to their potential influence on mortality.

### 2.3.2 | Nurses' level

*OCB*

OCB was assessed with the three-item extra-role behaviour subscale taken from the questionnaire developed by Perrone and Chiacchierini (1999). Items were slightly adapted to the hospital context (i.e., the term 'organization' was replaced by 'hospital'). Sample items are as follows: 'I carry out tasks that, although not expressly required, may help the image of my hospital' and 'I make suggestions in order to improve my hospital'. These items were scored on a 7-point scale ranging from 1 (*totally false*) to 7 (*totally true*). The internal consistency of this scale was $\alpha = .74$.

## 2.4 | Strategy of analysis

OCB data from nurses were aggregated to the team level in order to be matched with patient data. Before aggregation, intraclass correlations were calculated to determine whether this was justified statistically: $ICC_{[1]}$ was 0.04, and $ICC_{[2]}$. The $ICC_{[1]}$ value indicates that 4% of the variation in OCB can be accounted for by team membership, and it is slightly lower than the threshold of 05 for $ICC_{[1]}$ (LeBreton & Senter, 2008). On the other hand, $ICC_{[2]}$, representing the reliability of between-group differences, reported a value equal to 0.47. This therefore exceeds the criterion value of 0.40 given by Glick (1985), and these indices support data aggregation (Bliese, 2000).

As both outcomes (pressure ulcers and restraint use) are binary, and patients were grouped within nurses, we used multilevel binary logistic regression to test the hypotheses. The analysis controlled for patients' age, sex and health status (measured by the Charlson comorbidity index), by including these as covariates within the models. Analysis was conducted with the statistical software SPSS (Version 26), using the 'genlinmixed' procedure.

**TABLE 1** Summary statistics for all variables used in analyses

| | |
|---|---|
| Pressure ulcers (% yes) | 17% |
| Restraint use (% yes) | 40% |
| Patient gender (% male) | 47% |
| Patient age (range = 18–107) | 72.9 (17.1) |
| Nurses' organizational citizenship behaviour[a] (range = 1–7) | 3.38 (0.41) |
| Charlson comorbidity index[b] (range = 0–12) | 1 (0–3) |

[a]Mean (standard deviation).
[b]Median (interquartile range).

## 3 | RESULTS

In total, there were data on 11,345 patients treated by 52 nursing teams, giving a mean of 218.2 patients per team (this ranged from 5 to 641). Table 1 shows summary statistics for all variables used in the analysis. It can be seen that overall, 17% of patients had pressure ulcers, and restraints had been used in 40% of cases.

Tables 2 and 3 show the results of the multilevel binary logistic regression models used to test Hypotheses 1 and 2, respectively. For the model predicting pressure ulcers, the effect of nurses' OCB was not statistically significant: The odds ratio (OR) estimate of 0.73 (95% confidence interval [CI]: 0.46–1.15) suggests that any effect there may be is not large, and there is no sufficient evidence to support Hypothesis 1.

For the model predicting restraint use, however, there was a statistically significant relationship between nurses' OCB and the use of restraints. Specifically, the model gives an OR of 0.11 (95% CI: 0.02–0.52), indicating that for a one-unit higher OCB score, the odds of using restraints shrink to about one eighth of the previous level. This is a substantial change, so it makes sense to consider a one standard deviation change in OCB (0.41); a change of this level is associated with a reduction in odds of around 59% (95% CI: 24–78%) of using restraints. Therefore, Hypothesis 2 is supported.

## 4 | DISCUSSION

In order to contribute to the available literature concerning the occurrence of NSOs, the present study aimed to examine the relationship between OCB of nurses within specific patient care units and the occurrence of pressure ulcers and restraint use on individual patients cared for on these units. In doing so, a strength of the current study included the use of a multilevel approach to analysis and the use of multiple data sources to reduce common method variance. Using multiple measures (i.e., self-report questionnaires and objective data from medical records) from different sources (i.e., nurses and patients) is essential to overcome the limitations related to each data source (Ingersoll et al., 2000). Objective measures can be considered as an assessment of nursing quality that is free of bias and prejudice (Stalpers et al., 2016). Thus, the collection of objective data is

**TABLE 2** Results of multilevel binary logistic regression predicting pressure ulcers

| | *B* (95% CI) | Odds ratio (95% CI) | *p* |
|---|---|---|---|
| Intercept | −3.54 (−5.08, −2.00) | 0.03 (0.01, 0.14) | .000 |
| Patient age | 0.04 (0.03, 0.04) | 1.04 (1.03, 1.04) | .000 |
| Patient gender (male) | −0.21 (−0.32, −0.10) | 0.81 (0.73, 0.91) | .000 |
| Charlson comorbidity index | 0.12 (0.09, 0.15) | 1.12 (1.09, 1.16) | .000 |
| Nurses' organizational citizenship behaviour | −0.31 (−0.77, 0.14) | 0.73 (0.46, 1.15) | .173 |

Abbreviation: CI, confidence interval.

**TABLE 3** Results of multilevel binary logistic regression predicting restraint use

| | *B* (95% CI) | Odds ratio (95% CI) | *p* |
|---|---|---|---|
| Intercept | 3.42 (−1.76, 8.60) | 30.57 (0.17, 5434.67) | .196 |
| Patient age | 0.05 (0.04, 0.05) | 1.05 (1.05, 1.05) | .000 |
| Patient gender (male) | −0.39 (−0.50, −0.29) | 0.67 (0.60, 0.75) | .000 |
| Charlson comorbidity index | 0.13 (0.09, 0.16) | 1.13 (1.10, 1.17) | .000 |
| Nurses' organizational citizenship behaviour | −2.18 (−3.70, −0.66) | 0.11 (0.02, 0.52) | .005 |

Abbreviation: CI, confidence interval.

recognized by several scholars as a mean for the systematic assessment of adverse NSOs (e.g., Veldhuizen et al., 2021).

In line with previous research (Chou et al., 2020; Neziraj et al., 2021), age, gender and health status were significantly associated with the prevalence of pressure ulcers and the employment of physical restraint.

Although different patterns of findings regarding the links between the prevalence of pressure ulcers and demographic variables are reported in the literature, numerous studies discuss and consider age and gender as potential critical determinants.

Few studies report no significant links between age and gender and pressure ulcers (e.g., Gallagher et al., 2008; Krause & Broderick, 2004). Charalambous et al. (2018) criticize Waterlow Pressure Ulcer Risk Assessment Scale for including gender and age as risk factors for pressure ulcers. Similarly, although Lichterfeld-Kottner et al. (2020) report a higher risk for women, they suggest that gender should not be considered as an independent risk factor for pressure ulcer development.

Findings are more consistent regarding the positive association between older age and the occurrence of pressure ulcers, whereas studies vary in reporting male or female gender as a positive predictor. For instance, although Lindgren et al. (2005) and Artico et al. (2018) indicate female gender and older age as significant predictors of the prevalence of pressure ulcers, Cremasco et al. (2013) report that pressure ulcer development is five times more likely for males compared to female patients. In a similar vein, recent studies (Kayser et al., 2019) support that male and older patients are at higher risk for developing pressure ulcers.

Similar to older age, extant findings depict a more consistent picture of the positive association between ill health status and the prevalence of pressure ulcers. Patients with ill health status and higher illness severity develop higher levels of pressure ulcers (Cremasco et al., 2013; Lindgren et al., 2005). Other health indicators (e.g., lower haemoglobin level) and old age are reported as significant predictors of pressure ulcers (Williams et al., 2000). Similarly, a cohort study revealed that health status (e.g., diastolic blood pressure and temperature) and age are significant predictors for pressure ulcers (Bergstrom & Braden, 1992). Moreover, patients' beliefs about their health and age at onset were positively related to self-reported pressure ulcer occurrence (Garber et al., 2000).

Some studies report increased risk for restraint use for males but no evidence for the effects of age (e.g., Zhang et al., 2021), whereas other researchers report a significant association with age but not for gender (e.g., Migon et al., 2008). Nonetheless, the links between the employment of physical restraint and age, gender and health status are more agreed upon compared to the prevalence of pressure ulcers. Numerous studies demonstrate that male gender and young age together with health status are significant predictors of physical restraint duration (Knutzen et al., 2013; Smithard & Randhawa, 2022; Välimäki et al., 2022; Zhu et al., 2014). These results are in line with the current findings, with the only exception of gender. Indeed, in the current sample, women report a higher risk of developing pressure ulcers or restraint use. Moreover, several studies report that indicators of health status (e.g., unconsciousness, disorientation, psychiatric disorders and physical health) are significantly related to the employment of physical restraints (Engberg et al., 2008).

Although the results currently available are rather inconsistent, the present study corroborates the assumption that patients' characteristics should always be considered in studies concerning adverse NSOs, even if the main focus is to investigate their relationship with nursing procedures and practices.

The present results provided support to the hypothesis of a negative relationship between OCB among nurses and the use of restraints

on patients. This finding aligns with the evidence that nurses' OCB creates a higher commitment to satisfy patients' needs and positively relates to service quality and patient satisfaction (Kaihatu & Djati, 2016).

One possible explanation regarding restraint use is the emotion and empathy-driven nature of OCB. OCBs are emotion centred and associated with empathy (Nguyen et al., 2019). When controlling for external factors (e.g., staffing and shifts), empathy levels of nurses are significantly related with lower levels of restraint use (Yang et al., 2014). Studies reporting adverse consequences of restraint use and suggesting that standard care is possible without restraints (Meyer et al., 2009) emphasize the efforts for reducing restraint use in health care facilities. Overall, our results support the assumption that nurses engaging in practices exceeding formal standards may be particularly attentive in providing high-quality care and, in turn, may decrease the frequency of restraint use.

A previous study on a sample of 29,477 patients (Thomann et al., 2021) reported a lower use of restraint measures associated with a greater availability of adequate guidelines regarding restraints (OR = 0.60, 95% CI [0.49–0.74]) and refresher courses for at least 80% of ward nursing staff (OR = 0.70, 95% CI [0.64–0.89]). The present findings, combined with existing results from the literature, highlight the need to provide health care staff with appropriate support and training opportunities in order to mitigate the need for restraint use.

In contrast to our hypothesis, the relationship between OCB and the occurrence of pressure ulcers was non-significant. A meta-analysis conducted by Liu et al. (2012) reported that diabetic patients had 2.15 times higher probabilities to develop surgery pressure ulcers (95% CI [1.62–2.84]). In a recent review on the diabetes risk factor in postoperative pressure ulcers (Nasiri et al., 2021), the authors indicated that patients with diabetes had 1.5 higher probabilities (95% CI [1.28–1.79]) to develop surgery-related ulcers than non-diabetic patients. A further review and meta-analysis (Avsar et al., 2020) analysing the impact of repositioning techniques on the occurrence of pressure ulcers in at-risk adult patients indicated a 25% reduction in the odds of positioning ulcers (OR = 0.75, 95% CI [0.61–0.90]) in favour of more frequent repositioning. Moreover, the reviews reported that two studies regarding turning team (i.e., Harmon et al., 2016; Still et al., 2013) showed a 51% reduction of the odds of ulcers when a turning team is present (OR = 0.49, 95% CI [0.27–0.86]).

These empirical findings suggest that repositioning techniques constitute effective strategies for pressure ulcer prevention, in addition to efficient training of workforce (Borojeny et al., 2020), standardization of interventions, effective leadership and synergy of multidisciplinary teams (Sullivan & Schoelles, 2013). Risk assessment tools, medical devices for managing pressure relief and lack of staffing can act as barriers for transferring nurses' knowledge to effective management of pressure ulcers (Mwebaza et al., 2014). Although nurses play a fundamental role by constantly monitoring those risk factors that predispose patients to suffer from this negative outcome (Choi et al., 2020), the management of pressure ulcers involves a multifaceted structure, including teamwork, communication, available material resources (Kalisch et al., 2014) and macrovariables such as nurse staffing levels (Blume et al., 2021; Kim & Bae, 2018).

### 4.1 | Strengths and limitations

A major strength of the current study is the inclusion of objective data on the occurrence of adverse NSOs (i.e., pressure ulcers and restraint use) to overcome the limitations of self-report research. Furthermore, the sample size added further robustness to the reliability of the obtained results, with 52 teams involving 1346 nurses and 11,345 patients. These data allowed us to perform a first attempt to test a multilevel model of adverse NSOs.

Along with its strengths, the current study also has some limitations that should be acknowledged. First, the study was limited to the investigation of pressure ulcers and restraint use. A direction for future research would be to include additional common nursing-sensitive patient outcomes (e.g., patients' falls, hospital-acquired infections and pneumonia) when evaluating the impact of OCB. An additional limitation of this study entails measuring nurses' OCB with a three-item scale. Nevertheless, this scale has been widely used in previous studies in the Italian context (e.g., Argentero et al., 2008; Simbula & Guglielmi, 2013) and reported an internal reliability coefficient exceeding the minimum threshold of 0.70 (Cortina, 1993). Furthermore, our findings were based exclusively on a sample of Italian nurses and patients. Thus, future research is needed to test whether the same results can be replicated in other countries.

## 5 | CONCLUSIONS

The current study contributes knowledge about the antecedents of adverse NSOs and addressing the understudied concept of OCB using multilevel modelling and multisource objective data. The relationship between nurses' OCB and adverse NSOs has been poorly explored, especially using objective indicators of these outcomes. Using a multilevel model, the negative association between OCB and frequency of restraint use was empirically supported. These findings confirm that nurses' implementation of OCBs beyond prescribed work requirements may reduce adverse nursing-sensitive patient outcomes that are associated with burdens in terms of both patient health and financial costs. Overall, the current research contributed to the extension of the current knowledge of the potential role played by nurses' well-being in buffering the occurrence of outcomes that have shown to be highly onerous not only as regards patients' health and well-being but also in terms of financial cost. Given the current scenario in the global health care system, characterized by critical shortages in human and financial resources allocated to public hospitals, a strategic tool lies in a deeper understanding of nurses' behaviour that should be enhanced to inhibit the occurrence of these harmful outcomes.

## 6 | IMPLICATIONS FOR NURSING MANAGEMENT

For more than one decade, nursing resources in European public health care systems have been reduced due to the economic recession, whereas hospitals were shifting from acute to intensive care settings. In the context of nursing shortage and financial issue, recurrent changes in care models, work environments' characteristics and organizational approaches are factors influencing intensification of care and care rationing (Blackman et al., 2018).

In a context of structural understaffing, nurse managers play a pivotal role in exercising best leadership practices in designing and implementing plans to improve the work environments to maximize OCB. Although it is important that nurses retain a sense that going above and beyond their formal job role is a choice and not a demand, nurse managers and supervisors may subtly encourage behaviour contributing significantly to the organizational functioning. Promotion of OCB among nurses requires a multifaceted structure integrating, but not limited to, effective leadership style and human resources (HR) practices fostering professional competencies, organizational justice, trust, commitment and motivating job designs.

Developmental HR practices (e.g., training and development) play an essential role in promoting OCB among nurses (Eisenberg et al., 2018). In particular, nurses' perception regarding the developmental HR functions in the organization may positively affect their levels of OCB (Pohl et al., 2019). Organizations should enhance the required HR structure and facilitate effective communication to signal an effort and intention to value and support the growth and professional development needs of nurses. Thus, leaders should invest in satisfaction from developmental HR activities, which in turn will enhance perceived organizational support and foster OCB, loyalty and organizational citizenship participation (Pohl et al., 2019). Similarly, a study addressing academic nursing staff (Alim & El-Sayed, 2017) reports that training and development opportunities and work–life policies favouring flexibility and effective integration of work and family domains facilitate organizational citizenship.

Academic literature consistently identifies job satisfaction and work engagement as critical antecedents of OCB among health care professionals (Ng et al., 2021). Empirical evidence indicates that supporting the professional competency of nurses promotes their job satisfaction and OCB (Biagioli et al., 2018). Additionally, organizational efforts to build up emotional intelligence among employees and managers are crucial to enhance nurses' OCB.

Moreover, designing more intrinsically motivating jobs through higher autonomy, skill variety, feedback and task identity and significance (Oldham & Hackman, 2010) is another key to promoting OCB among nurses (Pohl et al., 2013). Investing in effective task designs and managerial styles that empower more meaning, task variety and flexibility in health care organizations can elevate OCB among nurses.

Effective leadership is a further critical pillar for OCB promotion in health care organizations. For instance, spiritual leadership can foster OCB among health care professionals through increased quality of work life and ethical behaviour (Pio & Lengkong, 2020). In a similar vein, ethical leadership fosters OCB among nurses through enhanced trust and psychological well-being (Huang et al., 2021). Transformational leadership mediates the association between organizational justice and OCB, and health care organizations and leaders investing in fairness and equity regarding the allocation of rewards, promotions and assessment processes can promote higher levels of OCB among nurses (Metwally et al., 2018). Leaders and organizations should invest in nurses' professional commitment as they contribute to nurses' OCB with a strong explaining power (Duarte, 2015).

## ETHICAL CONSIDERATIONS

Data collection was conducted by the Observatory for Healthcare Safety in all the hospitals of the Emilia-Romagna Region (Italy). The overall aim was to monitor phenomena regarding patient safety in agreement with Italy's National Health Plan (PSN 2011–2013, paragraph 3.3.1). Therefore, the Observatory for Healthcare Safety was set up with the purpose to identify the risks in each hospital and improve the quality of care. The present study was approved by the ethics committees of all the hospitals that accepted to take part in this study, and informed consent was obtained from all the patients.

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### CONFLICTS OF INTEREST

None.

### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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### REFERENCES

Alim, M. M. A., & El-Sayed, R. I. (2017). Organizational attributes and its relation to organizational citizenship behavior among academic nursing staff. *Egyptian Nursing Journal*, *14*(1), 25. https://doi.org/10.4103/ENJ.ENJ_5_17

Aluttis, C., Bishaw, T., & Frank, M. W. (2014). The workforce for health in a globalized context–global shortages and international migration. *Global Health Action*, *7*(SUPP.1), 23611. https://doi.org/10.3402/gha.v7.23611

Argentero, P., Cortese, C. G., & Ferretti, M. S. (2008). An evaluation of organizational citizenship behavior: Psychometric characteristics of the Italian version of Podsakoff et al.'s scale. *TPM–Testing, Psichometrics, Methodology in Applied Psychology*, *15*(2), 61–75.

Artico, M., Dante, A., D'Angelo, D., Lamarca, L., Mastroianni, C., Petitti, T., Piredda, M., & De Marinis, M. G. (2018). Prevalence, incidence and associated factors of pressure ulcers in home palliative care patients: A retrospective chart review. *Palliative Medicine*, *32*(1), 299–307. https://doi.org/10.1177/0269216317737671

Ausserhofer, D., Schubert, M., Desmedt, M., Blegen, M. A., De Geest, S., & Schwendimann, R. (2013). The association of patient safety climate and nurse-related organizational factors with selected patient outcomes: A cross-sectional survey. *International Journal of Nursing Studies*, *50*(2), 240–252. https://doi.org/10.1016/j.ijnurstu.2012.04.007

Avsar, P., Moore, Z., Patton, D., O'Connor, T., Budri, A. M., & Nugent, L. (2020). Repositioning for preventing pressure ulcers: A systematic review and meta-analysis. *Journal of Wound Care*, *29*(9), 496–508. https://doi.org/10.12968/jowc.2020.29.9.496

Bellenger, E. N., Ibrahim, J. E., Lovell, J. J., & Bugeja, L. (2018). The nature and extent of physical restraint-related deaths in nursing homes: A systematic review. *Journal of Aging and Health*, *30*(7), 1042–1061. https://doi.org/10.1177/0898264317704541

Bergstrom, N., & Braden, B. (1992). A prospective study of pressure sore risk among institutionalized elderly. *Journal of the American Geriatrics Society*, *40*(8), 747–758. https://doi.org/10.1111/j.1532-5415.1992.tb01845.x

Biagioli, V., Prandi, C., Nyatanga, B., & Fida, R. (2018). The role of professional competency in influencing job satisfaction and organizational citizenship behavior among palliative care nurses. *Journal of Hospice & Palliative Nursing*, *20*(4), 377–384. https://doi.org/10.1097/NJH.0000000000000454

Blackman, I. R., Papastavrou, E., Palese, A., Vryonides, S., Henderson, J., & Willis, E. (2018). Predicting variations to missed nursing care: A three-nation comparison. *Journal of Nursing Management*, *26*(1), 33–41. https://doi.org/10.1111/jonm.12514

Bliese, P. D. (2000). Within-group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions* (pp. 349–381). Jossey-Bass.

Blume, K. S., Dietermann, K., Kirchner-Heklau, U., Winter, V., Fleischer, S., Kreidl, L. M., Meyer, G., & Schreyögg, J. (2021). Staffing levels and nursing-sensitive patient outcomes: Umbrella review and qualitative study. *Health Services Research*, *56*(5), 885–907. https://doi.org/10.1111/1475-6773.13647

Borojeny, L. A., Albatineh, A. N., Dehkordi, A. H., & Gheshlagh, R. G. (2020). The incidence of pressure ulcers and its associations in different wards of the hospital: A systematic review and meta-analysis. *International Journal of Preventive Medicine*, *11*, 171. https://doi.org/10.4103/ijpvm.IJPVM_182_19

Carmassi, C., Dell'Oste, V., Bui, E., Foghi, C., Bertelloni, C. A., Atti, A. R., Buselli, R., Di Paolo, M., Goracci, A., Malacarne, P., Nanni, M. G., Gesi, C., Cerveri, G., & Dell'Osso, L. (2022). The interplay between acute post-traumatic stress, depressive and anxiety symptoms on healthcare workers functioning during the COVID-19 emergency: A multicenter study comparing regions with increasing pandemic incidence. *Journal of Affective Disorders*, *298*(Pt A), 209–216. https://doi.org/10.1016/j.jad.2021.10.128

Centers for Medicare and Medicaid Services. (2006). Glossary. https://www.cms.gov/apps/glossary/default.asp?Letter=ALL

Chahal, H., & Mehta, S. (2011). Antecedents and consequences of organisational citizenship behaviour (OCB): A conceptual framework in reference to health care sector. *Journal of Services Research*, *10*(2), 25–44.

Charalambous, C., Koulori, A., Vasilopoulos, A., & Roupa, Z. (2018). Evaluation of the validity and reliability of the Waterlow pressure ulcer risk assessment scale. *Medical Archives*, *72*(2), 141–144. https://doi.org/10.5455/medarh.2018.72.141-144

Charlson, M. E., Pompei, P., Ales, K. L., & MacKenzie, C. R. (1987). A new method of classifying prognostic comorbidity in longitudinal studies: Development and validation. *Journal of Chronic Diseases*, *40*(5), 373–383. https://doi.org/10.1016/0021-9681(87)90171-8

Choi, J. H., Lim, C. H., & Jeong, S. H. (2020). Actual pressure ulcer awareness of a person in charge of pressure ulcer management. *Medico-Legal Update*, *20*(1), 1822–1826. https://doi.org/10.37506/v20/i1/2020/mlu/194568

Chou, M. Y., Hsu, Y. H., Wang, Y. C., Chu, C. S., Liao, M. C., Liang, C. K., Chen, L. K., & Lin, Y. T. (2020). The adverse effects of physical restraint use among older adult patients admitted to the internal medicine wards: A hospital-based retrospective cohort study. *The Journal of Nutrition, Health & Aging*, *24*(2), 160–165. https://doi.org/10.1007/s12603-019-1306-7

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology*, *78*(1), 98–104. https://doi.org/10.1037/0021-9010.78.1.98

Cremasco, M. F., Wenzel, F., Zanei, S. S., & Whitaker, I. Y. (2013). Pressure ulcers in the intensive care unit: The relationship between nursing workload, illness severity and pressure ulcer risk. *Journal of Clinical Nursing*, *22*(15–16), 2183–2191. https://doi.org/10.1111/j.1365-2702.2012.04216.x

Davis, M. H. (2017). Empathy, compassion, and social relationships. In E. Seppälä, E. Simon-Thomas, S. L. Brown, M. C. Worline, C. D. Cameron, & J. R. Doty (Eds.), *The Oxford handbook of compassion science* (pp. 299–315). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780190464684.001.0001

Demarré, L., Vanderwee, K., Defloor, T., Verhaeghe, S., Schoonhoven, L., & Beeckman, D. (2012). Pressure ulcers: Knowledge and attitude of nurses and nursing assistants in Belgian nursing homes. *Journal of Clinical Nursing*, *21*(9–10), 1425–1434. https://doi.org/10.1111/j.1365-2702.2011.03878.x

Doran, D. (2003). *Nursing-sensitive outcomes: State of the science*. Jones & Bartlett.

Doran, D., Mildon, B., & Clarke, S. (2011). Towards a national report card in nursing: A knowledge synthesis. *Canadian Journal of Nursing Leadership*, *24*(2), 38–57. https://doi.org/10.12927/cjnl.2011.22464

Duarte, M. B. (2015). Organisational and professional commitments: The influence in nurses' organisational citizenship behaviours. *Tékhne*, *13*(1), 2–11. https://doi.org/10.1016/j.tekhne.2015.03.001

Dutra, C. K. D. R., & Guirardello, E. D. B. (2021). Nurse work environment and its impact on reasons for missed care, safety climate, and job satisfaction: A cross-sectional study. *Journal of Advanced Nursing*, *77*(5), 2398–2406. https://doi.org/10.1111/jan.14764

Eisenberg, A., Davidova, J., & Kokina, I. (2018). The interrelation between organizational learning culture and organizational citizenship behavior. *Rural Environment, Education, Personality*, *11*, 11–12. https://doi.org/10.22616/REEP.2018.043

Engberg, J., Castle, N. G., & McCaffrey, D. (2008). Physical restraint initiation in nursing homes and subsequent resident health. *The Gerontologist*, *48*(4), 442–452. https://doi.org/10.1093/geront/48.4.442

Feather, J., McGillis Hall, L., Trbovich, P., & Baker, G. R. (2018). An integrative review of nurses' prosocial behaviours contributing to work environment optimization, organizational performance and quality of care. *Journal of Nursing Management*, *26*(7), 769–781. https://doi.org/10.1111/jonm.12600

Fernandez, R., Lord, H., Halcomb, E., Moxham, L., Middleton, R., Alananzeh, I., & Ellwood, L. (2020). Implications for COVID-19: A systematic review of nurses' experiences of working in acute care hospital settings during a respiratory pandemic. *International Journal of Nursing Studies*, *111*, 103637. https://doi.org/10.1016/j.ijnurstu.2020.103637

Gallagher, P., Barry, P., Hartigan, I., McCluskey, P., O'Connor, K., & O'Connor, M. (2008). Prevalence of pressure ulcers in three university teaching hospitals in Ireland. *Journal of Tissue Viability*, *17*(4), 103–109. https://doi.org/10.1016/j.jtv.2007.12.001

Garber, S. L., Rintala, D. H., Hart, K. A., & Fuhrer, M. J. (2000). Pressure ulcer risk in spinal cord injury: Predictors of ulcer status over 3 years. *Archives of Physical Medicine and Rehabilitation*, *81*(4), 465–471. https://doi.org/10.1053/mr.2000.3889

George, S. (2020). Physical restraint and the law in England. *British Journal of Mental Health Nursing*, *9*(3), 1–7. https://doi.org/10.12968/bjmh.2019.0021

Glick, W. H. (1985). Conceptualizing and measuring organizational and psychological climate: Pitfalls in multilevel research. *Academy of Management Review*, *10*(3), 601–616. https://doi.org/10.5465/amr.1985.4279045

Gou, L., Wang, G., Feng, L., & Zhang, Y. (2021). A multilevel analysis of the impact of group organisational citizenship behaviour on nurse–patient relationship: The mediating effect of work engagement and the moderating effect of emotional intelligence. *Journal of Nursing Management*, *29*(2), 342–350. https://doi.org/10.1111/jonm.13159

Gunawan, F. E., Suyoto, Y. T., & Tannady, H. (2020). Factors affecting job performance of hospital nurses in capital city of Indonesia: Mediating role of organizational citizenship behavior. *Test Engineering and Management*, *83*, 22513–22524.

Hafenbrack, A. C., Cameron, L. D., Spreitzer, G. M., Zhang, C., Noval, L. J., & Shaffakat, S. (2020). Helping people by being in the present: Mindfulness increases prosocial behavior. *Organisational Behaviour and Human Decision Processes*, *159*, 21–38. https://doi.org/10.1016/j.obhdp.2019.08.005

Harmon, L. C., Grobbel, C., & Palleschi, M. (2016). Reducing pressure injury incidence using a turn team assignment. *Journal of Wound, Ostomy and Continence Nursing*, *43*(5), 477–482. https://doi.org/10.1097/WON.0000000000000258

Huang, N., Qiu, S., Yang, S., & Deng, R. (2021). Ethical leadership and organizational citizenship behavior: Mediation of trust and psychological well-being. *Psychology Research and Behavior Management*, *14*, 655–664. https://doi.org/10.2147/PRBM.S311856

Ingersoll, G. L., McIntosh, E., & Williams, M. (2000). Nurse-sensitive outcomes of advanced practice. *Journal of Advanced Nursing*, *32*(5), 1272–1281. https://doi.org/10.1046/j.1365-2648.2000.01598.x

Jarrar, M., Minai, M. S., Al-Bsheish, M., Meri, A., & Jaber, M. (2019). Hospital nurse shift length, patient-centered care, and the perceived quality and patient safety. *International Journal of Health Planning Management*, *34*(1), e387–e396. https://doi.org/10.1002/hpm.2656

Kaihatu, T. S., & Djati, S. P. (2016). Organizational citizenship behavior (OCB), service quality and patient satisfaction: A case study of the nurses in private hospitals of Surabaya. *Jurnal Ilmiah Manajemen*, *6*(2), 213–227.

Kalisch, B. J., Xie, B., & Dabney, B. W. (2014). Patient-reported missed nursing care correlated with adverse events. *American Journal of Medical Quality*, *29*(5), 415–422. https://doi.org/10.1177/1062860613501715

Kayser, S. A., VanGilder, C. A., & Lachenbruch, C. (2019). Predictors of superficial and severe hospital-acquired pressure injuries: A cross-sectional study using the International Pressure Ulcer Prevalence™ survey. *International Journal of Nursing Studies*, *89*, 46–52. https://doi.org/10.1016/j.ijnurstu.2018.09.003

Kim, C. G., & Bae, K. S. (2018). Relationship between nurse staffing level and adult nursing-sensitive outcomes in tertiary hospitals of Korea: Retrospective observational study. *International Journal of Nursing Studies*, *80*, 155–164. https://doi.org/10.1016/j.ijnurstu.2018.01.001

Knutzen, M., Bjørkly, S., Eidhammer, G., Lorentzen, S., Mjøsund, N. H., Opjordsmoen, S., Sandvik, L., & Friis, S. (2013). Mechanical and pharmacological restraints in acute psychiatric wards—Why and how are they used? *Psychiatry Research*, *209*(1), 91–97. https://doi.org/10.1016/j.psychres.2012.11.017

Kottner, J., Cuddigan, J., Carville, K., Balzer, K., Berlowitz, D., Law, S., Litchford, M., Mitchell, P., Moore, Z., Pittman, J., Sigaudo-Roussel, Haesler, E. (2020). Pressure ulcer/injury classification today: An international perspective. *Journal of Tissue Viability*, *29*(3), 197–203. https://doi.org/10.1016/j.jtv.2020.04.003

Krause, J. S., & Broderick, L. (2004). Patterns of recurrent pressure ulcers after spinal cord injury: Identification of risk and protective factors 5 or more years after onset. *Archives of Physical Medicine and Rehabilitation*, *85*(8), 1257–1264. https://doi.org/10.1016/j.apmr.2003.08.108

Labrague, L. J., de los Santos, J. A. A., Tsaras, K., Galabay, J. R., Falguera, C. C., Rosales, R. A., & Firmo, C. N. (2020). The association of nurse caring behaviours on missed nursing care, adverse patient events and perceived quality of care: A cross-sectional study. *Journal of Nursing Management*, *28*(8), 2257–2265. https://doi.org/10.1111/jonm.12894

LeBreton, J. M., & Senter, J. L. (2008). Answers to 20 questions about interrater reliability and interrater agreement. *Organisational Research Methods*, *11*(4), 815–852. https://doi.org/10.1177/1094428106296642

Lichterfeld-Kottner, A., Lahmann, N., & Kottner, J. (2020). Sex-specific differences in prevention and treatment of institutional-acquired pressure ulcers in hospitals and nursing homes. *Journal of Tissue Viability*, *29*(3), 204–210. https://doi.org/10.1016/j.jtv.2020.05.001

Lindgren, M., Unosson, M., Krantz, A. M., & Ek, A. C. (2005). Pressure ulcer risk factors in patients undergoing surgery. *Journal of Advanced Nursing*, *50*(6), 605–612. https://doi.org/10.1111/j.1365-2648.2005.03441.x

Liu, P., He, W., & Chen, H. L. (2012). Diabetes mellitus as a risk factor for surgery-related pressure ulcers: A meta-analysis. *Journal of Wound Ostomy & Continence Nursing*, *39*(5), 495–499. https://doi.org/10.1097/WON.0b013e318265222a

Mahooti, M., Vasli, P., & Asadi, E. (2018). Effect of organizational citizenship behavior on family-centered care: Mediating role of multiple commitment. *PLoS ONE*, *13*(9), e0204747. https://doi.org/10.1371/journal.pone.0204747

Metwally, F. G., Ata, A. A., & Ahmed, A. K. (2018). Organizational justice, organizational citizenship behavior and turnover intention among nurses: The mediating effect of transformational leadership. *American Journal of Nursing*, *6*(6), 576–585. https://doi.org/10.12691/AJNR-6-6-28

Meyer, G., Köpke, S., Haastert, B., & Mühlhauser, I. (2009). Restraint use among nursing home residents: Cross-sectional study and prospective cohort study. *Journal of Clinical Nursing*, *18*(7), 981–990. https://doi.org/10.1111/j.1365-2702.2008.02460.x

Migon, M. N., Coutinho, E. S., Huf, G., Adams, C. E., Cunha, G. M., & Allen, M. H. (2008). Factors associated with the use of physical restraints for agitated patients in psychiatric emergency rooms. *General Hospital Psychiatry*, *30*(3), 263–268. https://doi.org/10.1016/j.genhosppsych.2007.12.005

Mwebaza, I., Katende, G., Groves, S., & Nankumbi, J. (2014). Nurses' knowledge, practices, and barriers in care of patients with pressure ulcers in a Ugandan teaching hospital. *Nursing Research and Practice*, *1–6*, 973602. https://doi.org/10.1155/2014/973602

Nasiri, E., Mollaei, A., Birami, M., Lotfi, M., & Rafiei, M. H. (2021). The risk of surgery-related pressure ulcer in diabetics: A systematic review and meta-analysis. *Annals of Medicine and Surgery*, *65*, 102336. https://doi.org/10.1016/j.amsu.2021.102336

Neziraj, M., Hellman, P., Kumlien, C., Andersson, M., & Axelsson, M. (2021). Prevalence of risk for pressure ulcers, malnutrition, poor oral health and falls—A register study among older persons receiving municipal health care in southern Sweden. *BMC Geriatrics*, *21*(1), 1–10. https://doi.org/10.1186/s12877-021-02205-x

Ng, L. P., Choong, Y. O., Kuar, L. S., Tan, C. E., & Teoh, S. Y. (2021). Job satisfaction and organizational citizenship behaviour amongst health professionals: The mediating role of work engagement. *International Journal of Healthcare Management*, *14*(3), 797–804. https://doi.org/10.1080/20479700.2019.1698850

Nguyen, T. N. Q., Ngo, L. V., & Surachartkumtonkun, J. (2019). When do-good meets empathy and mindfulness. *Journal of Retailing and*

*Consumer Services*, *50*, 22–29. https://doi.org/10.1016/j.jretconser.2019.03.020

Noh, G. M., & Yoo, M. S. (2016). Effects of workplace spirituality and organizational citizenship behavior on nursing performance. *Journal of Korean Academy of Nursing Administration*, *22*(3), 251–259. https://doi.org/10.11111/jkana.2016.22.3.251

Oldham, G. R., & Hackman, J. R. (2010). Not what it was and not what it will be: The future of job design research. *Journal of Organizational Behavior*, *31*(2–3), 463–479. https://doi.org/10.1002/job.678

Organ, D. W., Podsakoff, P. M., & Mackenzie, S. B. (2006). *Organizational citizenship behavior: Its nature, antecedents, and consequences*. Sage. https://doi.org/10.4135/9781452231082

Perrone, V., & Chiacchierini, C. (1999). Fiducia e comportamenti di cittadinanza organizzativa. Un'indagine empirica nella prospettiva della rete degli scambi sociali. *Economia e Management*, *4*, 87–100.

Pio, R. J., & Lengkong, F. D. J. (2020). The relationship between spiritual leadership to quality of work life and ethical behavior and its implication to increasing the organizational citizenship behavior. *Journal of Management Development*, *39*(3), 293–305. https://doi.org/10.1108/JMD-07-2018-0186

Podsakoff, N. P., Podsakoff, P. M., MacKenzie, S. B., Maynes, T. D., & Spoelma, T. M. (2014). Consequences of unit-level organizational citizenship behaviors: A review and recommendations for future research. *Journal of Organisational Behaviour*, *35*(Suppl 1), S87–S119. https://doi.org/10.1002/job.1911

Pohl, S., Battistelli, A., & Librecht, J. (2013). The impact of perceived organizational support and job characteristics on nurses' organizational citizenship behaviours. *International Journal of Organization Theory & Behavior*, *16*, 193–207. https://doi.org/10.1108/IJOTB-16-02-2013-B002

Pohl, S., Vonthron, A. M., & Closon, C. (2019). Human resources practices as predictors of organizational citizenship behaviour: The role of job breadth and organizational support. *Journal of Management & Organization*, *25*(2), 224–238. https://doi.org/10.1017/jmo.2017.14

Purdy, N., Laschinger, H. K. S., Finegan, J., Kerr, M., & Olivera, F. (2010). Effects of work environments on nurse and patient outcomes. *Journal of Nursing Management*, *18*(8), 901–913. https://doi.org/10.1111/j.1365-2834.2010.01172.x

Simbula, S., & Guglielmi, D. (2013). I am engaged, I feel good, and I go the extra-mile: Reciprocal relationships between work engagement and consequences. *Revista de Psicología del Trabajo Y de Las Organizaciones*, *29*(3), 117–125. https://doi.org/10.5093/tr2013a17

Smithard, D., & Randhawa, R. (2022). Physical restraint in the critical care unit: A narrative review. *The New Bioethics*, *28*(1), 68–82. https://doi.org/10.1080/20502877.2021.2019979

Stalpers, D., Kieft, R. A., Van Der Linden, D., Kaljouw, M. J., & Schuurmans, M. J. (2016). Concordance between nurse-reported quality of care and quality of care as publicly reported by nurse-sensitive indicators. *BMC Health Services Research*, *16*(1), 120. https://doi.org/10.1186/s12913-016-1372-z

Still, M. D., Cross, L. C., Dunlap, M., Rencher, R., Larkins, E. R., Carpenter, D. L., Buchman, T. G., & Coopersmith, C. M. (2013). The turn team: A novel strategy for reducing pressure ulcers in the surgical intensive care unit. *Journal of the American College of Surgeons*, *216*(3), 373–379. https://doi.org/10.1016/j.jamcollsurg.2012.12.001

Sullivan, N., & Schoelles, K. M. (2013). Preventing in-facility pressure ulcers as a patient safety strategy: A systematic review. *Annals of Internal Medicine*, *158*(5_Part_2), 410–416. https://doi.org/10.7326/0003-4819-158-5-201303051-00008

Thomann, S., Hahn, S., Bauer, S., Richter, D., & Zwakhalen, S. (2021). Variation in restraint use between hospitals: A multilevel analysis of multicentre prevalence measurements in Switzerland and Austria. *BMC Health Services Research*, *21*(1), 1–10. https://doi.org/10.1186/s12913-021-06362-y

Välimäki, M., Lam, Y. T. J., Hipp, K., Cheng, P. Y. I., Ng, T., Ip, G., Lee, P., Cheung, T., Bressington, D., & Lantta, T. (2022). Physical restraint events in psychiatric hospitals in Hong Kong: A cohort register study. *International Journal of Environmental Research and Public Health*, *19*(10), 6032. https://doi.org/10.3390/ijerph19106032

Van Bogaert, P., Clarke, S., Roelant, E., Meulemans, H., & Van de Heyning, P. (2010). Impacts of unit-level nurse practice environment and burnout on nurse-reported outcomes: A multilevel modelling approach. *Journal of Clinical Nursing*, *19*(11–12), 1664–1674. https://doi.org/10.1111/j.1365-2702.2009.03128.x

Veldhuizen, J. D., Hafsteinsdóttir, T. B., Mikkers, M. C., Bleijenberg, N., & Schuurmans, M. J. (2021). Evidence-based interventions and nurse-sensitive outcomes in district nursing care: A systematic review. *International Journal of Nursing Studies Advances*, *3*, 100053. https://doi.org/10.1016/j.ijnsa.2021.100053

Walker, N., Scott, T., Dissanayaka, N. N., Barlow, F. K., & Pachana, N. A. (2018). Persisting use of physical restraint: Knowledge translation vs. attitudes. *Health*, *5*, 1. https://doi.org/10.21035/ijcnmh.2018.5.1

Williams, D. F., Stotts, N. A., & Nelson, K. (2000). Patients with existing pressure ulcers admitted to acute care. *Journal of WOCN*, *27*(4), 216–226. https://doi.org/10.1097/00152192-200007000-00005

Yang, C. P. P., Hargreaves, W. A., & Bostrom, A. (2014). Association of empathy of nursing staff with reduction of seclusion and restraint in psychiatric inpatient care. *Psychiatric Services*, *65*(2), 251–254. https://doi.org/10.1176/appi.ps.201200531

Yıldırım Üşenmez, T., & Gümüş, F. (2021). The effect of empathy skills of psychiatric nurses on their attitudes and practices towards the use of physical restraint. *Perspectives in Psychiatric Care*, *57*(4), 1595–1603. https://doi.org/10.1111/ppc.12723

Zhang, C., Liu, D., & He, Q. (2021). The characteristics of ICU physical restraint use and related influencing factors in China: A multi-center study. *Annals of Palliative Medicine*, *10*(2), 1198–1206. https://doi.org/10.21037/apm-20-563

Zhu, X. M., Xiang, Y. T., Zhou, J. S., Gou, L., Himelhoch, S., Ungvari, G. S., Chiu, H. F. K., Lai, K. Y. C., & Wang, X. P. (2014). Frequency of physical restraint and its associations with demographic and clinical characteristics in a Chinese psychiatric institution. *Perspectives in Psychiatric Care*, *50*(4), 251–256. https://doi.org/10.1111/ppc.12049

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