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Article

# Croatian Translation and Initial Psychometric Validation of the Negative Behaviors in Health Care Questionnaire

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**Abstract: Background/Objectives:** Measuring lateral and vertical aggression among healthcare professionals can improve work culture, patient safety, employee retention, team communication, and collaboration by targeting specific issues and promoting professional behavior. Nurses constitute the majority of healthcare staff, and understanding the dynamics within this group is essential for enhancing the work environment. This cross-sectional study aimed to produce an adapted Croatian version and validate the Negative Behaviors in Health Care Questionnaire. **Methods:** The translation, cultural adaptation, and psychometric evaluation of the questionnaire were approached. Clinical specialists and qualified bilingual speakers participated in both forward and backward translation. Face validity was tested. The survey's original developer approved the final version. The reliability of the questionnaire was assessed using the test-retest method and Cronbach alpha coefficient. Exploratory and confirmatory factor analyses and assessments of divergent and convergent validity were conducted for the questionnaire. The collected data were analyzed using SPSS 21.0 and R program version 3.5.2. for Windows. **Results:** A 5-factor structure was obtained, just like the original version of the questionnaire, which was confirmed by CFA – although not all fit coefficients were satisfactory. Internal consistency reliability was found to be high and test-retest reliability was satisfactory. **Conclusions:** The adapted, translated, and validated survey provides a valuable tool for assessing lateral and vertical aggression between and towards nurses regarding contributing factors, frequency, severity, uses of aggression, and fear of retaliation.

**Keywords:** lateral aggression; vertical aggression; incivility; translation; validation; nursing

## 1. Introduction

Workplace violence (WPV) against health workers is the main occupational hazard and a global problem. WPV is a serious nursing issue widespread in all settings [1].

It is defined as incidents where staff are threatened, abused, or assaulted in work-related circumstances that affect their safety, well-being, and health [2]. It includes physical assault, aggression [3], sexual harassment, bullying [4], verbal abuse [5], or threats and can lead to injury, death, psychological harm, mal-development, or deprivation [6]. WPV hurts the financial burdens for hospitals, turnover intention, the quality of medical care, and patient safety [7–9]. A prevalence of 42.5% for non-physical violence was estimated globally among healthcare workers [10]. Al-Azzam et al. have shown that anti-violence policy and violence training are essential predictors of nurses' mental health [11]. Underreporting can mask the significance of the problem. Various reasons for underreporting WPV included lengthy incident reporting procedures, inadequate support from superiors and co-workers, fear of retaliation, guilt about reporting, or the belief that reporting would not lead to positive change [12,13].

Most of the publications deal with violence against healthcare workers, while only a tiny part focuses on another aspect of the problem – aggression among colleagues [14,15]. The terms that most often describe negative behaviors among colleagues are workplace bullying, violence, aggression, abuse, hostility, sabotage, and incivility. The literature describes them in two ways. Incidents of

aggression between colleagues at the same hierarchical level are called lateral (LA) or horizontal, and incidents between superiors and employees—which can happen in either direction but are more often directed downward—are called vertical aggression (VA) [16]. They are associated with lower productivity, employee retention, engagement, satisfaction, and increased absenteeism. [17,18] but also to patient outcomes, treatment delays, medical errors, patient falls, and mortality [15,19,20].

A regrettable cliché that has been in use for more than 30 years among nurses worldwide is "Nurses Eat Their Young" [21,22]. The theory framework of The Nurse as Wounded Healer (NWH), developed by Dr. Marion Conti-O'Hare in 2014, describes how the decision is made to leave a job due to LA [23]. The results of a 2022 systematic review and meta-analysis draw the attention of nursing leaders to the fact that nurses who have experienced horizontal violence are more likely to leave or change careers [24]. LA and VA refer to undesirable behaviors towards colleagues of the same or different levels of power that cause psychological pain [25]. Recent graduates and those with limited professional experience are especially susceptible to such incidents [25]. There are three key characteristics of inappropriate behavior - frequency, intentionality, and repetition [17], [26–28]. It is necessary to investigate specific sources of incivility and identify the essential knowledge and skills to maintain a positive work environment, along with developing, applying, and evaluating effective educational and preventive steps [29]. Organizational and ergonomic strategies that lower stress and improve employee support and productivity should be part of the fight against workplace violence [30].

Measuring negative behaviors among healthcare professionals is still not covered in Croatian healthcare. This cross-sectional study aims to translate, modify, and validate the Negative Behaviors in Health Care (NBHC) survey in Croatian.

## 2. Materials and Methods

This cross-sectional descriptive study evaluates the cultural compatibility and psychometrics of the NBHC questionnaire among Croatian nurses. It consists of translation and validation. The translation was made according to Polit & Yang's guidelines [31]. For ethical considerations, permission to translate and validate the NBHC survey was obtained from the original designers of the questionnaire [32].

### 2.1. Translation

Two translators each participated in the forward and backward translation process. The first two translators are excellent connoisseurs of both languages and cultures, and the target language is their mother tongue. One is a health professional, while the other is an excellent translator of colloquial jargon phrases and was unfamiliar with the actual construction of the questionnaire and medical language. They independently translated the questionnaire into Croatian. Then, a multidisciplinary, bilingual expert group was formed to examine the translation of each particle, looking for differences between the original language and the translated text [33]. It consisted of experts from nursing, medicine, psychology, English, and Croatian language teachers. Semantic, conceptual, and technical inequities were considered while preserving the integrity of the original instrument. Two other bilingual and bicultural translators made a back translation to English without insight into the original questionnaire. One is a health professional, while the other is a connoisseur of the culture and linguistic nuances of the original language. After the experts agreed on the final version, the questionnaire was sent to the author for approval.

### 2.2. Pilot Testing

This phase was included to guarantee that all translated items were clear, easy to understand, and unambiguous. Twenty-eight respondents determined clarity, ambiguity, and appropriateness.

### 2.3. Test-Retest

The questionnaire was tested and retested. To ensure participant anonymity and adequately organize the collected data, each participant independently created a unique code when completing the questionnaire.

#### 2.4. Measuring Instrument

The 25 items of the NBHC are split into five subscales: the uses Aggression subscale, the Fear of Retaliation subscale, the Frequency of Aggression subscale, the Seriousness of Aggression subscale, and the Contributing Factor subscale. Unlike the original questionnaire, which uses a four-point Likert scale in 3 subscales, the adapted version uses a five-point Likert scale in all subscales.

A nine-item subscale measures factors that contribute to LA and VA. Seven items assess the frequency of aggression, six items the severity of aggression, and three examine fear of retaliation. Two open-ended questions were optional regarding the participants' testimonies of LA and VA experiences and recommendations that could help lower the occurrence. Participants submitted the ten sociodemographic questions throughout the test phase. The Toronto Empathy Questionnaire [34] and The Aggression Questionnaire [35] were used in addition to the NBHC questionnaire in the test phase to assess divergent and convergent validity, with the author's permission.

#### 2.5. Sample

The sample size calculation was done according to Field's instructions from 2013, where the usual recommendation is 5-10 respondents per questionnaire item [36]. A total of 193 participants took part in the test study, most female (N = 172, 89.12%), with an average age of 36.01 years (SD = 12.452, min = 20, max = 68). Most participants come from an urban environment (N = 136, 71.1%), while a smaller number come from a rural environment (N = 57, 28.9%). The most significant number of participants have completed only high school (N= 108, 55.9%), while the smallest number have completed graduate studies (N= 36, 18.7%). The average number of years of work experience in the profession is 14.78 years (SD = 12.182), ranging from 5 months to 43 years.

The test questionnaire took ten to fifteen minutes, and the retest took five minutes. Sociodemographic information and the questionnaires used to evaluate convergent and divergent validity during the test phase were not included in the retest phase. In the retest phase, 112 of the same respondents participated. Two months passed between the test and retest data collection periods.

#### 2.6. Data Collection

A random sample of respondents received an online form through the institution's management. The inclusion criteria were a valid work license. Participation was voluntary and anonymous. The purpose, the goal of the research, and the method of filling out the questionnaire were explained. Respondents gave consent to participate in the study.

#### 2.7. Data Analysis

There was no missing data. All responses were mandatory except for two open-ended questions not addressed in this paper. The data were collected in the MS Excel database (version 11. Microsoft Corporation, Redmond, WA, USA), the SPSS 21.0 statistical program (IBM Corp., Armonk, NY, USA), and the program R version 3.5.2. for Windows (Lavaan package) to perform confirmatory factor analysis. The normality of the distribution of results was tested with the Shapiro-Wilk test, the dimensionality of the questionnaire was tested with exploratory factor analysis under the principal components model with varimax rotation, test-retest reliability with the Spearman correlation coefficient, internal reliability with the Cronbach alpha coefficient, and divergent and convergent validity with the Spearman correlation coefficients. Confirmatory factor analysis was performed in the Lavaan package of the R program.

#### 2.8. Ethical Considerations

This study was conducted strictly with ethical guidelines and principles to ensure the protection and rights of all participants. They could withdraw from the study at any time without any repercussions. Confidentiality was rigorously maintained throughout the study. Only the research team has access to the securely stored data. The Ethics Committees reviewed and approved the research, ensuring that all ethical considerations were appropriately addressed. Permission was obtained, as well, from the author of the original questionnaire. The study followed the Declaration of Helsinki from 1964 (2013 revision).

### 3. Results

#### 3.1. Exploratory Factor Analysis

The dimensionality of the questionnaire was tested on this sample using an exploratory factor analysis under the principal components model. Bartlett's test determined the correlation matrix's significance and the correlation matrix, and the suitability of the correlation matrix for factorization was determined by the Kaiser-Meyer-Olkin sampling adequacy test [37]. Bartlett's test of significance of the correlation matrix is high ( $\chi^2 = 3814.192$ ) and significant with a risk of less than 1%. The Kaiser-Meyer-Olkin index of sampling adequacy was 0.86, which shows that the correlation matrix of the measuring instrument variables is suitable for implementing factorization [38]. The factor analysis, according to the Gutman-Kaiser criterion, with varimax rotation, showed that there are a total of 5 factors in the latent structure of the questionnaire, which explained a total of 66.28% of the variance and which are differentiated on the scree plot (Table 1).

**Table 1.** Factor saturations obtained by exploratory factor analysis under the principal components model with varimax rotation (N = 193).

	Contributing Factors	Seriousness	Uses Aggression	Fear of Retaliation	Frequency of Aggression
Rude behavior	,726				
Major personality clashes	,677				
Power and control issues	,793				
Inadequate staff/resources to handle the workload	,585				
Job stress leading to loss of control over behavior	,617				
Misunderstandings related to cultural differences.	,478				
The targeted person not willing to stand up to the perpetrator	,759				
Leaders not willing to intervene	,782				
Peers not willing to intervene	,767				
I observe lateral aggression					,668
I am the recipient of lateral aggression					,649
I use lateral aggression			,800		
I observe vertical aggression directed downward from healthcare professionals in leadership positions					,627
I am the recipient of vertical aggression directed downward					,682
I use vertical aggression directed downward			,963		
I use vertical aggression directed upwards			,852		
Lateral aggression toward healthcare professional peers		,475			
Lateral aggression toward new healthcare professionals		,831			

Compared to other workplace stressors, lateral aggression is						
Vertical aggression directed downward						
Vertical aggression directed upward						
Compared to other workplace stressors, vertical aggression is						
I feel safe from retaliation when reporting an episode of lateral aggression						,862
I feel safe from retaliation when reporting an episode of vertical aggression directed downward						,932
I feel safe from retaliation when reporting an episode of vertical aggression directed upward						,874
<b>EIGEN VALUE</b>	8,14	3.21	3.06	2.38	1.24	
<b>% EXPLAINED VARIANCE</b>	31.25	11.74	11.35	8.44	3.51	
<b>CRONBACH ALPHA</b>	.91	.90	.92	.95	.83	

### 3.2. Test-Retest Reliability

The questionnaire was applied to the same group of participants to check test-retest reliability. Since the distribution of results significantly deviated from normal on all individual factors, the non-parametric Spearman correlation test was applied for test-retest reliability (Table 2).

**Table 2.** Test-retest reliability of the questionnaire tested by the Spearman correlation coefficient (N = 112).

	<b>f1 – 1. measurement</b>	<b>f2 – 2. measurement</b>	<b>f3 – 2. measurement</b>	<b>f4 – 2. measurement</b>	<b>f5 – 2. measurement</b>
f1 – 1. measurement	0,528**				
f2 – 2. measurement		0,754**			
f3 – 3. measurement			0,606**		
f4 – 4. measurement				0,549**	
f5 – 5. measurement					0,725**

\*p<0,001.

### 3.3. Confirmatory Factor Analysis

Confirmatory factor analysis, a statistically more powerful procedure, helps to test how well a particular theoretically based model fits the empirical data. In this case, the five defined factors were checked to see if they correspond to the collected results. The results of the confirmatory factor analysis are shown in Table 3.

**Table 3.** Fit indices for the 5-factor model of the Inappropriate Behavior Questionnaire.

	Index values
Relative Chi-square	5,028
CFI	0,811
RMSEA	0,114
SRMR	0,197

### 3.4. Divergent Validity

To check the questionnaire's divergent validity, the Toronto Empathy questionnaire was applied. Since the questionnaires measure different constructs that are not expected to have significant correlations, it was expected that there would be no significant correlations between individual factors of the Questionnaire and the total result on the Toronto Empathy scale. Spearman's correlation coefficient was used for testing, and satisfactory divergent validity was determined (Table 4).

**Table 4.** Testing of correlations between 5 factors and the total score on the empathy scale, using Spearman's correlation coefficient.

	Empathy
f1a	,043
f2a	,077
f3a	,062
f4a	-,063
f5a	,000

### 3.5. Convergent Validity

The Aggression questionnaire was applied to check the convergent validity of the questionnaire, where it was expected that its specific factors would be significantly correlated with the characteristics of the NBHC questionnaire. Factor analysis for the Aggression scale showed the existence of four factors that explained 47.85% of the variance: Physical aggression (9 items), Anger (9 items), Hostility (5 items), and Verbal aggression (4 items) in Table 5.

**Table 5.** Spearman's correlation coefficients for five factors of the Questionnaire and subscales of the Aggressiveness questionnaire.

	Physical aggression	Anger	Hostility	Verbal aggression
Contributing factors	,003	-,099	-,023	-,001
Seriousness	-,142*	-,162*	-,010	-,048
Uses Aggression	-,225**	-,223**	-,206**	,034
Fear of Retaliation	-,033	,041	,127	-,113
Frequency of Aggression	-,083	-,241**	-,246**	,005

\*\*p<0,001.

## 4. Discussion

As far as we know, a similar questionnaire has yet to be translated and validated in Croatian. More literature is needed on lateral and vertical aggression in healthcare in this geographical area, although the problem was recognized worldwide several decades ago. Covering topics in Croatian

that could be related are violence against nurses, burnout, and mobbing [39]. The research provides valuable insights into the dimensionality, reliability, and validity of the adopted NBHC questionnaire, with results that prompt further discussion and consideration. Unlike the original questionnaire, the target population in this study was nurses. As nursing is still predominantly female worldwide, the stratification of the sample by gender is dominated by women (89.12%); 70.5% are from urban environments, with the majority high school education level (55,9%). Differences between urban and rural environments may indicate specific cultural or systemic factors that shape participants' experiences [40]. The educational system's contextualization and the questionnaire's adaptation can help interpret the results corresponding to the reality of nurses in Croatia. These demographic characteristics may influence the findings regarding cultural, educational, and gendered interpretations of workplace aggression [41]. Expanding the sample to more rural areas and including more men and participants from different health disciplines would contribute to a better generalization of the results.

Hierarchical dynamics in nursing impact professional relationships and fear of retaliation [42]. The results of the qualitative systematic review by [Qiulin et al.](#) indicated that inter-nursing LA can be influenced by hospital management, perpetrators, victims, and sociodemographic factors [43]. The research results emphasize the importance of systemic factors, such as stress at work and abuse of power, in shaping aggressive behavior in the health care system [42,44,45]. Involving department heads and management in reducing these behaviors can be crucial [46]. Nurses' work environment should be conducive, and evidence-based nursing should be encouraged to promote high-quality care [47]. When the nursing environment is unfavorable, turnover may increase. About 3.7 million nurses work in other countries due to adverse working environments. A shortage of 5.7 million nurses is predicted by 2030 [48]. In research on the motives for leaving the profession, [Kurtović et al.](#) emphasize the urgent need to address the burnout syndrome of young nurses. It would be interesting to investigate how negative behaviors in healthcare contribute to these findings [49].

In the original questionnaire, the subscales contributing factors, seriousness of aggression, and fear of retaliation can have four answers on the Likert scale [32]. In the translated and adapted NBHC survey, a 5-point Likert scale was set for the same subscales to better nuance the answers, the possibility of expressing attitudes and opinions more precisely, and avoiding neutral answers [50]. This study's exploratory factor analysis revealed a five-factor structure with high internal consistency and reliability. It was shown that each of the five factors has extremely high internal consistency reliability ( $\alpha > 0.80$ ), and the distribution of items by factors is completely identical to that obtained in the validation study by [Layne et al.](#) [32]. The Cronbach alpha coefficient was, respectively, for the factor Contributing factors 0.86, the factor Seriousness of aggression, the factor Use of aggression 0.79, the factor Fear of retaliation 0.95, and the factor Frequency of aggression 0.83. Testing the normality of the distribution of results of the factors Contributing factors and Seriousness of Aggression was positively asymmetric (shifted towards lower values). In contrast, the remaining factors were negatively asymmetric. However, test-retest reliability was moderate. All correlations were statistically significant. The correlation was the highest for the factors of Seriousness (0.754) and Frequency of Aggression (0.725), while it was the lowest for the factor Contributing factors (0.528). These results indicate the possibility that participants' perceptions of this factor vary over time, which may be a consequence of changing working conditions or personal circumstances [38]. The results of divergent validity (correlation with the Toronto Empathy questionnaire) and convergent validity (correlation with the Aggression Questionnaire) confirm that the questionnaire reliably distinguishes different constructs. Negative correlations between aggression and dimensions such as frequency and severity of aggression further support the instrument's validity [51]. Although the five-factor structure was confirmed, the fit indices of the model (CFI = 0.811; RMSEA = 0.114; SRMR = 0.197) suggest the need for further optimization. In the literature, various criteria for index values are stated that show whether the structure of the measuring instrument is good enough. It is recommended that the CFI should not be higher than 0.90 [52]; in this case, it was 0.811. RMSEA and SRMR indices should be less than 0.10 [53], [54], but the index had slightly higher values here. A value of the relative Chi-square that is less than 3.00 is most often accepted as a model of good fit to the data, although in practice, some researchers also accept a value of 5.00 [55]. In this case, it was 5,028. Confirmatory factor analysis thus confirmed the 5-factor structure of the questionnaire to some extent. The study will be repeated on a larger sample as the researchers further plan to check whether the model fits the data.

## 5. Conclusions

This study provides the basis for further research into negative behavior regarding LA and VA in healthcare institutions. The questionnaire's identified dimensions can help develop targeted interventions to reduce aggressive behavior and create a safer work environment. The practical implications of translating and validating the NBHC questionnaire into Croatian language include the possibility of measuring the systematic assessment of lateral and vertical aggression in health care in the Republic of Croatia and countries with similar languages and cultures. These results indicate that the NBHC questionnaire is a valid and reliable instrument with high internal consistency, satisfactory test-retest reliability, and an acceptable factor structure. This research is a solid foundation for further application of the NBHC questionnaire. The data obtained with a new measuring instrument can be used to develop targeted educational programs and interventions to improve working relations and reduce conflicts. It also enables monitoring the frequency and causes of negative behavior over time, supporting strategic decision-making in human resource management. A validated questionnaire can contribute to strengthening the professional status of nurses and creating a safer and more supportive work environment.

Further instrument validation and implementation in different contexts are crucial for practical application. To verify the findings, the study recommends repeating the research with a larger sample and possibly improving the CFA model.

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**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** The data presented in this study are available on request from the corresponding author.

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## References

1. Workplace Violence/End Nurse Abuse [Internet]. ANA. 2018 [cited 2024 Nov 11]. Available from: <https://www.nursingworld.org/practice-policy/work-environment/end-nurse-abuse/>
2. European Agency for Safety and Health at Work, Milczarek M. Workplace violence and harassment: a European picture [Internet]. LU: Publications Office; 2010 [cited 2024 Nov 11]. Available from: <https://data.europa.eu/doi/10.2802/12198>
3. Zhang J, Zheng J, Cai Y, Zheng K, Liu X. Nurses' experiences and support needs following workplace violence: A qualitative systematic review. *J Clin Nurs*. 2021 Jan;30(1–2):28–43. <https://doi.org/10.1111/jocn.15492>
4. Shorey S, Wong PZE. A qualitative systematic review on nurses' experiences of workplace bullying and implications for nursing practice. *J Adv Nurs*. 2021 Nov;77(11):4306–20. <https://doi.org/10.1111/jan.14912>

5. Mammen BN, Lam L, Hills D. Newly qualified graduate nurses' experiences of workplace incivility in healthcare settings: An integrative review. *Nurse Educ Pract.* 2023 May;69:103611. <https://doi.org/10.1016/j.nepr.2023.103611>
6. Cooper CL, Swanson N. Workplace violence in the health sector. Organización Internacional de Trabajo, Organización Mundial de la Salud, Consejo Internacional de Enfermeras Internacional de Servicios Públicos (2002)
7. Eneroth M, Gustafsson Sendén M, Schenck Gustafsson K, Wall M, Fridner A. Threats or violence from patients was associated with turnover intention among foreign-born GPs - a comparison of four workplace factors associated with attitudes of wanting to quit one's job as a GP. *Scand J Prim Health Care.* 2017 Jun;35(2):208–13. <https://doi.org/10.1080/02813432.2017.1333319>
8. Framework guidelines for addressing workplace violence in the health sector [Internet]. [cited 2024 Nov 11]. Available from: <https://www.who.int/publications/i/item/9221134466>
9. Choi SH, Lee H. Workplace violence against nurses in Korea and its impact on professional quality of life and turnover intention. *J Nurs Manag.* 2017 Oct;25(7):508–18. <https://doi.org/10.1111/jonm.12488>
10. Liu J, Gan Y, Jiang H, Li L, Dwyer R, Lu K, et al. Prevalence of workplace violence against healthcare workers: a systematic review and meta-analysis. *Occup Environ Med.* 2019 Dec 1;76(12):927–37. doi: 10.1136/oemed-2019-105849
11. Al-Azzam M, Al-Sagarat AY, Tawalbeh L, Poedel RJ. Mental health nurses' perspective of workplace violence in Jordanian mental health hospitals. *Perspect Psychiatr Care.* 2018 Oct;54(4):477–87. <https://doi.org/10.1111/ppc.12250>
12. Arnetz JE, Hamblin L, Ager J, Luborsky M, Upfal MJ, Russell J, et al. Underreporting of Workplace Violence: Comparison of Self-Report and Actual Documentation of Hospital Incidents. *Workplace Health Saf.* 2015 May;63(5):200–10. <https://doi.org/10.1177/2165079915574684>
13. Crilly J, Chaboyer W, Creedy D. Violence towards emergency department nurses by patients. *Accid Emerg Nurs.* 2004 Apr;12(2):67–73. <https://doi.org/10.1016/j.aeen.2003.11.003>
14. Laschinger HKS. Impact of workplace mistreatment on patient safety risk and nurse-assessed patient outcomes. *J Nurs Adm.* 2014 May;44(5):284–90. <https://doi.org/10.1097/nna.0000000000000068>
15. Houck NM, Colbert AM. Patient Safety and Workplace Bullying: An Integrative Review. *J Nurs Care Qual.* 2017;32(2):164–71. <https://doi.org/10.1097/ncq.0000000000000209>
16. Zapf D, Escartín J, Scheppa-Lahyani M, Einarsen SV, Hoel H, Vartia M. Empirical findings on prevalence and risk groups of bullying in the workplace. In: *Bullying and Harassment in the Workplace* [Internet]. CRC Press; 2020 [cited 2024 Nov 11]. p. 105–62. Available from: <https://www.taylorfrancis.com/chapters/edit/10.1201/9780429462528-5/empirical-findings-prevalence-risk-groups-bullying-workplace-dieter-zapf-jordi-escartin%C3%ADn-miriam-scheppa-lahyani-st%C3%A5le-valvatne-einarsen-helge-hoel-maarit-vartia>
17. Brooks A, Polis N, Phillips E. The New Healthcare Landscape: Disruptive Behaviors Influence Work Environment, Safety, and Clinical Outcomes. *Nurse Lead.* 2014 Feb 1;12:39–44. <http://dx.doi.org/10.1016/j.mnl.2013.11.006>
18. Magnavita N, Heponiemi T, Chirico F. Workplace Violence Is Associated With Impaired Work Functioning in Nurses: An Italian Cross-Sectional Study. *J Nurs Scholarsh Off Publ Sigma Theta Tau Int Honor Soc Nurs.* 2020 May;52(3):281–91. <https://doi.org/10.1111/jnu.12549>
19. Roche M, Diers D, Duffield C, Catling-Paull C. Violence toward nurses, the work environment, and patient outcomes. *J Nurs Scholarsh Off Publ Sigma Theta Tau Int Honor Soc Nurs.* 2010 Mar;42(1):13–22. <https://doi.org/10.1111/j.1547-5069.2009.01321.x>

20. Jaber HJ, Abu Shosha GM, Al-Kalaldehy MT, Oweidat IA, Al-Mugheed K, Alsenany SA, et al. Perceived Relationship Between Horizontal Violence and Patient Safety Culture Among Nurses. *Risk Manag Healthc Policy*. 2023 Aug 14;16:1545–53. <https://doi.org/10.2147/rmhps.s419309>
21. Meissner JE. Nurses: are we eating our young? *Nursing (Lond)*. 1986 Mar;16(3):51–3.
22. Gillespie GL, Grubb PL, Brown K, Boesch MC, Ulrich D. “Nurses Eat Their Young”: A Novel Bullying Educational Program for Student Nurses. *J Nurs Educ Pract*. 2017;7(7):11–21. <https://doi.org/10.5430/jnep.v7n7p11>
23. Conti-O’Hare M. Walking wounded or wounded healer? *Reflect Nurs Leadersh*. 2004;30(1):39.
24. Zhang Y, Yin R, Lu J, Cai J, Wang H, Shi X, et al. Association between horizontal violence and turnover intention in nurses: A systematic review and meta-analysis. *Front Public Health*. 2022 Oct 6;10:964629. <https://doi.org/10.3389/fpubh.2022.964629>
25. Stanley KM, Martin MM, Nemeth LS, Michel Y, Welton JM. Examining lateral violence in the nursing workforce. *Issues Ment Health Nurs*. 2007 Nov;28(11):1247–65. <https://doi.org/10.1080/01612840701651470>
26. Abolfazl Vagharseyyedin S. Workplace incivility: a concept analysis. *Contemp Nurse*. 2015;50(1):115–25. <https://doi.org/10.1080/10376178.2015.1010262>
27. Cortina L, Magley V, Williams J, Langhout R. Incivility in the Workplace: Incidence and Impact. *J Occup Health Psychol*. 2001 Jan 1;6:64–80.
28. Guidroz AM, Burnfield-Geimer JL, Clark O, Schwetschenau HM, Jex SM. The Nursing Incivility Scale: Development and Validation of an Occupation-Specific Measure. *J Nurs Meas*. 2010 Dec;18(3):176–200. <https://doi.org/10.1891/1061-3749.18.3.176>
29. Layne D, Beall C, Bryant WT, Morris L, Craven H. Experiences with Negative Behavior and Incivility: Perspectives of Unlicensed Assistive Personnel and Registered Nurses. *Nurs Rep Pavia Italy*. 2024 Jul 16;14(3):1706–21. <https://doi.org/10.3390/nursrep14030127>
30. Magnavita N, Meraglia I. Poor Work Ability Is Associated with Workplace Violence in Nurses: A Two-Wave Panel Data Analysis. *Int J Environ Res Public Health*. 2024 Aug 24;21(9):1118. <https://doi.org/10.3390/ijerph21091118>
31. Polit DF, Yang FM. *Measurement and the Measurement of Change: A Primer for the Health Professions*. Wolters Kluwer; 2016. 350 p.
32. Layne DM, Nemeth LS, Mueller M, Wallston KA. The Negative Behaviors in Healthcare Survey: Instrument Development and Validation. *J Nurs Meas*. 2019 Aug 1;27(2):221–33. <https://doi.org/10.1891/1061-3749.27.2.221>
33. Munro BH. *Statistical Methods for Health Care Research*. Lippincott Williams & Wilkins; 2005. 518 p.
34. Spreng RN, McKinnon MC, Mar RA, Levine B. The Toronto Empathy Questionnaire. *J Pers Assess*. 2009 Jan;91(1):62–71. <https://doi.org/10.1080/00223890802484381>
35. Buss AH, Perry M. The Aggression Questionnaire. *J Pers Soc Psychol*. 1992 Sep;63(3):452–9. <https://doi.org/10.1037//0022-3514.63.3.452>
36. Field A. *Discovering Statistics Using IBM SPSS Statistics*. 4th ed. Singapore: SAGE; 2013. 678–684 p.
37. Fulgosi A. *Faktorska analiza*. Zagreb: Filozofski fakultet u Zagrebu; 1984.
38. Field AP, Gillett R. How to do a meta-analysis. *Br J Math Stat Psychol*. 2010;63(3):665–94.
39. Friganović A, Selič P. Where to Look for a Remedy? Burnout Syndrome and its Associations with Coping and Job Satisfaction in Critical Care Nurses—A Cross-Sectional Study. *Int J Environ Res Public Health*. 2021 Apr 20;18(8):4390. <https://doi.org/10.3390/ijerph18084390>

40. Hegney D, Tuckett A, Parker D, Eley RM. Workplace violence: Differences in perceptions of nursing work between those exposed and those not exposed: A cross-sector analysis. *Int J Nurs Pract*. 2010;16(2):188–202. <https://doi.org/10.1111/j.1440-172x.2010.01829.x>
41. Vessey JA, Demarco R, DiFazio R. Bullying, harassment, and horizontal violence in the nursing workforce: the state of the science. *Annu Rev Nurs Res*. 2010;28:133–57. <https://doi.org/10.1891/0739-6686.28.133>
42. Hutchinson M, Jackson D. Transformational leadership in nursing: towards a more critical interpretation. *Nurs Inq*. 2013 Mar;20(1):11–22. <https://doi.org/10.1111/nin.12006>
43. Xie Q, Xu H, Luo Z, Gong A, Wang L, Zhou J. Influencing factors of inter-nursing lateral violence: A qualitative systematic review. *J Clin Nurs*. 2024 Mar 18; <https://doi.org/10.1111/jocn.17120>
44. Edwards D, Burnard P. A systematic review of stress and stress management interventions for mental health nurses. *J Adv Nurs*. 2003 Apr;42(2):169–200. <https://doi.org/10.1046/j.1365-2648.2003.02600.x>
45. Ljevak I, Vasilj I, Lesko J, Neuberg M, Perić O, Ćurlin M. The impact of shift work on the metabolism and circadian rhythm in nurses and medical technicians. *Acta Clin Croat*. 2021;60(3):476. <https://doi.org/10.20471/acc.2021.60.03.19>
46. Einarsen SV, Hoel H, Zapf D, Cooper CL. The Concept of Bullying and Harassment at Work: The European Tradition. In: *Bullying and Harassment in the Workplace*. 3rd ed. CRC Press; 2020.
47. Lake ET, Sanders J, Duan R, Riman KA, Schoenauer KM, Chen Y. A Meta-Analysis of the Associations Between the Nurse Work Environment in Hospitals and 4 Sets of Outcomes. *Med Care*. 2019 May;57(5):353–61. <https://doi.org/10.1097/mlr.0000000000001109>
48. World Health Organization. State of the world's nursing 2020: investing in education, jobs and leadership [Internet]. Geneva: World Health Organization; 2020 [cited 2024 Nov 16]. Available from: <https://iris.who.int/handle/10665/331677>
49. Kurtovic B, Civka K, Cukljek S, Boskovic S, Kovacevic I, Spevan M, et al. A Single-Centre Study of Factors Associated with Components of Burnout Among Nursing Students in Croatia. *Int J Crit Care*. 2024 Jun 30;18(1):18–33. <https://doi.org/10.29173/ijcc83>
50. Joshi A, Kale S, Chandel S, Pal DK. Likert Scale: Explored and Explained. *Curr J Appl Sci Technol*. 2015 Feb 20;396–403.
51. Anderson CA, Bushman BJ. Human aggression. *Annu Rev Psychol*. 2002;53(1):27–51.
52. Bentler PM. On the fit of models to covariances and methodology to the Bulletin. *Psychol Bull*. 1992;112(3):400–4.
53. Hu L tze, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Struct Equ Model*. 1999;6(1):1–55.
54. Browne MW, Cudeck R. *Testing Structural Equation Models*. 1st ed. Vol. 154. Newbury Parc: Sage; 1993. 136–162 p.
55. Mueller RO. Confirmatory Factor Analysis. In: Mueller RO, editor. *Basic Principles of Structural Equation Modeling: An Introduction to LISREL and EQS* [Internet]. New York, NY: Springer; 1996 [cited 2024 Nov 17]. p. 62–128. Available from: [https://doi.org/10.1007/978-1-4612-3974-1\\_2](https://doi.org/10.1007/978-1-4612-3974-1_2)

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