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Missed nursing care in hospital environments during the COVID-19 pandemic

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Abstract

Background: Studies performed in Central European countries showed a high prevalence of missed nursing care in various clinical settings before the COVID-19 pandemic.
Aims: The aim of the study was to investigate which domains of the work environment were significant predictors of missed nursing care activities in Czech hospitals during the COVID-19 pandemic.
Methods: A cross-sectional study was used. The RANCARE guideline and STROBE checklist were followed for reporting in the study. The sample consisted of 371 nurses from four acute care hospitals. The MISSCARE Survey and the Practice Environment Scale of the Nursing Work Index questionnaires were used to collect data. The data were analyzed using multiple linear and logistic regression analyses.
Results: Nurses reporting unfavorable environments consistently describe a higher frequency of episodes of missed care. Prevalence estimates of missed care in Czech acute care hospitals during the COVID-19 pandemic was predicted from the overtime work, the nurses' perception of the "Nursing foundations for the quality of care," and their satisfaction with their current position.
Conclusions: Missed nursing care could be mitigated by improving the nurses' work environment. Domains of the nurse work environment are known as structural modifiable factors and their refinement could be a cornerstone for interventions to reduce the prevalence of missed nursing care.
Implications for nursing policy: Monitoring the conditions and aspects of the nurse work environment in hospitals and considering nurses' concerns about the work environment on an ongoing basis are important strategies for nurse supervision as well as for policymakers.

KEYWORDS
COVID-19, hospitals, missed care, nursing, nurse work environment, quality of care

INTRODUCTION

Over the past two decades, missed nursing care (MNC) has been the subject of extensively growing research efforts worldwide (Willis et al., 2021). Findings from the recent reviews (Jones et al., 2015; Papastavrou et al., 2014a) have showed that MNC is a highly prevalent phenomenon in acute care settings. Between 55% and 98% of nurses report that they were unable to complete all patient care (Jones et al., 2015). Six systematic reviews provide evidence for contributing factors and consequences of this global phenomenon (Griffiths et al., 2018; Jones et al., 2015; Kalánková et al., 2020; Papastavrou et al., 2014a; Recio-Saucedo et al., 2018; Zhao et al., 2020). These reviews confirmed that staffing adequacy and a supportive nurse work environment are related to lower prevalence of MNC. A favorable nurse work environment (NWE) has a significant inverse relationship upon MNC; that is, nurses working in favorable workplace conditions report a lower prevalence of MNC.

The COVID-19 pandemic has predominantly underlined what nurses "do" rather than what they "cannot do" (Kirwan & Schubert, 2020) and has positively changed the public perception of nurses in many countries. However, during

this critical period, nurses are facing challenges of concerns for workplace safety (feelings of fear and threat of infection, concerns about the transmission of the infection to family members or about the consequences of COVID-19, etc.), moral distress, increased workload, and reassignment to other work sections with short training times. COVID-19 workplace conditions had a negative impact on nurses' health (Havaei et al., 2021). Therefore, during the time of COVID-19 crisis, the influence of the NWE on MNC has received a new impetus in nursing research due to exacerbation of pre-existing workplace conditions contributing to MNC, mainly nurse staffing inadequacies, nurses' workloads, or time-pressured work environments (Bagnasco et al., 2020). MNC emerges during periods of time scarcity (VanFosson et al., 2018). The COVID-19 pandemic has magnified the imbalance between limited nursing resources and the increased needs of patients (Palese et al., 2019). Acute care hospitals have been faced with inadequate capacity, supply shortages, and the need for the reorganization of care processes (Santos et al., 2021, von Vogelsang et al., 2021). In addition, nurses have experienced specific workplace stressors (Havaei et al., 2021; Fernandez et al., 2020). In this context, the COVID-19 pandemic may compound the risk of MNC and its negative consequences on patients, nurses, and health care organizations.

BACKGROUND

The phenomenon of MNC has been particularly linked with rationing in health care systems (Scott et al., 2019). A variety of related terms, such as "unfinished nursing care" (Jones et al., 2015) and "implicit rationing of nursing care" (Schubert et al., 2013), are nowadays used alternately in the nursing literature and in cross-national studies to label the phenomenon of MNC (Willis et al., 2021). Despite ongoing discussions on the terminological issues or inconsistencies in the theoretical frameworks of MNC (Jones et al., 2021; Kalisch et al., 2009; Schubert et al., 2013), the concept of MNC is considered as a process measure or an indicator of poorer hospital care quality (Kalánková et al., 2020; Lake et al., 2020b). Seminal multinational research projects (RN4CAST, RANCARE) have significantly contributed to empirical evidence related to the underlying mechanisms and associated outcomes of MNC (Aiken et al., 2018; Ball et al., 2018; Jones et al., 2021). The mediating effect of MNC as a process measure between systemic or organizational factors and nurse and patient performance/outcomes was confirmed (Liu et al., 2018; Zhao et al., 2020). NWE is considered as a significant work-related factor affecting nurse and patient outcomes (Lake et al., 2019). From the perspective of the intermediary of MNC between organizational structure and patient or nurse outcomes, the associations between MNC events and adequacy of nurse staffing or the quality of the work environment have been primarily investigated (Jones et al., 2019; Zhao et al., 2020). Therefore, there is an extensive body of evidence (Ausserhofer et al., 2014; Aiken et al., 2018; Ball et al., 2018) indicating the contributing effect of structural dimensions of the NWE on MNC in the acute care setting.

The predictive value of the NWE on the prevalence of MNC activities is a well-established phenomenon, across clinical settings worldwide. Various aspects of the NWE were explored as contributing factors of the prevalence of MNC across multiple practice settings. Moreover, NWE characteristics were revealed as a stronger predictor of MNC than individual nurse variables such as gender, age, education, experience, work role, and so on (Griffiths et al., 2018; Jones et al., 2015). The NWE explained a significant amount of the variance in MNC activities in several studies performed in the United States (Campbell et al., 2020; Duffy et al., 2018; Hessels et al., 2015; Lake et al., 2019, 2020a; Park et al., 2018; Smith et al., 2020a); Brazil (Pereira Lima Silva et al., 2020); Europe (Ausserhofer et al., 2014; Aiken et al., 2018; Ball et al., 2014, 2019; Papastavrou et al., 2014b; Schubert et al., 2013; Zeleníková et al., 2020b); Australia (Smith et al., 2020b), and Asia (Kim et al., 2018). More than 20 studies examining the associations between NWE and MNC in acute care settings have been reported in recent reviews (Zhao et al., 2020). The Practice Environment Scale of the Nursing Work Index (PES-NWI, Lake, 2002) was used in 17 studies. However, 12 of them calculated a composite score averaging the scores of the dimensions of the PES-NWI to delineate the overall NWE, which does not provide a basis for specific interventions or supportive strategies for mitigating MNC activities. In addition, none of the above-mentioned studies explored the influence of specific domains in the NWE on MNC in the specific COVID-19 nurses' workplace conditions.

AIM

The aim of the study was to examine the frequencies, type of MNC, and the associations between nurses' reported NWE and MNC variables during the COVID-19 pandemic at inpatient medical and surgical wards in the Czech Republic.

METHODS

Design

The missed care approach—the Missed Nursing Care Model (Kalisch et al., 2009)—was used as the theoretical framework underlying the association between the NWE as one of organizational variables and MNC. This is an observational cross-sectional study using data from a survey of nurses employed in acute care hospitals in the Czech Republic who had expressed an interest in being involved in the survey. Non-probability sampling was used, and the survey included two valid and reliable scales—the MISSCARE Survey (Kalisch & Williams, 2009) and the PES-NWI (Lake, 2002).

Sample and setting

This study took place in 30 inpatient wards of four acute care hospitals in the Czech Republic. Nurses from these hospitals were included if they: (a) worked in the adult surgical or internal medicine wards; (b) provided direct nursing care to adult patients; (c) worked in rotating shifts; and (d) worked full-time or part-time. There were 554 questionnaires administered in paper-and-pencil form distributed between April and September 2020 by researchers. The overall response rate was 66.97%.

Data collection

Instrument

Data used in this analysis were a part of the project focusing on nurse work environment and missed nursing care (Gurková et al., 2021). The MISSCARE Survey was used to measure MNC in this project. This tool is composed of three sections, two of which use sub-scales. Part A (24 ordinal variable items) seeks responses about the type and frequency of MNC, from "rarely" to "always." The study reports only the analysis focused on the Part A—on the scope and prevalence of reported MNC. Findings and discussion on the reasons of MNC (Part B of the MISSCARE Survey) arising from this project were reported elsewhere (Gurková et al., 2021).

The NWE was assessed by the Czech version of the *Practice Environment Scale of the Nursing Work Index* (PES-NWI, Lake, 2002, comprising 31 items divided into five domains (two facility-level domains: "Nursing foundations for quality of care," "Nurse participation in hospital affairs"; and three-unit level domains: "Staffing and resource adequacy," "Nurse manager ability," "Leadership, and support of nurses," "Collegial nurse-physician relations"). The overall PES-NWI composite score and the mean of the items in each subscale were calculated. The internal consistency for 31 PES-NWI items in this study was $\alpha = 0.930$ and ranged from 0.789 to 0.867 in the domains. For statistical purposes, the NWE was divided into three categories according to recommendations proposed by Lake and Friese (2006).

Ethical consideration

The study was approved by the Ethics Committee of the Palacký University Olomouc Faculty of Health Sciences (approval number UPOL-1689/1040-2020). The informed written consent requested from the nurses was formally approved by the Ethics Committee. Survey questionnaires and informed consent were distributed to general nurses and practical nurses working in the selected departments. Nurses' participation in the study was voluntary, and data confidentially was assured.

Data analysis

Data used in this study were analyzed using the Statistical Package for the Social Sciences 20.0. After data-cleansing, descriptive statistics were used. Since the data (items of the PES-NWI and both parts of the MISSCARE Survey) were not normally distributed (the Shapiro-Wilk test was used to test the distribution of data), analysis was performed using nonparametric tests. For group comparisons, Kruskal–Wallis tests with post hoc Dunn's multiple comparison tests were used to test differences in rating MNC by the quality (categories) of the NWE. In addition, Pearson's chi-square tests with post hoc Bonferonni correction were performed. For determining the associations between variables, multiple linear regression analyses were used. Logistic regression analyses were performed to investigate the relationship between any missed nursing care and three NWE groups (favorable – mixed – unfavorable NWE). Dichotomized scores of the MISSCARE Survey items (the percentage of nurses reporting positive response frequency > rarely and never) were used in logistic regression analyses.

RESULTS

Sample characteristics

The sample consisted of 371 nurses working in one university hospital (n = 214, 57.7%) and three general non-teaching hospitals (n = 157, 42.3%). More than 50% of the nurses (n = 204, 56%) worked in medical care wards and 44% (n = 167) worked in surgical care wards. A significant portion of the nurses were female (92.5%) with an average of 15.70 (SD = 11.21) years of nursing experience and an average of 8.60 (SD = 8.17) years of nursing experience in the current hospital ward. The mean age was 37.51 (SD 10.74) years. Almost one-third of the participants (n = 82; 22.80%) had a baccalaureate or higher degree. Most nurses (77.2%) graduated from secondary nursing schools or had a higher degree (diploma). Most nurses reported that during the last shift they had up to six admissions (87.2%) and/or discharges (94.44%). The mean number of patients during their last shift was 12.35 (SD = 6.35). The mean number of hours of overtime during the last three months was 24.21 (SD 21.65). A substantial portion of participants (n = 315; 88%) did not consider leaving their current position.

Descriptive statistics

Overall 63% of nurses rated the NWE as favorable, 30% as mixed, and 7% as unfavorable. 63.8% of nurses left at least one element of care undone. On average, each nurse left 2.89 elements of care undone. Item – level frequencies of MNC ranged from 5.4% to 36.3%.

TABLE 1 Comparison of Missed Nursing Care activities (mean scale responses) by the type of nursing work environment

Missed nursing care (items of the MISSCARE Survey)[a]	Quality of nurse working environment				Post hoc Dunn's Multiple Comparison test		
	Favorable Mean	Mixed Mean	Unfavorable Mean	P[b]	Favorable vs. Mixed	Favorable vs. Unfavorable	Mixed vs. Unfavorable
"Documenting of all necessary data"	1.74	2.05	2.15	**0.034**	0.109	0.169	1
"Performing of intravenous/central line site care"	1.39	1.60	1.92	**0.008**	0.780	**0.006**	0.062
"Monitoring intake and output"	1.43	1.73	2.04	**0.002**	0.140	**0.004**	0.140
"Assessing vital signs as ordered"	1.36	1.65	2.04	**< 0.0001**	0.074	**< 0.0001**	**0.009**
"Performing focused reassessment according to patient condition"	1.50	1.85	1.96	**< 0.0001**	**0.002**	**0.028**	1
"Washing hands"	1.57	1.87	2.31	**< 0.0001**	0.053	**< 0.0001**	**0.020**
"Monitoring bedside glucose as ordered"	1.26	1.49	1.77	**0.001**	0.460	**0.001**	**0.016**
"Assessing patient each shift"	1.30	1.68	1.92	**< 0.0001**	**0.001**	**< 0.0001**	0.253
"Assessing effectiveness of medications"	1.66	2.04	2.35	**0.001**	**0.007**	**0.009**	0.697
"Acting on PRN medication requests"	1.57	1.78	2.00	0.278	–	–	–
"Administering medications within scheduled time"	1.61	2.12	2.54	**< 0.0001**	**< 0.0001**	**< 0.0001**	0.168
"Assisting with toileting needs"	1.64	1.79	2.08	**0.024**	0.379	**0.038**	0.358
"Responding to call light"	1.59	1.75	2.04	0.153	–	–	–
"Emotional support"	2.06	2.50	2.50	**0.002**	**0.003**	0.167	1
"Ambulation with patient"	2.64	3.06	3.31	**0.001**	**0.005**	**0.030**	1
"Turning patient"	1.88	2.11	2.62	**0.001**	0.073	**0.002**	0.128
"Performing oral care"	1.70	2.06	2.35	**< 0.0001**	**0.006**	**0.001**	0.254
"Feeding patient when the food is still warm"	1.53	1.71	2.15	**0.001**	0.437	**0.001**	**0.029**
"Performing patient bathing/skin care"	1.49	1.78	2.04	**< 0.0001**	**0.033**	**0.001**	0.109
"Performing skin/wound care"	1.36	1.59	1.96	**0.001**	0.299	**0.001**	**0.031**
"Setting up meals for patients who feed themselves"	1.37	1.60	2.08	**0.001**	0.726	**< 0.0001**	**0.009**
"Patient education"	1.76	2.11	2.60	**< 0.0001**	**0.030**	**< 0.0001**	0.063
"Interdisciplinary care conferences whenever held"	2.25	2.59	2.84	**0.005**	**0.036**	**0.041**	0.942
"Discharge planning"	1.48	1.81	2.00	**0.006**	**0.045**	**0.036**	0.790
MISSCARE Survey (overall mean score)	1.29	1.58	1.83	**< 0.0001**	**0.001**	**< 0.0001**	0.116

[a] Adapting according to Kalisch et al. (2009, p. 5) and Maloney et al. (2015, p. 232).
[b] Kruskal–Wallis tests with post hoc Dunn's multiple comparison tests were used.

The most frequent MNC activities were found to be activities of fundamental nursing care: ambulation three times per day or as ordered—36.3%; attending interdisciplinary rounds—26.3%; emotional support to the patient and/or family—22.8%; turning patient every 2 hr—16.3%; patient teaching—13.6%; and oral care—13%. Medically oriented tasks or treatments and patient monitoring were less frequently missed (bedside glucose monitoring—5.4%; skin/wound care—6%; focused reassessment—6.3%; monitoring of vital signs—6.5%; intravenous/central line site care—6.5%).

Relationship between NWE and MNC

Differences in missed nursing care according to three NWE groups/categories are presented in Tables 1 and 2.

Table 1 reports differences in the mean scale responses of MNC activities according to three NWE groups/categories. Table 2 reports differences in the dichotomized responses of MNC activities according to three NWE groups/categories. Statistically significant differences were found in almost all activities in both estimates. Nurses working in favorable conditions reported a lower prevalence of MNC activities than nurses working in a mixed or unfavorable NWE. Nurses reporting unfavorable environments consistently reported a higher prevalence of MNC. Wards with an unfavorable NWE showed greater means for the 22 activities compared to those with a favorable NWE. In addition, inpatient wards with unfavorable NWE showed a higher percentage for the 16 activities, compared to those with favorable NWE.

Logistic regression analyses were performed to investigate the relationship between MNC, five domains of the PES-NWI, and the overall PES-NWI score. Facility level domains of

TABLE 2 Comparison of Missed Nursing Care activities (dichotomized responses) by the type of nursing work environment

Missed nursing care (items of the MISSCARE Survey)[a]	Quality of nurse working environment				Post hoc Bonferonni correction		
	Favorable % Missed[b]	Mixed % Missed[b]	Unfavorable % Missed[b]	*P*[c] (χ^2-Test)	Favorable vs. Mixed	Favorable vs. Unfavorable	Mixed vs. Unfavorable
"Documenting of all necessary data"	7.4%	18.2%	23.1%	**0.003**	**0.009**	0.057	1.000
"Performing of intravenous/central line site care"	3.9%	9.2%	19.2%	**0.005**	0.141	**0.024**	0.498
"Monitoring intake and output"	5.2%	13.6%	23.1%	**0.001**	0.018	**0.015**	0.711
"Assessing vital signs as ordered"	3.0%	10.8%	19.2%	**0.001**	**0.009**	**0.001**	0.954
"Performing focused reassessment according to patient condition"	3.5%	10.0%	15.4%	**0.009**	**0.042**	0.069	1.000
"Washing hands"	6.5%	15.3%	23.1%	**0.004**	**0.024**	**0.033**	1.000
"Monitoring bedside glucose as ordered"	2.6%	9.0%	15.4%	**0.003**	**0.027**	**0.033**	0.912
"Assessing patient each shift"	3.0%	11.7%	19.2%	**0.0003**	**0.003**	**0.009**	1.000
"Assessing effectiveness of medications"	5.6%	18.9%	19.2%	**0.0003**	< **0.0001**	0.072	1.000
"Acting on PRN medication requests"	5.2%	11.7%	23.1%	**0.003**	0.093	**0.015**	0.606
"Administering medications within scheduled time"	4.8%	17.1%	26.9%	< **0.0001**	**0.001**	**0.0001**	0.753
"Assisting with toileting needs"	5,.6%	13.5%	23.1%	**0.002**	**0.036**	**0.018**	0.702
"Responding to call light"	6.1%	13.5%	23.1%	**0.004**	0.063	**0.027**	0.702
"Emotional support"	17.7%	32.4%	26.9%	**0.009**	**0.006**	0.861	1.000
"Ambulation with patient"	28.2%	50.5%	46.2%	**0.0003**	**0.0002**	0.177	1.000
"Turning patient"	11.7%	21.6%	34.6%	**0.002**	**0.048**	**0.003**	0.489
"Performing oral care"	8.6%	20.9%	19.2%	**0.004**	**0.003**	0.450	1.000
"Feeding patient when the food is still warm"	5.6%	12.6%	23.1%	**0.003**	0.072	**0.018**	0.645
"Performing patient bathing/skin care"	4.3%	16.2%	7.7%	**0.001**	**0.001**	1.000	1.000
"Performing skin/wound care"	2.6%	9.9%	19.2%	**0.0004**	**0.012**	**0.006**	0.561
"Setting up meals for patients who feed themselves"	4.4%	13.8%	19.2%	**0.002**	**0.006**	**0.033**	1.000
"Patient education"	8.2%	20.9%	32.0%	**0.0001**	**0.003**	**0.006**	0.876
"Interdisciplinary care conferences whenever held"	20.5%	35.5%	40.0%	**0.004**	**0.009**	0.081	1.000
"Discharge planning"	3.9%	11.7%	20.0%	**0.001**	**0.018**	**0.006**	0.606

[a] Adapting according to Kalisch et al. (2009, p. 5) and Maloney et al. (2015, p. 232).
[b] Missed = Occasionally + Frequently + Always
[c] Chi-Quadrat- tests were used.

the PES-NWI ("Nursing foundations for quality of care" and "Nurse participation in hospital affairs") were found to be the most significant predictors of MNC (Table 3). "Nursing foundations for quality of care" was found to be a significant predictor for the eleven MNC activities and "Nurse participation in hospital affairs" for the eight MNC activities.

In order to explain the associations between domains of the PES-NWI, other organizational factors and the mean composite score of the MISSCARE Survey, linear multiple regression analyses were performed. Spearman's correlations (r_s) and Kruskal–Wallis tests were performed before linear regression analyses to identify relevant organizational factors (independent variables) for the dependent variables (the mean composite score of the MISSCARE Survey). Five subscale scores of the PES-NWI—satisfaction with the current position, satisfaction with the level of teamwork, satisfaction with being a nurse, number of patients during their last shift, number of hours of overtime in the last 3 months, type of ward and type of hospital, leaving intentions—were entered as independent variables in the regression model. The overall PES-NWI composite was excluded because of multicollinearity (Variable inflation factors were 25.3 and Tolerance was 0.039). The mean composite score of the MISSCARE Survey was predicted from the overtime work ($\beta = -0.227$, $t = 4.155$, $p < .0001$); "Nursing foundations for quality of care" ($\beta = -0.214$, $t = -3.718$, $p = .0002$); and "Satisfaction with current position" ($\beta = -0.151$, $t = -2.621$, $p = .009$), explaining a total of 16% of the variance. However, the percentage of variance accounted for by MNC is low; and therefore, results suggest that MNC is not strongly influenced by NWE.

DISCUSSION

The number of nurses per capita in the Czech Republic is below the European Union average (OECD/European Union,

TABLE 3 Results of logistic regression analysis

Missed nursing care (items of the MISSCARE Survey)[a]	Predictor[b]	OR	95% CI	P
"Documenting of all necessary data"	Overall score	0.168	0.071 – 0.399	< 0.0001
"Performing of intravenous/central line site care"	NFQoC	0.124	0.041 – 0.376	0.0002
"Monitoring intake and output"	NFQoC	0.150	0.056 – 0.398	0.0001
"Assessing vital signs as ordered"	Overall score	0.105	0.034 – 0.324	< 0.0001
"Performing focused reassessment according to patient condition"	NPHA	0.202	0.080 – 0.508	0.001
"Washing hands"	NFQoC	0.173	0.069 – 0.432	0.0002
"Monitoring bedside glucose as ordered"	NPHA	0.148	0.054 – 0.404	0.0002
"Assessing patient each shift"	NFQoC	0.121	0.040 – 0.363	0.0002
"Assessing effectiveness of medications"	NPHA	0.187	0.086 – 0.406	< 0.0001
"Acting on PRN medication requests"	NFQoC	0.126	0.045 – 0.351	< 0.0001
"Administering medications within scheduled time"	NPHA "	0.263	0.098 – 0.708	0.008
	NFQoC	0.306	0.096 – 0.975	0.045
"Assisting with toileting needs "	NFQoC	0.161	0.062 – 0.419	0.0002
"Responding to call light"	NFQoC	0.132	0.050 – 0.352	< 0.0001
"Emotional support"	NFQoC	0.295	0.152 – 0.575	0.0003
"Ambulation with patient"	SRA	0.393	0.627 – 0.577	< 0.0001
"Turning patient"	NPHA	0.412	0.183 – 0.927	0.032
	NFQoC	0.358	0.138 – 0.927	0.034
"Performing oral care"	NPHA	0.319	0.161 – 0.631	0.001
"Feeding patient when the food is still warm"	NPHA	0.234	0.105 – 0.523	0.0004
"Performing patient bathing/skin care"	Overall score	0.169	0.063 – 0.449	0.0004
"Performing skin/wound care"	NFQoC	0.102	0.032 – 0.331	0.0001
"Setting up meals for patients who feed themselves"	NPHA	0.164	0.069 – 0.388	< 0.0001
"Patient education"	Overall score	0.142	0.061 – 0.332	< 0.0001
"Interdisciplinary care conferences whenever held"	NPHA	0.284	0.161 – 0.500	< 0.0001
"Discharge planning"	Overall score	0.160	0.057 – 0.447	0.0005

[a] Adapting according to Kalisch et al. (2009, p. 5) and Maloney et al. (2015, p. 232).
[b] Subscales of the PES-NWI
NFQoC – "Nursing Foundations for Quality of Care", NPHA – "Nurse Participation in Hospital Affairs", SRA – "Staffing and Resource Adequacy"

2020), and therefore there is less capacity to mitigate the frequencies of MNC during the pandemic. However, the prevalence of MNC in this study was not higher in comparison with recent studies conducted in Czech acute care settings before the COVID-19 pandemic (Jarošová et al., 2021; Zeleníková et al., 2021). Study findings show that MNC occurred in all categories of nursing care. The patterns and reasons of MNC revealed in this study were in line with previous studies in the Czech Republic (Jarošová et al., 2021; Zeleníková et al., 2019, 2020a, 2020b) and other European studies (Bragadóttir et al., 2017; Palese et al., 2015; Bagnasco et al., 2020) based on the missed care approach and conducted before the COVID-19 pandemic. In line with our results, a Swedish comparative study (von Vogelsang et al., 2021) revealed similar levels and reasons of MNC before and during the COVID-19 pandemic. On the other hand, its authors demonstrated a distinct pattern of MNC. Unlike our results, activities related to emotional and psychological needs had lower levels of omission (von Vogelsang et al., 2021). Study design and sample, findings related to perceived adequacy of ward staff and the mean patient-to-nurse ratio were similar in this study and other Czech studies with data collection before the COVID 19 pandemic (Jarošová et al., 2021; Zeleníková et al., 2021). Low level of staffing combined with an unexpected rise in patient acuity on wards were the most perceived causes of MNC before and during the COVID-19 pandemic (Gurková et al., 2021; Jarošová et al., 2021; Zeleníková et al., 2019). Our study was performed between the two waves of the COVID-19 pandemic, when acute care hospitals postponed elective surgery, and significant decrease in all-cause admissions was reported (OECD/European Union, 2020). These factors may contribute to comparable results related to the patterns and prevalence of MNC before and during the pandemic. In addition, health care students, retired and non-practicing, and foreign health workers were mobilized, and overtime work of frontline nurses was increased. Moreover in May, the acute care sector returned to their original functions, and hospitals resumed all elective procedures. During the data

collection period, the Czech Republic had one of the lowest per capita COVID-19 rates in European countries and pressure on intensive care hospital beds was lower than in Western Europe (Ministry of Health of the Czech Republic, 2021).

The frequencies of MNC in Czech acute care hospitals during the COVID-19 pandemic was mainly predicted from "the nurses' perception of the nursing foundations for quality of care." Surprisingly, this facility level domain of the PES-NWI was found to be the most significant domain of the NWE influencing MNC. However, the other studied dimensions of NWE were not, as proposed, significantly associated with MNC. Interestingly, neither "Staffing and resource adequacy" nor the self-reported patient-to-nurse ratio were found to be significant predictors. However, low correlations were found between staffing, resource adequacy, and MNC in previous studies from Central European countries (Friganovic et al., 2020; Gurková et al., 2020; Zeleníková et al., 2020a, 2020b, 2021). On the other hand, these surveys showed prevalent overtime work (Friganovic et al., 2020). Working overtime in this study was higher in comparison with recent studies conducted in Central European countries before the COVID-19 pandemic (Zeleníková et al., 2020a). A significant relationship between the prevalence of MNC and working overtime was found in multinational European research (Bruyneel et al., 2015; Griffiths et al., 2014). Lower prevalence of MNC, higher quality of care or patient safety can be revealed in areas in which nurses work less overtime (Bruyneel et al., 2015, Griffiths et al., 2014). Improving staffing and resource adequacy was confirmed as the most significant factor predicting lower prevalence of MNC activities in regression analyses performed in several studies (Kim et al., 2018; Park et al., 2018; Rochefort & Clarke, 2010; Schubert et al., 2013; Zúñiga et al., 2015). Zhao et al. (2020), in their recent systematic review, have concluded that two domains of the PES-NWI (staffing and teamwork) had a great impact on the prevalence of MNC. In the South Korean study (Kim et al., 2018), two domains of the PES-NWI ("Nurse manager ability, leadership, and support of nurses" and "Staffing and resource adequacy") were found to be influential factors of MNC. Park et al. (2018) identified three domains ("Staffing and resource adequacy", "Nurse–physician relations", and "Nurse participation in hospital affairs") that were significantly related to MNC. The burden of the COVID-19 pandemic on healthcare systems and hospitals significantly affected nurses and their perception of their work environment worldwide. Our results can provide an initial insight into individual areas of NWE in acute hospitals from nurses' perspectives and their impact on MNC. The issues regarding changing policies and procedures in hospitals, adequate provision of personal protective equipment (PPE), and training of hospital staff on the correct use of PPE have been highlighted in clinical settings during the first wave of COVID-19. Nurses had to follow many new rules and infection prevention and control guidelines. This may be one explanation why facility level domains of the PES-NWI and overtime work were found to be the most significant predictors of MNC in logistic regression analyses. Our study also highlights that persistent staffing inadequacy, increased overtime work, and job dissatisfaction during the pandemic may compound MNC and subsequently nurse and patient outcomes. Further research should examine the associations between specific COVID 19 workplace conditions (workplace relations, organizational support, organizational preparedness, workplace safety, and access to supplies and resources during the COVID-19 pandemic) and MNC.

Limitations

The data collection period was performed between April and September 2020. However, this period was initially planned for the end of December 2020 (Gurková et al., 2021). In response to the second wave of COVID-19 and deteriorating situation in Czech hospitals, we had to close this period prematurely in October 2020 (Gurková et al., 2021). The results have limited generalizability because data were obtained from hospitals only from one region in the Czech Republic and nonrandom, nonprobability sampling was applied. The cross-sectional design allows for no causal inferences.

CONCLUSION

The prevalence of MNC in Czech acute care hospitals during the COVID-19 pandemic was predicted from the number of hours of overtime in the last 3 months, the nurses' perception of the nursing foundations for quality of care, and their satisfaction with their current position. Missed nursing care could be mitigated by improving a positive nursing work environment and refinement of its aspects could be a cornerstone for interventions to reduce the prevalence of missed nursing care.

The implications for nursing policy

MNC is "a proxy for work intensification" (Willis et al., 2015). Nurses' perceptions of MNC in acute care hospitals during this critical period (Fernandez et al., 2020; Santos et al., 2021) could have implications to future workforce and strategies for policymakers and nurse supervisors. Inadequate COVID-19-specific guidance and training in hospitals, a lack of management support and counselling resources for nurses in hospitals, and inadequate financial protection and compensation for nurses could intensify the growing concerns about nurses' job outcomes—mainly nurse retention and turnover intention. The nature and extent of nurses' support from the management of wards, hospitals (maintaining a competent workforce, ensuring of adequate PPE and COVID-19-specific guidance and training, availability of specific supportive programs focused on the physical and psychosocial burden on nurses) can act as a protective aspect. "Overtime working" and "Nursing foundations for quality of care" were found to be the most significant predictors of the NWE during the COVID-19 pandemic. MNC is a unit outcome which was influenced by the

facility level domain of NWE in our study. This domain is a known modifiable factor (Kirwan & Schubert, 2020) and its refinement could be a cornerstone for interventions to reduce the prevalence of MNC. However, the other studied dimensions of the NWE were not, as proposed, significantly associated with MNC. The findings of this study could extend the available extensive evidence regarding the impact of the NWE on MNC. The organizational features of the NWE were measured from a nurse's perspective. Overtime working and so too the nursing workload has been increased in the midst of the COVID-19 pandemic. Monitoring the conditions and aspects of the NWE in acute care hospitals and considering nurses' concerns about their work environment on an ongoing basis are important strategies for nurse supervisors as well as for policymakers (Smith, 2020c).

Therefore, it is important for policymakers to cooperate with the hospital administrator and consult with nurses and nursing organizations on the implementation of strategies that promote a positive NWE and therefore MNC and patient safety.

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REPORTING GUIDELINE

The STROBE checklist for observational cross-sectional studies was followed for reporting of the research study.

CONFLICT OF INTEREST

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

AUTHOR CONTRIBUTIONS

E.G., Z.M., and L.S. made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data. E.G. and L.S. were involved in drafting the manuscript or revising it critically for important intellectual content. E.G. and Z.M. gave final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content. E.G., Z.M., and L.S. agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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REFERENCES

Aiken, L.H., Sloane, D.M., Ball, J., Bruyneel, L., Rafferty, A.M. & Griffiths, P. (2018) Patient satisfaction with hospital care and nurses in England: An observational study. *BMJ Open*, 8, e019189. https://doi.org/10.1136/bmjopen-2017-019189

Ausserhofer, D., Zander, B., Busse, R., Schubert, M., De Geest, S., Rafferty, A.M. et al. (2014) Prevalence, patterns and predictors of nursing care left undone in European hospitals: Results from the multicountry cross-sectional. RN4CAST study. *BMJ Quality & Safety*, 23, 126–135. https://doi.org/10.1136/bmjqs-2013-002318

Ball, J.E., Murrells, T., Rafferty, A.M., Morrow, E., & Griffiths, P. (2014) 'Care left undone' during nursing shifts: Associations with workload and perceived quality of care. *Bmj Quality & Safety*, 23, 116–125. https://doi.org/10.1136/bmjqs-2012-001767

Bagnasco, A., Catania, G., Zanini, M., Dasso, N., Rossi, S., Aleo, G. et al. (2020) Are data on missed nursing care useful for nursing leaders? The RN4CAST@IT cross-sectional study. *Journal of Nursing Management*, 28, 2136–2145. https://doi.org/10.1111/jonm.13139

Ball, J.E., Griffiths, P., Rafferty, A.M., Lindqvist, R., Murrells, T. & Tishelman, C. (2016) A cross-sectional study of 'care left undone' on nursing shifts in hospitals. *Journal of Advanced Nursing*, 72, 2086–2097. https://doi.org/10.1111/jan.12976

Ball, J.E., Bruyneel, L., Aiken, L.H., Sermeus, W., Sloane, D.M. et al. (2018) Post-operative mortality, missed care and nurse staffing in nine countries: A cross-sectional study. *International Journal of Nursing Studies*, 78, 10–15. https://doi.org/10.1016/j.ijnurstu.2017.08.004.

Bruyneel, L., Li, B., Ausserhofer, D., Lesaffre, E., Dumitrescu, I., Smith, H.L. et al. (2015) Organization of hospital nursing, provision of nursing care, and patient experiences with care in Europe. *Medical Care Research and Review*, 72, 643–664. https://doi.org/10.1177/1077558715589188.

Bragadóttir, H., Kalisch, B.J. & Tryggvadóttir, G.B. (2017) Correlates and predictors of missed nursing care in hospitals. *Journal of Clinical Nursing*, 26, 1524–1534. https://doi.org/10.1111/jocn.13449

Campbell, C.M., Prapanjaroensin, A., Anusiewicz, C.V., Baernholdt, M., Jones, T. & Patrician, P.A. (2020) Variables associated with missed nursing care in Alabama: A cross-sectional analysis. *Journal of Nursing Management*, 28, 2174–2184. https://doi.org/10.1111/jonm.12979

Duffy, J.R., Culp, S. & Padrutt, T. (2018) Description and factors associated with missed nursing care in an acute care community hospital. *Journal of Nursing Administration*, 48, 361–367. https://doi.org/10.1097/NNA.0000000000000630

Fernandez, R., Lord, H., Halcomb, E., Moxham, L., Middleton, R., Alananzeh, I. et al. (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*,103637, 111. https://doi.org/10.1016/j.ijnurstu.2020.103637

Friganovic, A., Režić, S., Kurtović, B., Vidmanić, S., Zelenikova, R., Rotim, C. et al. (2020) Nurses' perception of implicit nursing care rationing in Croatia—A cross-sectional multicentre study. *Journal Of Nursing Management*, 28, 2230–2239. https://doi.org/10.1111/jonm.13002

Griffiths, P., Dall'ora, C., Simon, M., Ball, J., Lindqvist, R., Rafferty, A.-.M. et al. (2014) Nurses' shift length and overtime working in 12 European countries. *Medical Care*, 52, 975–981. https://doi.org/10.1097/MLR.0000000000000233

Griffiths, P., Recio-Saucedo, A., Dall'ora, C., Briggs, J., Maruotti, A., Meredith, P. et al. (2018) The association between nurse staffing and omissions in nursing care: A systematic review. *Journal of Advanced Nursing*, 74, 1474–1487. https://doi.org/10.1111/jan.13564

Gurková, E., Adamkovič, M., Jones, T., Kurucová, R., Kalánková, D. & Žiaková, K. (2020) Factor analysis, validity of the perceived implicit rationing of nursing care instrument and prevalence and patterns of unfinished nursing care in Slovakia. *Journal of Nursing Management*, 8, 2036–2047. https://doi.org/10.1111/jonm.12887

Gurková, E., Bartoníčková, D., Mikšová, Z., Labudíková, M. & Chocholková, D. (2021) Reasons for unfinished nursing care from the perspective of nurses from regional and university hospitals. *Kontakt*, (in press). DOI:

10.32725/kont.2021.026. https://kont.zsf.jcu.cz/corproof.php?tartkey=knt-000000-0740

Havaei, F., Ma, A., Staempfli, S. & Macphee, M. (2021) Nurses' workplace conditions impacting their mental health during COVID-19: A cross-sectional survey study. *Healthcare*, 9, 84. https://doi.org/10.3390/healthcare9010084

Hessels, A.J., Flynn, L., Cimiotti, J.P., Cadmus, E. & Gershon, R.R.M. (2015) The impact of the nursing practice environment on missed nursing care. *Clinical Nursing Studies*, 3, 60–65. https://doi.org/10.5430/cns.v3n4p60

Jarošová, D., Gurková, E., Zeleníková, R., Plevová, I. & Janíková, E. (2021) Hospital and unit variables of missed nursing care in acute care hospitals: A cross-sectional study. *Journal of Clinical Nursing*, 30, 1099–1110. https://doi.org/10.1111/jocn.15655

Jones, T.L., Hamilton, P. & Murry, N. (2015) Unfinished nursing care, missed care, and implicitly rationed care: State of the science review. *International Journal of Nursing Studies*, 52, 1121–1137. https://doi.org/10.1016/j.ijnurstu.2015.02.012

Jones, T., Willis, E., Amorim-Lopes, M. & Drach-Zahavy, A. (2019) Advancing the science of unfinished nursing care: Exploring the benefits of cross-disciplinary knowledge exchange, knowledge integration and transdisciplinarity. *Journal of Advanced Nursing*, 75(4), 905–917. https://doi.org/10.1111/jan.13948

Jones, T., Drach-Zahavy, A., Sermeus, W., Willis, E. & Zelenikova, R. (2021) Understanding missed care: Definitions, measures, conceptualizations, evidence, prevalence, and challenges. In E. Papastavrou & R. Suhonen (Eds.) *Impacts of rationing and missed nursing care: Challenges and solutions* (pp. 9–47). Springer International Publishing. https://doi.org/10.1007/978-3-030-71073-6_2.

Kalánková, D., Kirwan, M., Bartoníčková, D., Cubelo, F., Žiaková, K. & Kurucová, R. (2020) Missed, rationed or unfinished nursing care: A scoping review of patient outcomes. *Journal of Nursing Management*, 28, 1783–1797. https://doi.org/10.1111/jonm.12978

Kalisch, B.J. & Williams, R.A. (2009a) Development and psychometric testing of a tool to measure missed nursing care. *Journal of Nursing Administration*, 39, 211–219. https://doi.org/10.1097/NNA.0b013e3181a23cf5.

Kalisch, B.J., Landstrom, G.L. & Hinshaw, A.S. (2009) Missed nursing care: A concept analysis. *Journal of Advanced Nursing*, 65, 1509–1517. https://doi.org/10.1111/j.1365-2648.2009.05027.x

Kim, K.-J., Yoo, M.S. & Seo, E.J. (2018) Exploring the influence of nursing work environment and patient safety culture on missed nursing care in Korea. *Asian Nursing Research*, 12, 121–126. https://doi.org/10.1016/j.anr.2018.04.003

Kirwan, M. & Schubert, M. (2020) Missed or rationed nursing care: Where to now for the nurse manager? *Journal of Nursing Management*, 28, 1767–1769. https://doi.org/10.1111/jonm.13078

Lake, E.T. (2002) Development of the practice environment scale of the nursing work index. *Research in Nursing and Health*, 25, 176–188. https://doi.org/10.1002/nur.10032

Lake, E.T., Sanders, J., Duan, R., Riman, K.A., Schoenauer, K.M. & Chen, Y. (2019) A Meta-analysis of the associations between the nurse work environment in hospitals and 4 sets of outcomes. *Medical Care*, 57, 353–361. https://doi.org/10.1097/MLR.0000000000001109

Lake, E.T., French, R., O'rourke, K., Sanders, J. & Srinivas, S.K. (2020a) Linking the work environment to missed nursing care in labour and delivery. *Journal of Nursing Management*, 28, 1901-1908. https://doi.org/10.1111/jonm.12856

Lake, E.T., Riman, K.A. & Sloane, D.M. (2020b) Improved work environments and staffing lead to less missed nursing care: A panel study. *Journal of Nursing Management*, 28, 2157-2165. https://doi.org/10.1111/jonm.12970

Liu, X., Zheng, J., Liu, K., Baggs, J.G., Liu, J., Wu, Y. et al. (2018) Hospital nursing organizational factors, nursing care left undone, and nurse burnout as predictors of patient safety: A structural equation modeling analysis. *International Journal of Nursing Studies*, 86, 82–89. https://doi.org/10.1016/j.ijnurstu.2018.05.005

Maloney, S., Fencl, J.L. & Hardin, S.R. (2015) Is nursing care missed? A comparative study of three North Carolina hospitals. *Medsurg nursing: official journal of the Academy of Medical-Surgical Nurses*, 24, 229–235.

Ministry of Health of the Czech Republic. (2021) COVID 19: Overview of the current situation in the Czech Republic. Available at: https://onemocneni-aktualne.mzcr.cz/covid-19 (Accessed 12 February 2021).

OECD/European Union. (2020) *Health at a glance: Europe 2020: State of health in the EU cycle*. Paris: OECD Publishing. Available at: https://ec.europa.eu/health/sites/default/files/state/docs/2020_healthatglance_rep_en.pdf (Accessed 11 June 2020)

Palese, A., Ambrosi, E., Prosperi, L., Guarnier, A., Barelli, P., Zambiasi, P. et al. (2015) Missed nursing care and predicting factors in the Italian medical care setting. *Internal and Emergency Medicine*, 10, 693–702. https://doi.org/10.1007/s11739-015-1232-6

Palese, A., Bassi, E., Tommasini, C., Vesca, R., Di Falco, A., De Lucia, P. et al. (2019) Developing policies and actions in response to missed nursing care: A consensus process. *Journal of Nursing Management*, 27, 1492–1504. https://doi.org/10.1111/jonm.12835

Papastavrou, E., Andreou, P. & Efstathiou, G. (2014a) Rationing of nursing care and nurse patient outcomes: A systematic review of quantitative studies. *International Journal of Health Planning and Management*, 29, 3–25. https://doi.org/10.1002/hpm.2160

Papastavrou, E., Andreou, P., Tsangari, H., Schubert, M. & De Geest, S. (2014b) Rationing of nursing care within professional environmental constraints: A correlational study. *Clinical Nursing Research*, 23, 314–335. https://doi.org/10.1177/1054773812469543

Park, S.H., Hanchett, M. & Ma, C. (2018) Practice Environment Characteristics Associated with Missed Nursing Care. *Journal of Nursing Scholarship*, 50, 722–730. https://doi.org/10.1111/jnu.12434

Pereira Lima Silva, R., Gonçalves Menegueti, M., Dias Castilho Siqueira, L., Araújo, T.R., Auxiliadora-Martins, M., Mantovani Silva Andrade, L. et al. (2020) Omission of nursing care, professional practice environment, and workload in intensive care units. *Journal of Nursing Management*, 28, 1986–1996. https://doi.org/10.1111/jonm.13005

Rochefort, C.M. & Clarke, S.P. (2010) Nurses' work environments, care rationing, job outcomes, and quality of care on neonatal units. *Journal of Advanced Nursing*, 66, 2213–2224. https://doi.org/10.1111/j.1365-2648.2010.05376.x

Santos, J.L.G.D., Balsanelli, A.P., Freitas, E.D.O., Menegon, F.H.A., Carneiro, I.A., Lazzari, D.D. et al. (2021) Work environment of hospital nurses during the COVID-19 pandemic in Brazil. *International Nursing Review*, 68, 228–237. https://doi.org/10.1111/inr.12662

Schubert, M., Ausserhofer, D., Desmedt, M., Schwendimann, R., Lesaffre, E., Li, B. et al. (2013) Levels and correlates of implicit rationing of nursing care in Swiss acute care hospitals – A cross sectional study. *International Journal of Nursing Studies*, 50, 230–239. https://doi.org/10.1016/j.ijnurstu.2012.09.016

Scott, P.A., Harvey, C., Felzmann, H., Suhonen, R., Habermann, M., Halvorsen, K. et al. (2019) Resource allocation and rationing in nursing care: A discussion paper. *Nursing ethics*, 26, 1528–1539. https://doi.org/10.1177/0969733018759831

Smith, J.G., Rogowski, J.A. & Lake, E.T. (2020a) Missed care relates to nurse job enjoyment and intention to leave in neonatal intensive care. *Journal of Nursing Management*, 28, 1940–1947. https://doi.org/10.1111/jonm.12943

Smith, S., Lapkin, S., Sim, J. & Halcomb, E. (2020b) Nursing care left undone, practice environment and perceived quality of care in small rural hospitals. *Journal of Nursing Management*, 28, 2166–2173. https://doi.org/10.1111/jonm.12975

Smith, J.G. (2020c) Strategies for improving the nurse work environment during the COVID-19 pandemic. Available at: https://www.myamericannurse.com/strategies-for-improving-the-nurse-work-environment-during-the-covid-19-pandemic/ [Accessed 15 December 2020].

Vanfosson, C.A., Jones, T.L. & Yoder, L.H. (2018) Monthly variation of unfinished nursing care at the US Army Burn Center. *Burns: Journal of the International Society for Burn Injuries*, 44, 1910–1919. https://doi.org/10.1016/j.burns.2018.03.008

Von Vogelsang, A.-C., Göransson, K.E., Falk, A.-C. & Nymark, C. (2021) Missed nursing care during the COVID-19 pandemic: A comparative observational study. *Journal of Nursing Management*. Accepted Author Manuscript. https://doi.org/10.1111/jonm.13392

Willis, E., Henderson, J., Hamilton, P., Toffoli, L., Blackman, I., Couzner, L. et al. (2015) Work intensification as missed care. *Labour & Industry: a journal of the social and economic relations of work*, 25(2), 118–133. https://doi.org/10.1080/10301763.2015.1060811

Willis, E., Zelenikova, R., Bail, K. & Papastavrou, E. (2021) The globalization of missed nursing care terminology. *International Journal of Nursing Practice*, 27, e12859. https://doi.org/10.1111/ijn.12859

Zeleníková, R., Gurková, E. & Jarošová, D. (2019) Missed nursing care measured by MISSCARE Survey – the first pilot study in the Czech Republic and Slovakia. *Central European Journal of Nursing and Midwifery*, 10, 958–966. http://doi.org/10.15452/CEJNM.2019.10.0002

Zeleníková, R., Gurková, E., Friganovic, A., Uchmanowicz, I., Jarošová, D., Žiaková, K. et al. (2020a) Unfinished nursing care in four central European countries. *Journal of Nursing Management*, 28, 1888–1900. https://doi.org/10.1111/jonm.12896

Zeleníková, R., Jarošová, D., Plevová, I. & Janíková, E. (2020b) Nurses' perceptions of professional practice environment and its relation to missed nursing care and nurse satisfaction. *International Journal of Environmental Research and Public Health*, 17, 3805-3805. https://doi.org/10.3390/ijerph17113805

Zeleníková, R., Jarošová, D., Plevová, I., Janíková, E., Polanská, A. & Mynaříková, E. (2021) Relationship between nursing practice environment and unfinished nursing care - the first results of research in the Czech Republic. *Zdravotnicke Listy*, 9, 12–18.

Zhao, Y., Ma, D., Wan, Z., Sun, D., Li, H. & Sun, J. (2020) Associations between work environment and implicit rationing of nursing care: A systematic review. *Journal of Nursing Management*, 28, 1841–1850. https://doi.org/10.1111/jonm.12895

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

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