

THE EFFECT OF NURSES' JOB CHARACTERISTICS ON MISSED NURSING CARE IN MEDICAL AND SURGICAL DEPARTMENTS IN SELECTED SLOVENIAN HOSPITALS—A CROSS-SECTIONAL STUDY

UČINEK ZNAČILNOSTI DELOVNIH MEST MEDICINSKIH SESTER NA NEIZVEDENO ZDRAVSTVENO NEGO NA INTERNISTIČNIH IN KIRURŠKIH ODDELKIH V IZBRANIH SLOVENSkih BOLNIŠNICAH - PRESEČNA RAZISKAVA

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Received: May 21, 2024

Accepted: Sep 16, 2024

Original scientific article

ABSTRACT

Aim: The aim was to examine the extent of missed nursing care (MNC), the reasons behind it and the contribution of nurses' job characteristics to MNC in Slovenian hospitals.

Keywords:

BERNCA-R

MISSCARE

Work environment

Nurse retention

Quality of healthcare

Workforce

Methods: A cross-sectional explorative research was conducted. The BERNCA-R and part B of the MISSCARE questionnaire were used. A total of 880 nurses from 10 hospitals in Slovenia participated with completed questionnaires; of those, 57.6% were healthcare assistants and 42.4% were registered nurses. Univariate, bivariate and multivariate analyses were performed.

Results: In the five-component solution of the MNC, the activities of 'Monitoring' (M=2.09; SD=0.909) and 'Caring, support, activation, education' (M=2.03; SD=0.822) were the most frequently missed, with the leading item being 'Conversation with a patient or their family' (M=2.45; SD=0.940). Labour resources (M=3.44; SD=0.642) were the most common reason for MNC, with inadequate number of staff (M=3.75; SD=0.660) as the leading item. The stepwise multiple regression model showed that the more significant the labour resources are, the more frequently MNC occurs in all five dimensions (p=0.000-0.002). Most job characteristics proved to be significant; however, as satisfaction with wages, years of employment and assessment of the quality of nursing care increase, MNC decreases in all five dimensions.

Conclusions: This study enables healthcare decision makers and managers at the national level and in healthcare organisations to understand the problem of missed nursing care and to plan and implement changes accordingly.

IZVLEČEK

Namen: Namen je bil preučiti obseg neizvedene zdravstvene nege (NZN), vzroke in vpliv značilnosti dela medicinskih sester na NZN v slovenskih bolnišnicah.

Ključne besede:

BERNCA-R

MISSCARE

delovno okolje

zadržanje medicinskih sester

kakovost zdravstvene oskrbe

delovna sila

Metode: Izvedena je bila presečna raziskava. Uporabljena sta bila BERNCA-R in MISSCARE (del B) vprašalnika. S popolno izpolnjenimi vprašalniki je sodelovalo 880 medicinskih sester iz 10 bolnišnic v Sloveniji, od tega 57,6 % tehnikov zdravstvene nege in 42,4 % diplomiranih medicinskih sester. Izvedene so bile univariatne, bivariatne in multivariatne analize.

Rezultati: V pet-komponentnem modelu NZN sta bili najpogosteje neizvedeni aktivnosti »Nadzor« (PV = 2,09; SO = 0,909) in »Skrb, čustvena podpora, aktivacija, edukacija« (P = 2,03; SO = 0,822), najpogosteje neizveden je bil pogovor s pacientom ali njegovo družino (PV = 2,45; SO = 0,940). Kadrovske viri (PV = 3,44; SO = 0,642) so bili najpogostejši razlog za NZN, pri čemer je bilo neustrezno število zaposlenih (PV = 3,75; SO = 0,660) najpogosteje izbrana trditev. Model postopne multiple regresije je pokazal, da pomembnejši, kot so kadrovske viri, pogosteje se NZN pojavlja v vseh 5 dimenzijah (p = 0,000-0,002). Večina značilnosti se je izkazala za pomembne; toda, ko se poveča zadovoljstvo s plačami, delovna doba in oceno kakovosti zdravstvene nege, se NZN zmanjša v vseh petih dimenzijah.

Zaključki: Ta raziskava omogoča odločevalcem in managerjem v zdravstvu na nacionalni ravni in v zdravstvenih organizacijah, da razumejo problem ter načrtujejo in uvedejo spremembe.

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1 INTRODUCTION

Missed nursing care (MNC) has been researched in many countries around the world. It is a phenomenon present in nursing care worldwide and was first described in a qualitative study by Kalisch (1). MNC refers to the withdrawal or non-performance of certain nursing care activities due to limited resources such as time, staff or knowledge (2). When nurses are faced with multiple demands and insufficient resources, they tend to prioritise, so they choose to leave some parts of nursing care delayed, only partially done or even undone (3). Since nursing care plays an important role in promoting the health and well-being of individuals, families and communities, MNC can lead to various negative public health consequences. Failure to provide nursing care in healthcare facilities decreases the quality of nursing care, causes dangerous events and complications, and ultimately leads to negative patient outcomes, such as patient dissatisfaction and readmissions, affecting patients' health or even lives (2, 4-12). The antecedents of MNC such as staffing, patient-to-nurse ratios, workload, non-nursing tasks, work environment, nurse characteristics, their experience and education levels, and satisfaction as well as the impact of these antecedents in terms of reducing or increasing MNC are well documented and have been researched over the last fifteen years (13, 14). Different aspects of work environment influenced the extent of MNC (15, 16), so paying attention to variables in the work environment and organisational characteristics is important for decreasing MNC. An unfavourable work environment is an important reason for an increased intent to leave nursing, and the decrease in the nursing care workforce is a predominant reason for the increase in MNC (17).

A representative survey on MNC in medical and surgical departments in Slovenian hospitals has not yet been conducted. Country-specific research is required to identify peculiarities related to the organisation of nursing care and the reasons given by nurses in order to convince policy makers to implement changes in decision-making and resource allocation.

The aim of this study was to investigate and describe the extent of MNC in Slovenian hospitals, the reasons for MNC as identified by nurses and the contribution of nurses' job characteristics to MNC in medical and surgical departments in selected Slovenian hospitals.

2 METHODS

Cross-sectional explorative research was conducted. The study design was modelled after research on this topic conducted worldwide, with the capacity to compare results from other European countries.

2.1 Instruments

The BERNCA-R questionnaire with 32 items was used for describing missed nursing activities. Using a 5-point scale (0-Not required, 1-Never, 2-Rarely, 3-Sometimes, 4-Often), respondents were asked to rate how frequently in the past seven working days they were unable to perform the tasks. We also used part B of the MISSCARE questionnaire with items on reasons for MNC; according to the authors, the two sections of the instrument can be used independently (3). The part B scale consists of 17 items, each having four response options (0-Not a reason for MNC, 1-Minor reason, 2-Moderate reason, and 3-Significant reason). The forward and backward translations were done by two translators specialising in healthcare terminology, using the same translation methodology as the RN4CAST study (18). Following the translation, content validation of the translated instrument items was conducted by a panel of Slovenian experts. Each statement was thoroughly checked for understandability and for substantive meaning in Slovenian with conceptual clarification. The next step was pilot testing of the instrument in a general hospital (this data was not included in the final results), additional post-test editing of the instrument, and repeated content validation. As previously established by other authors and thoroughly described in a systematic review of psychometric properties (19), our instruments are also valid (RMSR=0.0186 for BERNCA-R and RMSR=0.0154 for MISSCARE part B). Reliability in our case was also good, with BERNCA-R $\alpha=0.967$, and MISSCARE, part B $\alpha=0.928$. Consent to use the questionnaires was obtained from the authors. The study was approved by the National Medical Ethics Committee of Slovenia and informed consent was obtained from the participants.

2.2 Setting, sample characteristics and data collection

The data capture for this study was done at the same time as the RN4CAST data capture. All general hospitals in Slovenia were invited to participate in the survey. Eight general hospitals and both university medical centres (n=10) confirmed participation. Next, all registered nurses and healthcare assistants who provided direct nursing care in adult surgical and medical wards and worked shifts in a predetermined 14-days' time window (N=2813) were invited to participate in the study. Those on maternity leave, extended sick leave or study leave were excluded from participation. Data collection with paper-and-pencil approach was performed over a two-week period. Respondents returned the sealed envelope to the research coordinator at the agreed collection point. The majority of data was collected between 10 February and 7 March 2020, prior to the first wave of the COVID-19 pandemic in Slovenia. One hospital collected data between 8 and 20 June 2020, when the first COVID-19 wave was over.

2.3 Data analysis

Data was analysed using SPSS, version 27 software. Univariate, bivariate and multivariate statistical analyses were performed. Using the Principal Component Analysis (PCA) method, we changed the basic set of variables from the MISSCARE survey instrument and the BERNCA-R questionnaire into a new set of principal components (20). Communalities were set at 0.50. Bartlett's test of sphericity ($p < 0.05$) and the Kaiser-Meyer-Olkin test (> 0.6) were used. Cronbach's alpha was used to check for component reliability. Furthermore, a multiple regression model was used with the method of gradual inclusion of variables (STEPWISE) to determine the mutual dependence between groups of variables and to establish causality. The level of statistical significance was set at $p \leq 0.05$.

3 RESULTS

3.1 Participants

The response rate among nurses was 35.91% ($n=1010$), with hospital response rates ranging from 23.1 to 61.2%. Of the 1,010 respondents participating, 880 surveys were duly completed, so the database of 880 surveys thus created serves as the basis for all analyses.

3.2 Extent of missed nursing care

All 32 nursing activities included in the survey were missed to some extent. Here, the most and the least common missed nursing care activities are specified. The most

frequently missed nursing activity was conversation with a patient or their family members ($M=2.45$, $SD=0.940$), or nurses could not monitor confused patients closely enough so patients had to be sedated ($M=2.42$, $SD=1.005$) or restrained ($M=2.39$, $SD=0.992$). The least frequently missed activities were those related to daily living, such as assisting with the intake of food ($M=1.56$, $SD=0.809$), performing a sponge bath ($M=1.62$, $SD=0.833$), or changing the patient's bed linen ($M=1.64$, $SD=0.813$). According to the components of the MNC (the five-component solution), the activities of 'Monitoring' ($M=2.09$) and 'Caring, support, activation, education' ($M=2.03$) were the most commonly missed. To a lesser extent but still missing are the activities of 'Documentation' ($M=2.02$), 'Safety' ($M=1.85$), and 'Activities of daily living' ($M=1.72$) (Table 2).

Looking at the data according to the participating hospitals (Table 3), the average values of MNC reveal a trend of missing activities in the component of 'Caring, support, activation, education' occurring more frequently compared to the 'Activities of daily living'. Activities of 'Caring, support, activation, education' were missed significantly more often ($t=-13.548$; $p < 0.001$; $d=0.457$) than 'Activities of daily living'.

3.3 Reasons for missed nursing care

The data on the reasons for MNC was collected using the MISSCARE part B questionnaire. The most common reasons for MNC as identified by respondents were inadequate number of staff ($M=3.75$, $SD=0.660$), an unexpected rise in patient volume and/or acuity on the unit ($M=3.48$, $SD=0.838$), and urgent patient situations (e.g. a patient's condition worsening) ($M=3.40$, $SD=0.913$). The three-component solution on reasons for MNC reflects the same situation: 'Labour resources' ($M=3.44$) are the most common reason for MNC, followed by 'Material resources' ($M=3.20$), and finally 'Communication' ($M=2.98$) (Table 4).

3.4 Contribution of nurses' job characteristics to missed nursing care

Table 4 shows the results of multiple regressions, measuring the effect of reasons for MNC, and nurses' job characteristics on MNC (Table 5).

Table 1. Participant characteristics.

Nurse characteristics	n	%
General care registered nurses (RNs)	373	42.4
Healthcare assistants (HCAs)	507	57.6
Female	733	83.3
Male	147	16.7
Employment at surgical units	486	55.22
Employment at medical units	394	44.77
	M	SD
Mean age	37.08	10.55
Mean length of employment in nursing	15.34	11.12

Note: M-mean, SD-standard deviation

Table 2. 5-component PCA solution on MNC.

Component of MNC	M	SD	% of total variance explained	α
1 Monitoring	2.09	0.909	72.658	0.872
2 Caring, support, activation, education	2.03	0.822	68.555	0.997
3 Documentation	2.02	0.846	77.059	0.900
4 Safety	1.85	0.679	73.125	0.947
5 Activities of daily living	1.72	0.773	68.904	0.911

Note: 1-never, 2-rarely, 3-sometimes and 4-often missed; M-mean, SD-standard deviation, α -Cronbach's alpha

Table 3. Extent of MNC by participating institution.

Component of MNC	Monitoring		Caring, support, activation, education		Documentation		Safety		Activities of daily living	
	M	SD	M	SD	M	SD	M	SD	M	SD
Hospital										
1	2.07	0.832	2.13	0.934	1.95	0.714	2.01	0.741	1.79	0.777
2	1.73	0.669	2.11	0.860	1.63	0.504	1.87	0.734	1.53	0.528
3	1.96	0.808	2.01	0.763	1.77	0.752	1.91	0.755	1.62	0.617
4	1.96	0.679	2.18	0.643	1.73	0.535	1.87	0.589	1.45	0.533
5	2.12	0.815	2.09	0.926	1.89	0.674	2.05	0.805	1.86	0.743
6	2.04	0.582	1.99	0.809	1.78	0.502	1.96	0.733	1.73	0.451
7	1.99	0.961	2.49	1.059	2.12	0.623	2.48	0.872	1.94	0.899
8	2.19	0.708	2.34	0.754	1.93	0.462	2.24	0.911	2.29	0.782
9	1.91	0.929	1.89	1.020	1.77	0.760	1.94	0.956	1.52	0.928
10	2.11	0.764	2.20	0.803	1.88	0.657	2.01	0.833	1.78	0.640

Table 4. 3-component PCA solution on reasons for MNC.

Component	M	SD	% of total variance explained	α
1 Labour resources	3.44	0.642	63.809	0.962
2 Material resources	3.20	0.852	77.897	0.858
3 Communication	2.98	0.792	61.510	0.911

Note: 1- not a reason for MNC, 2-minor reason, 3-moderate reason and 4-significant reason; M-mean, SD-standard deviation, α -Cronbach's alpha

Table 5. The effect of reasons for MNC and different job characteristics on MNC.

	Dependent variables of MNC in 5 regression models									
	Monitoring		Documentation		Activities of daily living		Safety		Caring, support, activation, education	
R ²	0.128		0.165		0.178		0.228		0.143	
Constant	1.647		1.669		1.782		2.079		1.544	
Independent variables	B	p	B	p	B	p	B	p	B	p
Reasons										
Labour resources	0.186	<0.001	0.200	<0.001	0.127	0.002	0.197	<0.001	0.245	<0.001
Communication									-0.102	0.015
Material resources							-0.108	0.002		
Job characteristics*										
Work schedule flexibility			-0.078	0.034	-0.094	0.015				
Opportunities for advancement					0.165	<0.001	0.084	0.039		
Independence at work										
Professional status	-0.070	0.047					-0.092	0.015		
Wages	-0.059	0.050	-0.115	0.001	-0.103	0.006	-0.158	<0.001	-0.076	0.028
Educational opportunities										
Annual leave			-0.117	0.007			-0.109	0.010		
Sick leave			0.119	0.005	0.103	0.016	0.147	0.001	0.121	0.004
Study leave					-0.111	0.008	-0.069	0.049	-0.084	0.044
Other aspects of work										
No. of patients on recent shift			0.061	0.046						
Satisfaction with career			-0.096	0.005						
Years of work in nursing	-0.135	0.050	-0.138	0.049	-0.052	0.050	-0.170	0.031	-0.241	0.003
Quality of nursing care in unit	-0.138	<0.001	-0.130	<0.001	-0.201	<0.001	-0.213	<0.001	-0.137	<0.001
Assessment of work environment	-0.109	0.004			-0.117	0.002	-0.070	0.046	-0.140	<0.001
Intention to leave= nursing but not in hospital	0.071	0.028	0.086	0.007					0.088	0.006
Intention to leave=not in nursing							-0.072	0.020		

Note: R²-adjusted R-Squared, B-standard regression coefficient, p-statistical significance; *1-very dissatisfied, 2-a little dissatisfied, 3-moderately satisfied, 4-very satisfied.

As shown in Table 5, of the three components describing the reasons for MNC, 'Labour resources' explained all five dimensions of MNC. The more significant the 'Labour resources' become, the more MNC there is. Communication explains MNC in the dimension 'Caring', and 'Material resources' explain MNC in the dimension 'Safety'. The different variables describing nurses' work characteristics also proved to be significant, with only satisfaction with wages explaining all five dimensions. MNC decreases as satisfaction with wages increases. The variables 'Educational opportunities' and 'Independence at work' did not prove to be important in any dimension of MNC. The variables 'Years of work in nursing' and assessment of 'Quality of nursing care in unit' also proved to be important, as they both explain all five dimensions of MNC. The longer the respondents had worked in nursing and the better their assessment of nursing work quality at their unit, the lower the MNC. Similarly, we found that a better assessment of the work environment led to lower MNC in four dimensions, except 'Documentation'. On the other hand, we expected that a higher patient-to-nurse ratio in respondents' most recent shift would lead to a higher rate of MNC, but this was confirmed only for the 'Documentation' dimension. The last two rows show dummy variables. The intention to leave the hospital explains MNC for the dimensions 'Monitoring', 'Documentation' and 'Caring, support, activation, education', but only for respondents who would leave their current job for another nursing position but not in the current hospital. The intention to leave the hospital explains MNC for the dimension 'Safety', but only for respondents who would leave the nursing profession.

4 DISCUSSION

Understanding the most frequently missed activities and the underlying reasons for that provides an opportunity to plan changes in the organisation of nursing care in Slovenia by providing decision makers with concrete and valid data on the current situation in hospitals. We found that nursing activities related to the basic life needs and safety of patients are the least frequently missed. For these activities, not implementing them would have the most visible results. The most frequently missed activities are those of talking to patients and their families. A study conducted in 12 European countries (33,659 nurses in 488 hospitals) (21) has also shown that the most frequently missed nursing activity was comforting/talking to patients. Those activities are extremely important for the quality of patient care, but are sidelined due to the priority that medical/technical procedures and nursing interventions take in practice. The absence of these activities is not visible (unlike missed skin care or oral hygiene) and they do not affect immediate patient safety (such as,

for example, missed administration of a prescribed medication). As noted by Kirwan & Matthews (22), nurses are more likely to provide care that achieves immediate or short-term outcomes. However, missed psychological care (the dimension 'Caring, support, activation, education' falls into that category) which may not have immediate negative effects, often goes unaddressed. The unpredictability of the time required for psychological care, as opposed to physical care, may contribute to a tendency to ration these activities. Other authors (23) also noted that patient education is a frequently cited omission in nursing care. In their qualitative study, the theme of 'Not priority nursing care due to competing work demands and the missing workplace culture' emerged, and they emphasised the need for developing strategies for increasing patient education to prevent MNC and to recognise patient education as the next care-related indicator of quality of care. The next frequently missed activity is monitoring confused patients, which led to more frequent physical and drug immobilisation of patients due to a lack of monitoring. Monitoring confused patients is a challenge because it requires constant to very frequent presence of a nurse in the patient's room. In a Polish study (24), the authors came to somewhat different conclusions. The most frequently missed nursing activities were reviewing nursing care plans to familiarise themselves with the patient's condition, talking to the patient and/or their family and identifying the needs of newly admitted patients. The average rating of the individual components in our survey shows that 'Monitoring' is the most frequently missed nursing activity in Slovenia, closely followed by 'Care, support, activation, education'. Monitoring of hospital patients is a critical aspect of healthcare and can pose a high safety risk if missed. Interventions that are part of the dimension 'Care' have a major impact on the quality of life of patients and their relatives, especially post discharge. As authors (25) state in their comprehensive scoping review, regardless of the concept analysed—missed, rationed or unfinished nursing care—all have a negative impact on patient outcomes related to patient safety and quality of care.

Missed nursing care can be linked to its underlying reasons, the topmost being the insufficient number of staff, which in Slovenia is related to the long-standing and worsening shortage of nurses. We found that the highest mean value in the significance of reasons for MNC is related to 'Labour resources' and is confirmed as the most important reason. A shortage of nurses has been recorded since 2007 and varies between 20% and 30% (26). In addition, the number of patients per registered nurse in Slovenia is currently the highest in Europe and higher than in some non-European countries, which poses a high risk to the quality of nursing and healthcare overall (27). The regression model results did not confirm our expectations—that a higher number of patients cared for by the respondents in their last shift

would increase MNC—as this was only shown this for the dimension ‘Documentation’. The International Council of Nurses, representing nurses around the world (28), developed guidelines for the retention and continued employment of nurses, but unless policy makers make changes, labour resources will remain high on the list of reasons for MNC. Other authors have come to similar conclusions (22, 29-32), as labour resources were also cited as the most prevalent reason for MNC.

The association between nurse-related organisational factors and missed nursing care shows that, in addition to staffing, the working environment of nursing staff is also a significant reason for MNC. Hospitals with a more favourable working environment, lower patient-to-nurse ratios and fewer professional nurses reporting often carrying out non-nursing tasks had a lower prevalence of nurse-reported MNC (21). In relation to the nurses’ work environment, previous findings (33) have already stated that the working environment in Slovenia needs to be changed and that nurses lack opportunities for professional development; therefore, self-assessment of various aspects of work (e.g. wages, opportunities for advancement and professional development) is low. The results (34) indicate that nursing care is missed due to staff shortages, organisational problems and the working climate. A good working environment reduces MNC, less MNC is present when nurses have no intention of leaving the hospital, when they perceive adequate staffing in the unit, when they are satisfied with their current position, and with being a nurse, and when they are satisfied with the level of teamwork (35, 36). Organisational characteristics, nursing unit features and the degree of teamwork among nursing staff have an impact on MNC. Among other characteristics, professional roles, working hours, and adequate staffing can also potentially contribute to the occurrence of MNC. Our results showed which characteristics of the work environment and job satisfaction have an impact on whether or not nursing care is provided. We found that less nursing care was missed when satisfaction with wages, annual leave, study leave, professional status and work flexibility increased. The same applies to the number of years employed in nursing, the evaluation of nursing care quality, satisfaction with the career and the evaluation of the working environment. Nurses’ work environment has a strong influence on levels of missed care (4, 37), and nurses’ leadership is a very important element of the work environment. As the authors (38) state, the role of management and leadership of the healthcare service is central to mitigating the factors that contribute to the emergence of MNCs, especially labour resources. The main effects of lack of nursing care in the adult setting were an increase in mortality, adverse events and failure of care. A number of causative factors have been identified relating to ward environments, inadequate staffing and skill mix,

although the findings are inconclusive. Solutions include continuing education, reorganisation of wards and work, and appropriate skill levels (39).

The differences in the functioning and management of different national healthcare systems are the reason why it is of utmost importance to have national data based on which national solutions can be implemented. Identifying and addressing missed nursing care is crucial for the nursing profession and healthcare organisations so that optimal outcomes for patients and the well-being of nurses can be achieved (22, 34).

5 CONCLUSION

Missed nursing care needs to be addressed by healthcare management and policy, especially given the severe shortage of nurses in Slovenia and Europe and the potentially harmful consequences this can have for patients. If we look at the problem from a public health perspective, several consequences are possible: increased morbidity and mortality, delayed or inappropriate treatment, reduced patient safety, increased healthcare costs, poor management of chronic conditions and reduced effectiveness of healthcare interventions and prevention strategies. Nurse leaders can help address missed nursing care by having the opportunity to openly acknowledge and discuss missed nursing care. It is important to recognise this as a possible consequence of staff shortages. However, its effectiveness depends on support from the organisation (22). This study contributes to the understanding of nursing care practices in Slovenia and is internationally comparable, as MNC is an existing problem and the reasons for it need to be known in order for healthcare management to be able to plan and implement change.

ACKNOWLEDGMENT

We would like to thank and acknowledge the contribution of all the nurses who participated in the study and the staff who helped with organisation of the survey in healthcare institutions. The data capture for this study was carried out simultaneously with the RN4CAST study data capture. Our study presents part of the results of a doctoral dissertation.

CONFLICTS OF INTEREST

The authors declare that no conflicts of interest exist. The manuscript has not been published and is not under consideration for publication elsewhere.

FUNDING

The research received no external funding.

ETHICAL APPROVAL

Formal approval was obtained from the authors of the questionnaires Beatrice J. Kalisch (MISSCARE survey) and Maria Schubert (BERNCA-R survey). The study was approved by the National Medical Ethics Committee (No. 0120-488/2019/6) and informed consent was obtained from participants.

AVAILABILITY OF DATA AND MATERIALS

Data used in this study are available upon request.

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