ORIGINAL RESEARCH ORİJİNAL ARAŞTIRMA

Evaluation of Nursing Care Plans of Patients Monitored in the Intensive Care Unit with the Diagnosis of COVID-19: A Retrospective Study

Yoğun Bakım Ünitesinde COVID-19 Tanısı ile İzlenen Hastaların Hemşirelik Bakım Planlarının Değerlendirilmesi: Retrospektif Çalışma

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This study was presented as a poster presentation at the 6th National 2nd International Congress on Basic Nursing Care Congress between 15-17 September, 2022.

ABSTRACT Objective: This study aimed to examine electronic nursing care plans for patients who received treatment due to the diagnosis of coronavirus disease-2019 (COVID-19) in the intensive care units of a hospital. **Material and Methods:** The sample of this descriptive and retrospective study consisted of the electronic nursing care plans of 429 patients who received treatment due to the diagnosis of COVID-19 in the intensive care units of a hospital between 15 March, 2020 and 15 March, 2022. Data were collected between June and July 2022 using a descriptive characteristics form, a patient care plan evaluation form, and the quality measurement tool for nursing diagnosis, interventions, and outcomes. **Results:** The nurses were found to use 27 different nursing diagnoses in their care plans and they mostly preferred the nursing diagnoses of risk for infection (n=608), risk for ineffective breathing pattern (n=282), and risk for ımpaired oral mucous membrane integrity (n=233). The nurses labeled 87.66% of the nursing diagnosis correctly and identified 72.78% of the related factors and descriptive characteristics and 58.04% of the goals at an adequate level, 74.77% of the nursing interventions feasibly, and 47.26% of the evaluation at an adequate level. The mean score of the nurses for the quality measurement tool for nursing diagnosis, interventions, and outcomes was 51.82±6.89. **Conclusion:** It was seen that the nurses were sufficient in the electronic nursing process they prepared for the patients treated with the diagnosis of COVID-19, except for the evaluation, and the quality of the nursing process was above the average. It is recommended to provide training to nurses, especially for the evaluation stage of the nursing process.

Keywords: COVID-19; intensive care unit; nursing care planning; nursing process

ÖZET Amaç: Bu çalışma, bir hastanenin yoğun bakım ünitesinde koronavirüs hastalığı-2019 [coronavirus disease-2019 (COVID-19)] tanısı ile tedavi görmüş hastaların elektronik hemşirelik bakım planlarının incelenmesi amacıyla yürütülmüştür. **Gereç ve Yöntemler:** Tanımlayıcı ve retrospektif türde yürütülen çalışmanın örneklemini, 15 Mart 2020-15 Mart 2022 tarihleri arasında yoğun bakım ünitelerinde COVID-19 tanısı ile tedavi görmüş 429 hastanın elektronik hemşirelik bakım planları oluşturdu. Veriler, tanımlayıcı özellikler formu, hasta bakım planı değerlendirme formu, hemşirelik tanıları, girişimleri ve sonuçları için kalite ölçüm aracı ile Haziran-Temmuz 2022 tarihleri arasında toplandı. **Bulgular:** Hemşirelerin bakım planlarında 27 farklı hemşirelik tanısı kullandıkları, en çok enfeksiyon riski (n=608), solunum fonksiyonlarında etkisizlik riski (n=282) ve oral mukoz membranda bozulma riski (n=233) hemşirelik tanılarını tercih ettikleri görüldü. Hemşirelik tanı etiketlerinin %87,66'sının doğru, ilişkili olduğu faktör ve tanımlayıcı özelliklerin %72,78'i ve hedeflerin %58,04'ünün yeterli, hemşirelik girişimlerinin %74,77'sinin uygun ve değerlendirmenin %47,26'sının yeterli olduğu belirlendi. Hemşirelik tanıları, girişimleri ve sonuçları için kalite aracı puan ortalamasının 51,82±6,89 olduğu saptandı. **Sonuç:** Hemşirelerin COVID-19 tanısı ile tedavi gören hastalar için hazırladıkları elektronik hemşirelik sürecinde, değerlendirme dışındaki aşamalarda yeterli oldukları ve hemşirelik süreci kalitesinin ortalamanın üzerinde olduğu görüldü. Hemşirelere, hemşirelik sürecinin özellikle değerlendirme aşamasına yönelik eğitimlerin planlanması önerilmektedir.

Anahtar Kelimeler: COVID-19; yoğun bakım üniteleri; hemşirelik bakım planı; hemşirelik süreci

Nursing care should be used systematically with scientific problem-solving methods. For this purpose, it is necessary to benefit from the nursing process.[1]

The nursing process is defined as the identification of individuals' health needs, the determination and fulfillment of their care requirements in accordance

with these needs, and then the evaluation of the effectiveness of this nursing care.[2] The use of the nursing process has many benefits such as increasing the quality of care and making care visible, systematizing care practices, and ensuring the maintenance of information exchange.[3,4] The transfer of patient data and the nursing care process to the electronic environment with advanced technology, easy recording of nursing care practices, and access to data at any time have provided time and cost management.[5,6] As a matter of fact, it is essential to use electronic recording systems effectively in periods such as the coronavirus disease-2019 (COVID-19) pandemic when nursing care is pursued intensively.[7] For this reason, electronic nursing care plans have become important during the COVID-19 pandemic. In the literature, a limited number of studies have been conducted on the nursing process prepared by nurses during the COVID-19 pandemic.[8] Tosun et al. examined the nursing diagnoses that nurses frequently preferred during the COVID-19 pandemic and the problems they experienced while using the nursing process. It was reported that the nurses frequently used the nursing diagnosis of hopelessness and that 12.3% of them had difficulty determining the nursing diagnosis, 28.1% had difficulty in developing their care goals, 22.8% had difficulty in planning care interventions, 43.9% had difficulty in applying care practices, and 21.1% had difficulty in evaluating care practices.[9] Moorhead et al. developed a guide, which included North American Nursing Diagnosis Association (NANDA-I) nursing diagnoses, nursing interventions, and patient outcomes classifications, for nurses practicing in community or public health roles during the COVID-19 pandemic.[10] In studies conducted by Cengiz et al. and Barioni et al., the preferred nursing diagnoses for COVID-19 patients were identified.[11,12] Apart from these studies, no study has evaluated all the stages of the nursing process prepared for COVID-19 patients. Recording nursing interventions in intensive care units where the need for care is greater and the treatment and care of critically ill patients is maintained will increase the quality of care. For this reason, it is thought that examining the electronic nursing care plans of patients hospitalized and monitored in the intensive care unit with the di-

agnosis of COVID-19 during the COVID-19 pandemic will increase awareness of the subject. This research was conducted to examine the electronic nursing care plans of patients monitored in the intensive care units of a hospital due to the diagnosis of COVID-19.

RESEARCH QUESTIONS

1. What are the nursing diagnoses that nurses frequently identify?

2. Is the terminology used for the nursing diagnoses determined in the nursing care plan appropriate?

3. Are the etiological factors and descriptive features of the diagnoses determined in the nursing care plan sufficient?

4. Are the identified goals sufficient?

5. Are the nursing interventions appropriate for the preferred nursing diagnosis identified?

6. Is the evaluation made for the determined goal(s) sufficient?

7. Are the prepared nursing care plans of high quality?

MATERIAL AND METHODS

STUDY DESIGN

The research has a descriptive and retrospective design.

POPULATION AND SAMPLING

The population of the research consisted of all patients hospitalized in the intensive care units of a hospital between 15 March, 2020-15 March, 2022 and who were monitored due to the diagnosis of COVID-19. A total of 530 COVID-19 patients were monitored between the specified dates. Of these patients, 74 were not included in the study because no nursing care plan was prepared for them and 27 were not included due to incomplete data. In total, 429 patients' nursing care plans were examined.

DATA COLLECTION FORMS

In the research, data were collected using a descriptive characteristics form, a patient care plan evaluation form prepared by the researcher, and the quality

measurement tool for nursing diagnosis, interventions, and outcomes.[9-11,13]

The Descriptive Characteristics Form: The forms includes 7 (seven) questions regarding the patient's age, gender, intensive care unit, length of hospital stay, mechanical ventilation status, chronic disease, and having a pressure ulcer.[9-11]

Patient Care Plan Evaluation Form: The form consisted of 4 parts inclueding nursing diagnosis with associated factors and descriptive features, goals, nursing interventions, and evaluation. The nursing diagnosis preferred for each patient in the form was evaluated as "correct" or "false." For the evaluation of the nursing diagnoses, the Nursing Diagnosis List Grouped under the NANDA-Taxonomy II-Functional Health Patterns was used. Nursing diagnosis-associated factors and descriptive features were evaluated as "sufficient" or "insufficient." If all descriptive features of the patient were written, it was considered as "sufficient." In the form, the goals determined for each nursing diagnosis were evaluated as "sufficient" or "insufficient" in terms of being individual-centered, observable, measurable, time-limited, and realistic. If the goals does not have any of these characteristics, they were evaluated as insufficient. Nursing interventions were evaluated as "appropriate" or "inappropriate." Since the research is an archive review, it could not be evaluated whether the nursing interventions were sufficient or not. For this reason, nursing interventions were considered appropriate if they were related to the nursing diagnosis. If there was no intervention suitable for the diagnosis among the nursing interventions, it was considered as inappropriate. The evaluation section of the process was evaluated by the researcher as "sufficient" or "insufficient" in terms of plan features such as being goal-oriented, including objective/subjective data, and being clear and understandable. If the evaluations does not contain any of these features, it was considered as isufficient. The content validity was conducted with expert opinion method. For this purpose, expert opinions were obtained from 6 academicians (from fundamentals of nursing had conducted research on nursing diagnosis). The form was sent to them via email. The experts were asked to evaluate whether or not each section evaluated the nursing proses, on a scale rated between 1 and 4. On this scale, "not suitable" is 1 point, "needs to be made suitable" is 2 points, "suitable but requires small changes" is 3 points, and "very suitable" is 4 points. The agreement level of the expert opinions was examined using nonparametric test, Kendall's W analysis. The scores given by the experts were not statistically different (Kendall W=0.346; p>0.05), and there was agreement among the experts.

Quality Measurement Tool for Nursing Diagnosis, Interventions, and Outcomes: The tool was developed by Müller-Staub et al. in 2008 and its Turkish validity and reliability were established by Tuğrul et al. in 2021.[13] The scale consists of four sub-dimensions and 29 items in total. The quality of the prepared nursing care plan increases as the scale score increases. Nursing Diagnoses as Process (items 1-11): This section contains information about the patient or individual's hospitalization-related anxiety and coping processes, socio-cultural and spiritual characteristics, and patient relatives. Each item is ranked as 0=unrecorded, 1=partially recorded, and 2=recorded. Nursing Diagnoses as Outcomes (items 12-19): This section is about nursing diagnoses, which are arranged according to the PES (P: Problem, E: Etiology, S: Symptom) format. Information regarding the nursing diagnosis number, etiology, descriptive features, and nursing goals is included. Nursing Interventions (items 20-22): This section is about nursing interventions and consists of 3 items. Nursing-Sensitive Patient Outcomes (items 23-29): This section is about nursing outcomes. The 2nd, 3rd, and 4th sections are scored as 0=not recorded, 1=partially recorded, 2=well recorded, 3=almost fully recorded, and 4=fully recorded.

In the original validity and reliability study of the measurement tool, the Cronbach alpha coefficient was 0.83 for the section on nursing diagnoses as process, 0.98 for nursing diagnoses as outcomes, 0.90 for nursing interventions, and 0.99 for nursing-sensitive patient outcomes. In this research, the values were 0.88, 0.93, 0.91, and 0.94, respectively.

STATISTICAL ANALYSIS

The data obtained with the data collection tools were analyzed in the IBM SPSS 20.0 (IBM Corporation,

Armonk, NY, USA) software program. Statistical information such as frequency, percentage, minimum and maximum values, and mean and standard deviation was presented.

ETHICAL CONSIDERATIONS

After receiving the necessary permissions, the data were collected by the researcher from the hospital's information processing center and hospital archive using the identified data collection forms between June and July 2022. This research has been approved by the Human Research Ethics Committee of Yalova University (date: 27 April, 2022, no: 2022/63) and from the Y Provincial Directorate of Health (date: 06 July, 2022, no:2022/17). The study was conducted in accordance with the principles of the Declaration of Helsinki.

RESULTS

In the study, nursing care plans prepared for 429 patients who were hospitalized in the intensive care unit due to COVID-19 were examined. Some descriptive characteristics of the patients are presented in Table 1. The mean age of the patients was 72.20±12.86 years and 63.9% of the patients were male.

Nurses used 27 different nursing diagnoses for the patients monitored due to COVID-19. It was seen that they did not use any nursing diagnosis associated with sleep-rest, sexuality and reproduction, or value-belief patterns. In their care plans, the nurses mostly preferred the nursing diagnoses of risk for infection (n=608), ineffective breathing pattern (n=282), and impaired oral mucous membrane integrity (n=233), mostly used problem-based nursing diagnoses and used 3 collaborative problems. It was determined that 87.66% of the nursing diagnosis labels were identified correctly and that 72.78% of the nursing diagnosis-related factors and descriptive features were sufficient. It was seen that the factors and descriptive features related to the nursing diagnosis of ineffective coping did not include sufficient data (Table 2).

The outcomes by the nurses for nursing diagnoses, nursing interventions, and evaluations are presented in Table 3. It was observed that 58.04% of the goals determined by the nurses were sufficient, but

TABLE 1: Some descriptive characteristics of the patients (n=429).		
Variables	**Mean (minimum-maximum)**	**SD**
Age	72.20 (24-96)	12.86
Length of stay (days)	7.66 (0-40)	6.32
	n	**%**
Sex		
Female	155	36.1
Male	274	63.9
Units		
Internal intensive care	14	3.3
Surgical intensive care	49	11.4
General intensive care 1	71	16.6
General intensive care 2	61	14.2
Reanimation intensive care	234	54.5
Ventilator		
Used	358	83.4
Not used	71	16.6
Chronic disease		
Present	296	69
Absent	133	31
Pressure ulcer		
Present	49	11.4
Absent	380	88.6

SD: Standart deviatiton.

the outcomes regarding nutrition and metabolic, activity-exercise, self-perception, and coping stress tolerance patterns were insufficient at a rate higher than 50%. It was determined that 74.77% of the nursing interventions were appropriate for the nursing diagnosis. Nursing interventions for diagnoses in the elimination pattern were mostly appropriate (88.69%). In the evaluation stage of the nursing process, 47.26% were sufficient and the evaluation of nursing diagnoses under only health perception-health management, nutrition-metabolic, and elimination patterns was sufficient at a rate of higher than 50% (Table 3). It was observed that the nurses repeated the statements regarding nursing interventions and used limited objective and subjective data. Moreover, in the study, it was seen that the nursing outcomes classification system was not used for the evaluation.

The mean score of the nurses on the Quality Measurement Tool for Nursing Diagnosis, Interventions, and Outcomes created for patients monitored

TABLE 2: Diagnosis label and associated factors and descriptive characteristics of nursing diagnosis.								
	Nursing diagnosis label				Associated factors and defining characteristics			
	correct		false		sufficient		insufficient	
Functional health patterns	n	%	n	%	n	%	n	%
Health perception-health management	30	100	-	-	17	56.6	13	43.4
Nutrition and metabolic	1266	100	-	-	1062	83.88	204	16.2
Elimination	115	100	-	-	52	45.21	63	54.79
Activity-exercise	135	32.14	285	67.86	367	87.38	53	12.62
Cognitive-perceptual	183	100	-	-	53	28.96	130	71.4
Sleep-rest	0	0	0	0	0	0	0	0
Self-perception-self-concept	33	100	-	-	5	15.16	28	84.84
Sexuality-reproductive	0	0	0	0	0	0	0	0
Role-relationship	125	100	-	-	68	54.4	57	45.6
Coping-stress tolerance	104	99.04	1	0.96	47	44.76	58	55.24
Collaborative problems	42	100	-	-	17	40.47	25	59.53
Total	2033	87,66	286	12.34	1688	72.78	631	27.22

TABLE 3: The outcomes by the nurses for nursing diagnoses, nursing interventions, and evaluations.												
	Outcomes				Nursing interventions				Evaluation			
	sufficient		insufficient		appropriate		appropriate		sufficient		insufficient	
Functional health patterns	n	%	n	%	n	%	n	%	n	%	n	%
Health perception-health management	10	33.3	20	66.7	25	83.3	5	16.7	29	96.6	1	3.4
Nutrition and metabolic	789	62.32	477	37.68	1013	80.01	253	19.99	662	52.29	604	47.71
Elimination	57	49.56	58	50.44	102	88.69	13	11.31	84	73.04	31	26.96
Activity-exercise	265	63.09	155	36.91	281	66.9	139	33.1	136	32.38	284	67.62
Cognitive-perceptual	39	21.31	144	78.69	127	69.4	56	30.6	131	71.6	52	28.4
Sleep-rest	0	0	0	0	0	0	0	0	0	0	0	0
Self-perception-self-concept	17	51.51	16	48.49	18	54.54	15	45.46	2	6.06	31	93.94
Sexuality-reproductive	0	0	0	0	0	0	0	0	0	0	0	0
Role-relationship	62	49.6	63	50.4	73	58.4	52	41.6	32	25.6	93	74.4
Coping-stress tolerance	84	80	21	20	61	58.09	44	41.91	4	3.80	101	96.2
Collaborative problems	23	54.8	19	45.2	34	81	8	19	16	38.1	26	61.9
Total	1346	58,04	973	41,96	1734	74,77	585	25,23	1096	47,26	1223	52,74

in the intensive care unit with the diagnosis of COVID-19 is given in Table 4. The mean total score of the nurses on the measurement tool was 51.82±6.89. It was determined that the nurses scored above the average in all sub-dimensions of the tool, except for the nursing-sensitive patient outcomes sub-dimension.

DISCUSSION

In the research, in which the nursing care plans prepared for patients monitored in the intensive care unit due to the diagnosis of COVID-19 were examined, it was seen that the nurses mostly used the nursing di-

TABLE 4: The mean score of the nurses on the Quality Measurement Tool for Nursing Diagnosis, Interventions, and Outcomes.		
Sub-dimensions of the tool	Minmum-maximum	Mean±SD
Nursing diagnoses as process	8-21	11.57±2.80
Nursing diagnoses as outcomes	12-32	17.76±2.59
Nursing interventions	4-12	8.73±1.50
Nursing-sensitive patient outcomes	6-23	13.75±3.80
Total	37-73	51.82±6.89

SD: Standart deviatiton.

agnoses regarding metabolic-nutrition. It was also observed that the nursing diagnoses of risk for infection

and ineffective breathing pattern, which are directly associated with COVID-19, were frequently used. In the study conducted by Cengiz et al., it was seen that intensive care nurses frequently used the nursing diagnoses of risk for infection and ineffective breathing patterns for patients who were monitored due to the diagnosis of COVID-19 and who underwent stem cell transplantation.[11] Tosun et al. stated that nurses often preferred the nursing diagnosis of impaired gas exchange in the field of activity-exercise for COVID-19 patients.[9] In a review, it was stated that nurses mostly used the diagnosis of "impaired gas exchange."[14] The study findings are consistent with this research. Symptoms such as coughing, difficulty in breathing, and shortness of breath, which are among the main symptoms of COVID-19, affect the patient's ventilation status.[15] In addition, due to the airborne transmission of the disease, these nursing diagnoses are expected to be involved in the nursing process. However, it was considered a limitation that nurses did not prefer any nursing diagnoses related to sleep-rest, sexuality and reproduction, or value-belief patterns. This finding is related to the fact that patients are not evaluated with a holistic approach. In many studies conducted, it is stated that nurses are limited in the interventions of patients' values-beliefs, sexuality and reproductive system.[14,16-18] The lack of interventions for sleep patterns in the study may be related to the fact that the patients are generally unconscious.

After the analysis and interpretation of the data in the diagnostic stage of the nursing process, it is necessary to formulate the correct nursing diagnosis and write it on the diagnosis label.[19] In this process, it is expected that the factors associated with the nursing diagnosis are identified correctly and that the descriptive features of the patient for the nursing diagnosis are listed in detail. In the study, it was observed that the nurses used nursing diagnoses that were not included in NANDA-I Taxonomy II although they correctly identified the diagnosis labels. This finding may be related to the non-updated nursing diagnosis list. However, the nursing diagnoses in the current electronic nursing diagnosis list can be changed. Therefore, it can be said that the nurses also had a lacked knowledge of diagnosis labels. As a matter of fact, in the study, it was seen that the nurses

insufficiently noted descriptive features and related factors. In previous studies, it was reported that the nurses had a lack of knowledge about the NANDA-I taxonomy.[20-22] Furthermore, some studies reported that nurses working in the intensive care unit did not have enough time to use electronic recording systems, so the data entries may have been incomplete.[23-25] This finding may be related to the increase in the number of patients per nurse, especially during the pandemic process. In addition, this result shows that the institution could not update the nursing diagnosis list.

In the nursing process, nurses choose and implement interventions that will improve the current health status of the patient and achieve the expected results in accordance with the goals they have set. Nursing outcomes for nursing diagnosis are expected to be time-limited, patient-oriented, measurable, and observable.[19] Coping-stress tolerance pattern was the most recorded nursing outcomes classification outcomes feasibly in the study. This result may be related to the fact that nurses frequently use nursing diagnoses for this pattern. Because the intensive care environment can create anxiety and uncertainty for conscious patients. In the uncertainty of the pandemic, more diagnoses for this pattern are expected. However, the choice of this diagnosis was found to be limited in the study. This result may be related to the fact that most of the patients in the study are on mechanical ventilator. In a study conducted in the emergency unit, it was stated that no nursing diagnosis for coping-stress tolerance pattern was used in the nursing process.[16] This situation has been associated with the physiological stabilization of the patients in the emergency unit as their priority. In a study conducted in a pre-hospital emergency, anxiety level and emotional support were the most recorded nursing outcomes classification outcomes.[17] It can be said that the general condition of COVID-19 patients and the clinic they receive treatment are directly related to nursing care goals.

In the study, it was seen that nursing interventions were quite feasible. The fact that this rate is especially high in the elimination pattern may be related to the fact that nursing interventions under this pattern are frequently used in periods other than the

COVID-19 pandemic. Because patients treated in the intensive care unit do not have stable consciousness status and bowel incontinence is frequently encountered.[26,27] Studies show that patients hospitalized with the diagnosis of COVID-19 also experience similar problems.[28-30] In this case, it can be said that nurses continue their routine nursing interventions during pandemic, and case-specific interventions are limited.

The final stage of the nursing process is evaluation. An evaluation is conducted to determine the quality of nursing care and its effect on the patient's health status. An evaluation should include goal-oriented objective and subjective data as much as possible.[19] In the study, it was seen that nurses did not sufficiently evaluate the nursing care. This finding may be related to the intense work pace of nurses, their lack of awareness about the importance of record keeping, and thus the prevalence of insufficient patient records. In addition, the non-use of NOC in the institution may have caused insufficient evaluation. The number of studies on this topic is limited in the literature.[31-33] In the study conducted by Lopes et al., it was stated that the NOC determined by the nurses was sufficient.[31] In the study conducted by Yom et al., it was stated that the nursing outcomes should be expanded.[32] In the national literature, it was seen that the study on the subject were carried out with nursing students and that the students were not sufficient in the evaluation stage of the nursing process.[33] Since insufficiency in the evaluation process will affect the problem-solving process, it should be developed to improve the quality of patient care.

In the study, it was seen that the nursing care plans prepared for the patients monitored due to the diagnosis of COVID-19 were of high quality. In their study, Wang et al. stated that the examined electronic nursing care plans were insufficient.[34] In the study conducted by Teuly et al. in the neonatal intensive care unit, it was seen that the nursing records and the nursing process were sufficient.[25] In their study, Akhu-Zaheda et al. reported that the nursing records were not of high quality.[35] Such different results on the subject may be related to the use of different evaluation materials and the implementation of studies in different institutions and units. However, the fact that nurses use the electronic nursing process well despite the increase in their workload in the pandemic may show that they were good in this regard before the pandemic.

LIMITATION OF THE STUDY

The limitation of the study is that the study was conducted in a single center and the findings could not be generalized to all hospitals.

CONCLUSION

It was concluded that the nurses that participated in this study had some deficiencies in the nursing care plans that they prepared for the patients receiving treatment in the intensive care unit for COVID-19, especially in the evaluation stage, and that the nursing care plans were of high quality. In line with the research results, it is recommended to update the electronic nursing diagnosis list, provide feedback to the nurses about the stages of the nursing process, organize training programs on aspects to consider in the evaluation stage, and use the NOC classification system in the nursing process. To carry out patient care management more effectively, it is necessary to examine the obstacles that nurses face in using electronic patient care plans for global health problems such as COVID-19.

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