RESEARCH ARTICLES

Oncology nurses' practices on diagnosis, prevention, and management of delirium

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ABSTRACT

Objective: To determine oncology nurses' practices about the diagnosis, prevention, and management of delirium.

Background: Delirium can occur at any stage of the disease process of patients with cancer, or it can develop when the first diagnosis is learned.

Study Design and Methods: A cross-sectional design was used. The study was conducted between May 10 and July 16, 2021 in Turkey with 181 nurses who worked in the oncology units of public and private hospitals and were reached by using the snowball sampling method. Data were statically analysed.

Results: Of the nurses, 48.6% have a bachelor's degree and the average working years in oncology is 6.61 ± 5.47, 38.1% had been making routine delirium assessments, and only 5.5% of these nurses had prior experience using a screening tool. Also, 38.1% of the nurses had difficulty diagnosing delirium, with the patient group they had difficulty diagnosing most often being patients with dementia, hypoactive delirium, and those who were sedated, respectively. The rate of nurses who worked with a patient with delirium in the last month was 31.5%, and 40.3% could not determine the type of delirium. While the nurses' definition of hyperactive delirium findings was high, their definition of hypoactive delirium findings such as lethargy (48.8%), decreased psychomotor activity (47.7%) and withdrawal (56.1%) was low. In the study, it was found that being male, having an undergraduate degree in nursing, having professional work experience, having a lower patient-to-nurse ratio, using a screening tool, having experience working with patients diagnosed with delirium, and having positive views on delirium treatment had a significant impact on nurses' routine follow-up of delirium ($p<0.05$). In addition, it was determined that those who had experience working with patients diagnosed with delirium had less difficulty diagnosing delirium ($p<0.05$). Also, 82.4% of the nurses stated that they first applied pharmacological treatment after the diagnosis of delirium and that they most frequently used haloperidol (35%), benzodiazepine (29.8%) and dexmedetomidine (22.8%). Although nurses were self-confident about the management of delirium, they thought that it was difficult to prevent and treat delirium in patients with cancer.

Conclusions: Although approximately one-third of the nurses had cared for patients diagnosed with delirium in the last month, the rate of using a measurement tool for routine delirium screening and diagnosis was low.

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Implications for research, policy, and practice: It was concluded that it was important to support the education of nurses with case examples in in-service or certificate programs, workforce planning should be made according to patient/nurse ratios, and evidence-based care procedures should be prepared and implemented so that oncology nurses could do routine follow-up of delirium in patients diagnosed with cancer, use a valid and reliable screening tool, and manage effectively and appropriately delirium.

What is already known about this topic?

- Although the incidence of delirium is high in cancer patients, it is not always diagnosed appropriately or managed effectively.
- Despite the factors limiting diagnosis and treatment in cancer patients, 40% of delirium cases can be prevented.
- Delirium is a syndrome that can be managed with pharmacological and non-pharmacological applications.

What this paper adds:

- In the diagnosis and management of delirium, whether nurses use screening tools and do routine follow-up, the level of their education, their experience working with patients diagnosed with delirium, the number of patients they provide care for, their self-confidence, and their positive attitudes towards delirium are factors that impact on the diagnosis and outcomes.
- Nurses should be supported with case-based education that will increase their knowledge and skills regarding the diagnosis and management of delirium in patients diagnosed with cancer. This approach will increase nurses' experience before they encounter a patient with delirium.
- For effective diagnosis and management of delirium, workforce planning should consider patient/nurse ratios in oncology units as a workload management and patient safety measure.
- It is recommended to prepare and implement institutional care procedures for the diagnosis, management and follow-up of delirium in oncology units.

Keywords: Delirium; Diagnosis; Management; Nurse; Oncology

OBJECTIVE

To determine oncology nurses' practices about the diagnosis, prevention, and management of delirium.

BACKGROUND

Delirium is an acute confusional state in which there are fluctuations in the level of consciousness during the day resulting from organic brain dysfunction.[1] Delirium can occur when cancer is first diagnosed or at any stage of the disease.[2] The incidence of delirium in patients with cancer is between 13-85%.[3] In a study conducted by Sieber et al., delirium was observed in 36% of the patients with malignancy, and the incidence of delirium development was higher in patients with liver, lung, and colorectal malignancies, respectively.[4] It has been reported that this variance in the incidence of delirium differs according to the delirium assessment method used in studies, education of personnel, and the delirium subtype.[1,5,6] Hyperactive delirium is often associated with agitation and discomfort, and increased psychomotor activity makes delirium easily recognized.[2,6] In hypoactive delirium, findings such as withdrawal and lethargy, which manifest themselves with a decrease in psychomotor activity, are dominant. Therefore, it is more likely to be overlooked.[2,6]

Delirium is a syndrome that increases morbidity, mortality, and cost of care in patients with cancer and affects the care burden of patients and healthcare professionals.[4,7,8] In a prospective cohort study, it was determined that the presence of delirium in patients with cancer increased the risk of mortality by a factor of six.[9] It was found that 40.2% of palliative care patients receiving inpatient treatment in a tertiary health center in Mexico developed delirium and that the average life expectancy was 11 days in patients with delirium but 21 days in patients with no delirium.[7]

Considering the effects of delirium on patient outcomes, early and accurate diagnosis with a reliable and valid measurement tool is very important.[10] Diagnosis of delirium in patients with cancer can be difficult due to the failure to use guidelines and assessment protocols for delirium, lack of communication within the team, and clinical characteristics of delirium.[11,12] Although there are guidelines for the management of delirium in cancer patients, the inconsistent awareness of nurses about the recommendations in these guidelines or the lack of an institutional guide-based care procedure may support the inadequacy in diagnosis.[6,13] Nurses' diagnosis of delirium in patients with cancer is affected by factors, such as the presence of dementia and depression in the patient, advanced age, visual and hearing impairment, the presence of hypoactive delirium, fluctuating

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course of delirium symptoms, health professionals' lack of knowledge, and inconsistent use of screening tools.[14] Lack of routine delirium monitoring with a delirium screening tool in patients with cancer is mostly associated with a poor prognosis, and treatment can be difficult due to multifactorial reasons.[1,15,16] In a study on the characteristics of patients with malignancy who developed delirium in the intensive care unit, it was found that patients were older and had a higher disease severity score, incidence of sepsis and septic shock, and length of stay in the unit.[4]

In the European Society for Medical Oncology (ESMO) Clinical Practice Manual, it has been noted that oncology nurses are concerned about how to evaluate delirium and how to manage delirium during evening and night shifts.[6] De la Cruz et al., found that delirium could not be detected in 61% of patients hospitalised in cancer care centers and that delirium findings were evaluated as pain.[17] According to the ESMO, Clinical Practice Guidelines for Delirium in Adult Cancer Patients (2018), the diagnosis of delirium should be made by an appropriately educated and competent healthcare professional using the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) or International Classification of Diseases (ICD-10) criteria.[17] The Memorial Delirium Assessment Scale (MDAS) and the Delirium Rating Scale Revised-98 (DRS-R98) are used to less often evaluate the severity of delirium in patients with cancer.[6,13] The Confusion Assessment Method (CAM), on the other hand, is a reliable and valid tool for diagnosing delirium rapidly by health practitioners with the appropriate training and education.[18] While DSM-5 and ICD-10 are delirium diagnostic tools mostly used by doctors, CAM is a diagnostic tool that nurses can use easily and safely.[18] According to The ESMO Clinical Practice Guideline, since there are no randomised controlled trials on screening for delirium in patients with cancer, there is not enough evidence to recommend the routine use of screening tools in diagnosing delirium.[6] For this reason, if there is any change in cognitive or emotional behaviour or psychomotor activity that is suggestive of delirium, assessment of delirium by a healthcare professional trained and competent in the use of a delirium screening tool is recommended.[6]

Despite the frequency of delirium in patients with cancer, factors limiting the diagnosis, and patient characteristics, 30-40% of delirium cases can be prevented.[19,20] The application of non-pharmacological nursing approaches in patients with cancer is critical for the prevention of delirium.[5,13] In a meta-analysis study examining the effect of non-pharmacological interventions to reduce the incidence and duration of delirium in critically ill patients, it was reported that multi-component interventions, such as the arrangement of the physical environment, participation of the family in care, exercise support, improvement of cerebral blood flow, and maintenance of current care were the most effective practices for preventing delirium and reducing the length of hospital stay.[21] Non-pharmacological measures in the management of delirium are the first line of treatment and should potentially be supported by pharmacological measures if indicated. In pharmacological approaches, drug treatment should be planned according to patient characteristics and the underlying causes.[10] While Dexmedetomidine, one of the pharmacological agents, is recommended for both the treatment and prevention of delirium in the intensive care unit and post-surgical patients, the routine use of antipsychotics is not recommended.[10,22]

To improve patient outcomes and increase the quality of life in delirium management, strengthening the knowledge and practices of nurses giving care to oncology patients regarding the diagnosis, prevention, and management of delirium comes to the fore. Research shows that the use of an evidenced-based delirium protocol, supported by appropriate education, increases nurses' delirium knowledge, management skills, and self-confidence.[6,23,24]

This study was conducted to determine the current trends in oncology nurses' diagnosis, prevention, and management practices of delirium. It is anticipated that the results obtained from the study will contribute to carrying out further studies to improve patient care outcomes by identifying delirium diagnosis, prevention, and treatment approaches of nurses working in oncology units and the variables affecting these approaches.

STUDY DESIGN AND METHODS

STUDY DESIGN

This is a cross-sectional study that was carried out by using the snowball sampling method. It was conducted with the participation of nurses working in oncology units (medical oncology, surgical oncology, radiation oncology, radiotherapy unit, outpatient chemotherapy unit) of public and private hospitals in Turkey between May 10 and July 16, 2021. There are seven geographical regions in Turkey. When the status of oncology nurses, who can be reached via e-mail and social media (Facebook, Instagram, WhatsApp), in terms of representing the universe according to these seven regions was examined; it was found that the participation rate was 58% from the Central Anatolia Region, 23.2% from the Marmara Region, 3.9% from the Eastern Anatolia Regin, 5% from the Aegean Region, 4.4% from the Black Sea Region, 4.4% from the Mediterranean Region, and 1.1% from the Southeastern Anatolia Region.

The methodological procedures for this study were conducted according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for cross-sectional studies (See Appenix A).

SELECTION AND DESCRIPTION OF PARTICIPANTS

The number of nurses working in oncology units in Turkey could not be found; thus, the total number of nurses could not be determined in the study. Consequently, the sample size was calculated using the sampling unknown universe method.[25] In this method, in cases where the population is not fully known, the sample is calculated by taking into account the frequency of occurrence of the event (p).[25] In a study on evaluating oncology nurses' knowledge about delirium risk factors, assessment, and management, the delirium knowledge level of nurses was 69%.[23] According to this information, when the formula $n=t^2.p.q/d^2$, where p=0.69 and q=0.31, was used, the sample size of the study was found to be 164.[25] A total of 183 oncology nurses were reached during the data collection period determined in the study. Since two nurses did not submit consent, the study was completed with 181 nurses.

The inclusion criteria: Nurses who worked in oncology units, volunteered to participate in the study, and filled out the online questionnaire completely were included in the study.

The exclusion criterion: Nurses who did not work in oncology units and did not agree to participate in the study were not included in the study.

DATA COLLECTION

In this study, an "online questionnaire form" created on Google Forms was used as the data collection tool. Due to the restrictions imposed by the COVID-19 pandemic nationally and globally, the online survey participation link was sent to oncology nurses through social media and communication platforms. Nurses reached by using the snowball method were taken as reference, and other nurses were reached through these nurses. Snowball sampling is used when the actual size of the population cannot be precisely determined. As the number of people reached increases, the sample size also gets larger. It is a fast and easy-to-apply method. The disadvantage of this method is that volunteers with similar characteristics and interest in the subject are included in the sample.[26] There is also a risk of bias or skewing of results due to self-selection of responses. Access to the online questionnaire was closed when the data collection phase of the study was completed. Institution and identity information of the nurses participating in the study were not sought. The privacy and security of personal data were protected by using encryption on Google Forms. Only the researchers had access to the data collected from the participants.

The first page of the online survey application was reserved for the consent page. On the consent page, the volunteers were asked whether they agreed to participate in the study, and those who volunteered to participate were allowed to proceed to the next pages, while those who did not submit consent were not allowed to see the questions. The first page included the identity information of the researchers who carried out this study.

DESCRIPTION OF DATA COLLECTION TOOLS

In this study, two data collection forms, namely, "Oncology Nurse Information Form" and "Oncology Nurses' Practices for the Diagnosis, Prevention, and Management of Delirium", were used.

THE ONCOLOGY NURSE INFORMATION FORM

This form was created by the researchers. It consisted of a total of 10 questionsabout the nurses' age, gender, marital status, geographical region, total work experience, total work experience in oncology service, the average number of patients given care daily, having an oncology nursing certificate, and having received education on delirium.

ONCOLOGY NURSES' PRACTICES FOR THE DIAGNOSIS, PREVENTION, AND MANAGEMENT OF DELIRIUM

This form was prepared by the researchers according to the relevant literature review and the results of the evidence-level studies and guidelines were used.[2,5,6,11,13,15,18,19,27] This form included a total of 18 questions where oncology nurses could reveal their practices regarding the diagnosis, prevention, and management of delirium. For the content validity of the form, expert opinion was obtained from three faculty members who had conducted studies on delirium. The answers obtained from the experts were analysed according to the Davis Technique and the content validity index, which should be 0.80 and above, was found to be 1.[28]

The questions regarding the diagnosis of delirium were designed to evaluate nurses' knowledge and practices about routine consciousness levels, the status of monitoring sedation and delirium, identification of delirium, the status of delirium evaluation (use of a scale and frequency of assessment, patient characteristics making it difficult to make a diagnosis), the status of working with a patient diagnosed with delirium in the last month, delirium risk factors, and delirium findings and types. Alternatively, the questions regarding the prevention and management of delirium were designed to evaluate nurses' views on the difficulty of preventing and treating delirium in patients with cancer, their assessment of the effectiveness of non-pharmacological approaches in the prevention and management of delirium (orientation, communication, mobilisation, hydration, nutrition, sleep, providing family support, comforting the patient, monitoring bowel functions, avoiding unnecessary drugs and invasive interventions, informing the family about delirium, managing pain, making environmental arrangements), and assessment of the drugs they used in the pharmacological management of delirium.

STATISTICAL ANALYSIS

The study data were analysed on the IBM SPSS Statistics Version 20 software package (IBM Corp Armonk, NY). In the evaluation of the data, descriptive statistics of continuous variables were performed. Chi-square/fisher's exact analysis was used to determine the difference between dependent and independent variables. The level of significance was accepted as 0.05.

ETHICAL CONSIDERATION

Approval of the Presidency of the Ankara University Non-Interventional Research Ethics Committee was obtained (Date: April 12, 2021; Issue: 0652; Approval number: 56786525-050.04.04/100854). The consent of the nurses who voluntarily agreed to participate in the study was obtained on the first page of the online questionnaire.

RESULTS

DESCRIPTIVE CHARACTERISTICS OF THE ONCOLOGY NURSES

The mean age of the nurses was 33.18±8.62 years, 91.7% of them were female, and 48.6% had an undergraduate degree in nursing. The total work experience of 49.2% of the nurses was 11 years or above, 56.1% had been working in the oncology unit for 2-10 years, 32.6% had an oncology nurse certificate, and the average number of patients they gave care to daily was 11.06±7.50 people. Only 11% of the nurses had received education on the diagnosis and/or management of delirium (Table 1). Although not tabulated, it was determined that 25.4% of the nurses with oncology nurse certificates had education on delirium and that only 5.1% (n = 3) were in the certificate program.

ONCOLOGY NURSES' PRACTICES FOR THE DIAGNOSIS AND TREATMENT OF DELIRIUM

The examination of the nurses' practices for the diagnosis and treatment of delirium indicated that 74.6% routinely evaluated the level of consciousness, 56.4% sedation, and 38.1% delirium. While 38.1% of the nurses had difficulty diagnosing delirium, it was determined that the patient groups that they most frequently had difficulty with were patients diagnosed with dementia (84%), hypoactive delirium (79.7%), and those who were sedated (75.4%). It was found that only 5.5% of the nurses used a scale to assess delirium and that 60% of these nurses made an assessment once a day. While 31.5% of the nurses worked with patients diagnosed with delirium in the last month, 40.3% could not determine the delirium type. The delirium type that they diagnosed most was hyperactive delirium (35%), while the delirium type they diagnosed least was hypoactive delirium (10.5%). It was detected that 82.5% of the nurses performed pharmacological interventions in patients diagnosed with delirium as a first step. Although it is not shown in the table, the majority of the nurses who expressed this had worked with patients diagnosed with delirium in the last month ($p<0.05$). In addition, it was identified that the most frequently requested pharmacological agent by the physician was haloperidol (35%) (Table 2).

ONCOLOGY NURSES' VIEWS ON THE DIAGNOSIS, PREVENTION, AND MANAGEMENT OF DELIRIUM

Delirium descriptions: The nurses' descriptions of delirium included "blurred consciousness," "impaired mood," "impaired mental abilities," "impaired orientation to person, place, and time," and "agitation". In addition, it was noteworthy that nurses frequently described visible signs, such as "outburst of anger," "aggression," "abnormal behavior," "extreme irritability," and "going insane".

It was determined that nurses were better at describing hyperactive delirium findings, and they were less likely to define hypoactive delirium findings, such as lethargy (48.8%), decreased psychomotor activity (47.7%), and withdrawal (56.1%), as delirium findings (Table 3).

Although not included in the table, the nurses were asked to rate the risk factors of patients with cancer, which are important factors in the diagnosis of delirium, from 1 to 5 (1: the least risky, 5: the riskiest) in terms of the risk of developing delirium. Patient characteristics that nurses considered the riskiest were brain metastasis ($\bar{x}$±SD=4.57±0.80), long-term hospitalisation ($\bar{x}$±SD=4.44±0.85), advanced age ($\bar{x}$±SD=4.42±0.77), use of benzodiazepine-derived drugs ($\bar{x}$±SD=4.32±0.86), advanced-stage cancer ($\bar{x}$±SD=4.30±0.94), uncontrollable pain ($\bar{x}$±SD=4.24±0.84), and high disease severity score ($\bar{x}$±SD=4.22±0.94).

The non-pharmacological approaches that nurses found most effective in the prevention and management of delirium were the arrangement of the environment (97.8%), informing the family about delirium (97.8%), pain management (97.2%), supporting the sleep-wake cycle (97.2%), providing family support (96.1%), and supporting communication (95%), respectively (Table 3).

While 64.6% of the nurses were self-confident in the management of delirium, 67.4% thought that it was difficult to prevent delirium in patients with cancer and 74% thought it was difficult to treat it (Table 3).

TABLE 1. DESCRIPTIVE CHARACTERISTICS OF THE ONCOLOGY NURSES

Variables		n	%
Mean age 33.18 ± 8.62 (21-57)			
Female		166	91.7
Level of education	Health vocational high school	28	15.5
	Undergraduate (Formal)	88	48.6
	Undergraduate (Distance)	33	18.2
	Graduate	32	17.7
Total work experience in nursing Mean: 11.52 ± 9.02 (1–35) years	0-1 year	32	17.7
	2-10 years	60	33.1
	≥11	89	49.2
Total work experience in the oncology unit Mean: 6.61 ± 5.47 (1–24) years	0-1 year	42	23.3
	2-10 years	101	56.1
	≥11	37	20.6
Number of patients given care daily Mean: 11.06 ± 7.50 Median (2–80)	0-5	65	36.1
	6-10	62	34.4
	11-15	18	10.0
	>16	35	19.4
Having a certificate of oncology nursing		59	32.6
Educated on diagnosis and/or management of delirium		20	11.0
The place of education on the diagnosis and/or management of delirium (n:20)	Current institution	11	55.0
	Certificate education program	3	15.0
	Individual research/following the literature	2	10.0
	Congress and/or conference, course programs	4	20.0

TABLE 2. ONCOLOGY NURSES' PRACTICES FOR DELIRIUM DIAGNOSIS AND TREATMENT

Practices for delirium diagnosis and treatment		n	%
Doing routine monitoring of consciousness level		135	74.6
Doing routine monitoring of sedation level		102	56.4
Doing routine monitoring of delirium		69	38.1
Difficulty in diagnosing delirium		69	38.1
Difficulty in diagnosing delirium according to patient characteristics (n:69)	Patients with dementia	58	84.0
	Presence of hypoactive delirium	55	79.7
	Sedated patients	52	75.4
	Patients with hearing impairment	51	73.9
	Patients diagnosed with depression	50	72.5
	Intubated patients	49	71.0
	Patients with pain problems	42	60.9
	Patients with visual impairment	42	60.9
	Patients with advanced age	41	59.4
Using a screening tool in delirium assessment*		10	5.5
The frequency of delirium assessment (n:10)	Once a day	6	60.0
	When needed	2	20.0
	Once per shift	2	20.0
Working with a patient diagnosed with delirium in the last month		57	31.5
Type of the delirium diagnosed (n:57)	Hyperactive	20	35.0
	Hypoactive	6	10.5
	Mixed type	8	14.0
	Delirium type could not be determined	23	40.3
Priority approach when delirium was diagnosed (n:57)	Pharmacological approach	47	82.5
	Non-pharmacological approach	10	17.5
Pharmacological agent requested by the doctor in delirium management (n:57)	Haloperidol	20	35.0
	Benzodiazepine	17	29.8
	Dexmedetomidine	13	22.8
	Olanzapine	3	5.3
	Propofol	1	1.8
	Other†	3	5.3

* Delirium was evaluated according to Glasgow Coma Scale (1), Confusion Assessment Method-CAM (1), Ramsay Sedation Scale (1), Richmond Agitation Sedation Scale (1), blurred consciousness, disorientation, and presence of hallucinations.

†Other pharmacological agents were not specified.

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TABLE 3. ONCOLOGY NURSES' VIEWS ON DELIRIUM

Views	n	%
Nurses' definition of delirium findings		
Shouting	169	93.8
Apathy	111	61.6
Lethargy	88	48.8
Disruption in thought process	179	99.4
Efforts to get rid of medical devices	172	95.5
Complaining	129	71.6
Withdrawal signs	101	56.1
Increase in psychomotor activity	147	81.6
Decrease in psychomotor activity	86	47.7
Attacking other people	155	86.1
Fluctuations in consciousness levels	176	97.7
Hallucinations	172	95.5
Impaired orientation	178	98.8
Loss of long-term memory	57	31.6
Loss of short-term memory	157	87.2
Opinions on the difficulty of preventing delirium in patients with cancer		
Delirium is easy to prevent.	25	13.8
Delirium is difficult to prevent.	122	67.4
No idea	34	18.8
Non-pharmacological approaches that nurses think are effective in the prevention and management of delirium		
Provision of orientation	162	89.5
Supporting communication	172	95.0
Encouraging the patient for mobilisation	159	87.8
Monitoring/supporting hydration	168	92.8
Maintaining care with as many familiar people as possible	168	92.8
Monitoring/supporting nutrition	164	90.6
Supporting the sleep-wake cycle	176	97.2
Providing family support	174	96.1
Comforting the patient with a calming voice	170	93.9
Monitoring bowel functions	135	74.6
Avoiding unnecessary drug use	170	93.9
Informing the family about delirium	177	97.8
Monitoring bladder functions	139	76.8
Providing pain management	176	97.2
Avoiding unnecessary invasive procedures	167	92.3
Making environmental arrangements	177	97.8
Opinions on the difficulty of treating delirium in a patient with cancer		
Delirium is easy to treat.	23	12.7
Delirium is difficult to treat.	134	74.0
No idea	24	13.3
Self-confidence in delirium management		
Yes	117	64.6

PRACTICES OF ONCOLOGY NURSES FOR THE DIAGNOSIS, PREVENTION, AND MANAGEMENT OF DELIRIUM BY THEIR DESCRIPTIVE CHARACTERISTICS

In the study, factors affecting nurses' routine assessment of consciousness, sedation, and delirium during their monitoring of cancer patients were examined. Accordingly, it was detected that nurses who had an undergraduate degree, worked with patients diagnosed with delirium in the last month, and applied pharmacological treatment first when delirium was diagnosed evaluated the level of consciousness at a higher level ($p<0.05$) (Table 4). Variables affecting routine sedation monitoring; were total work experience of one year or less, low number of patients given care, not having an oncology nursing certificate, not having difficulty diagnosing delirium, using a measurement tool, working with a patient diagnosed with delirium in the last month, and self-confidence in delirium management ($p<0.05$) (Table 4). It was found that routine delirium monitoring was performed at a significantly higher level by those who were male, had an undergraduate degree, had a total work experience of 2-10 years, provided care for a lower number of patients, did not have an oncology nursing certificate, did not have difficulty diagnosing delirium and used a measurement tool, worked with patients diagnosed with delirium in the last month, in those who have a positive attitude towards delirium management ($p<0.05$) (Table 4).

When the factors affecting nurses' opinions regarding the diagnosis, prevention, and treatment of delirium in cancer patients were examined in the study, it was determined that the level of education, total work experience in the profession, the nurse to patient ratio, and the status of having received education on delirium diagnosis and treatment did not have an effect ($p>0.05$) (Table 5). In the study, nurses without an oncology nurse certificate had significantly higher self-confidence in delirium management (χ^2/p:6.491/0.039) (Table 5). It was concluded that the education level of uncertified nurses was higher ($p<0.05$) and the rate of working patients diagnosed with delirium in the last month was higher ($p>0.05$). Nurses who made routine delirium assessment (26.1%), compared to those who did not (45.5%), had less difficulty in diagnosing delirium, thought that it was easier to prevent and treat delirium, and they were more confident in delirium management ($p<0.05$) (Table 5). Nurses who worked with a patient diagnosed with delirium in the last month had less difficulty in diagnosing delirium than nurses who did not (χ^2/p: 10.276/0.002) (Table 5). In addition, nurses who used a scale in the assessment of delirium had a significantly higher rate of correctly answering hypoactive delirium findings such as apathy (χ^2/p:6.675/0.036) and lethargy (χ^2/p:7.258/0.027) as delirium findings compared to the nurses who did not use a scale.

TABLE 4. DISTRIBUTION OF ROUTINE DELIRIUM, SEDATION AND CONSCIOUSNESS MONITORING SITUATIONS ACCORDING TO NURSES' DESCRIPTIVE CHARACTERISTICS

Descriptive characteristics	Consciousness (N:125)		Sedation (N:102)		Delirium (N:69)	
	n	%	n	%	n	%
Gender						
Male	14	93.3	12	80	12	80
Female	121	72.9	90	54.2	57	34.3
χ^2/p	3.033/0.120		3.718/0.061		12.160/0.001*	
Level of education						
Health vocational high school	26	19.3	18	17.6	14	20.3
Undergraduate (Formal)	61	45.1	53	52	39	56.5
Undergraduate (Distance)	22	16.3	14	13.7	6	8.7
Graduate	26	19.3	17	16.7	10	14.5
χ^2/p	8.061/0.045*		3.992/0.262		9.130/0.025*	
Total work experience in nursing						
0-1 year	22	16.3	24	23.5	13	18.8
2-10 years	48	35.6	35	34.3	31	44.9
≥11	65	48.1	43	42.2	25	36.2
χ^2/p	1.616/0.446		6.957/0.031*		8.549/0.014*	
Number of patients given care daily						
0-5	55	41	42	41.6	33	48.5
6-10	45	33.6	36	35.6	22	32.4
11-15	13	9.7	11	10.9	6	8.8
≥16	21	15.7	12	11.9	7	10.3
χ^2/p	7.533/0.057		8.958/0.030*		9.663/0.022*	
Having a certificate of oncology nursing						
Yes	40	26.9	26	25.5	14	20.3
No	95	70.4	76	74.5	55	79.7
χ^2/p	2.128/0.150		5.372/0.025*		7.687/0.006*	
Education on diagnosis and/or management of delirium						
Yes	14	10.4	11	10.8	9	13
No	121	89.6	91	89.2	60	87
χ^2/p	0.249/0.595		0.017/1.000		0.451/0.626	
Difficulty in diagnosing delirium						
Yes	48	35.6	32	31.4	18	26.1
No	87	64.4	70	68.6	51	72.9
χ^2/p	1.483/0.292		4.513/0.045*		6.846/0.012*	
Using a screening tool in delirium assessment						
Yes	9	90	10	100	9	90
No	126	73.7	92	53.8	60	35.1
χ^2/p	1.327/0.456		8.198/0.005*		12.077/0.001*	
Working with a patient diagnosed with delirium in the last month						
Yes	52	91.2	39	68.4	28	49.1
No	83	66.9	63	50.8	41	33.1
χ^2/p	12.157/0.001*		4.926/0.036*		4.269/0.048*	

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TABLE 4. DISTRIBUTION OF ROUTINE DELIRIUM, SEDATION AND CONSCIOUSNESS MONITORING SITUATIONS ACCORDING TO NURSES' DESCRIPTIVE CHARACTERISTICS (CONTINUED)

Descriptive characteristics	Consciousness (N:125)		Sedation (N:102)		Delirium (N:69)	
	n	%	n	%	n	%
Opinions on the difficulty of preventing delirium in patients with cancer						
It is easy.	21	84	13	52	11	44
It is difficult.	90	73.8	74	60.7	51	41.8
No idea	24	70.6	15	44.1	7	20.6
χ^2/p	1.498/0.473		3.180/0.204		5.498/0.064	
Opinions on the difficulty of treating delirium in a patient with cancer						
It is easy.	19	82.6	15	65.2	14	60.9
It is difficult.	98	73.1	75	56	48	35.8
No idea	18	75	12	50	7	29.2
χ^2/p	0.932/0.627		1.137/0566		6.162/0.046*	
Self-confidence in delirium management						
Yes	91	77.8	76	65	56	47.9
No	44	69.8	26	41.3	13	20.6
χ^2/p	4.132/0.116		10.640/0.005*		13.490/0.001*	
Priority approach when delirium was diagnosed						
Pharmacological approach	44	32.6	31	30.4	23	33.3
Non-pharmacological approach	8	5.9	8	7.8	5	7.2
χ^2/p	12.964/0.002*		5.587/0.061		4.273/0.118	

χ^2: chi-square test/fisher's exact test. *p < 0.05

TABLE 5. NURSES' VIEWS ON DIAGNOSING, TREATING AND PREVENTING DELIRIUM IN CANCER PATIENTS ACCORDING TO SOME VARIABLES

Variables	Difficulty diagnosing delirium (N:69)		Self-confidence in delirium management (N:117)		Thinking it's easy to prevent delirium (N:25)		Thinking it's easy to treat delirium (N:23)	
	n	%	n	%	n	%	n	%
Level of education								
Health vocational high school	10	35.7	20	71.4	6	21.4	6	21.4
Undergraduate (Formal)	34	38.6	60	68.2	12	13.6	10	11.4
Undergraduate (Distance)	14	42.4	16	48.5	5	15.2	4	12.1
Graduate	11	34.4	21	65.6	2	6.3	3	9.4
χ^2/p	0.528/0.913		6.156/0.406		5.142/0.526		5.240/0.513	
Total work experience in nursing								
0-1 year	14	43.8	18	56.3	4	12.5	4	12.5
2-10 years	19	31.7	43	71.7	10	16.7	9	15.0
≥11	36	40.4	56	62.9	11	12.4	10	11.2
χ^2/p	1.694/0.429		4.874/0.301		2.410/0.661		3.038/0.551	
Number of patients given care daily								
0-5	23	35.4	47	72.3	9	13.8	11	16.9
6-10	27	43.5	38	61.3	6	9.7	7	11.3
11-15	5	27.8	13	72.2	2	11.1	2	11.1
>16	14	40.0	18	51.4	8	22.9	3	8.6
χ^2/p	1.842/0.606		8.603/0.197		3.498/0.744		3.196/0.784	
Having a certificate of oncology nursing								
Yes	24	40.7	31	52.5	5	8.5	8	13.6
No	45	36.9	86	70.5	20	16.4	15	12.3
χ^2/p	0.243/0.628		6.491/0.039*		2.631/0.268		0.740/0.691	
Education on diagnosis and/or management of delirium								
Yes	10	50.0	14	70.0	3	15.0	3	15.0
No	59	36.6	103	64.0	22	13.7	20	12.4
χ^2/p	1.345/0.329		0.373/0.830		0.217/0.897		0.194/0.908	
Routine delirium evaluation								
Doing	18	26.1	56	81.2	11	15.9	14	20.3
Not doing	51	45.5	61	54.5	14	12.5	9	8.0
χ^2/p	6.846/0.012*		13.490/0.001*		5.498/0.064		6.162/0.046*	
Working status with a patient diagnosed with delirium in the last month								
Working	12	21.1	42	73.7	8	14.0	9	15.8
Not working	57	46.0	75	60.5	17	13.7	14	11.3
χ^2/p	10.276/0.002*		3.236/0.198		2.364/0.307		0.827/0.661	

χ^2: chi-square test/fisher's exact test, Row percentage is taken. *p < 0.05

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DISCUSSION

The incidence of delirium in patients diagnosed with cancer is high, although it varies depending on patient characteristics and the stage of cancer.[3,4,8] Delirium that is not diagnosed early and cannot be managed effectively is a factor that negatively affects the care and patient outcomes of cancer patients and increases the care burden.[7-9] There are many risk factors that cause delirium development.[8] The most common triggering factors for delirium in patients with cancer are high-dose psychotropic drugs, constipation,[29] benzodiazepine therapy, hematological malignancy, hearing and vision impairment, sleep disorders,[30] dehydration, organic damage to the central nervous system, hypoxia,[15] duration of mechanical ventilation,[31] being aged ≥ 63, palliative performance scale score of ≤ 20%, brain metastasis, urinary tract infection, sepsis, and hypercalcemia.[32] Awareness of these risk factors can help identify individuals who are prone to delirium and prevent delirium by controlling modifiable risk factors in risky patients.[33] In the study, the majority of the nurses described patient characteristics that increased the risk of delirium as brain metastasis, long-term hospitalisation, advanced age, use of benzodiazepine-derived drugs, advanced-stage cancer, uncontrollable pain, and high disease severity score. The delirium risk factors expressed by the nurses were consistent with those in the literature.

With the increase in the incidence of delirium in cancer patients related to the frequency of risk factors, patients can be underdiagnosed.[7,8] The diagnosis of delirium is missed in 73-76% of patients in palliative care units.[7,29] This result is mostly due to the lack of routine delirium screening in palliative care patients.[29] Low awareness of delirium risks, signs and symptoms have also been shown to be a second important reason for underdiagnosing delirium.[34] It was detected that very few of the nurses had education on delirium (11%), but nurses who used a scale for the assessment of delirium (5.5%) defined apathy and lethargy as hypoactive delirium findings more accurately. In addition, it was found that the experience of working with patients diagnosed with delirium increased the level of routine delirium monitoring while reducing difficulty making a diagnosis ($p<0.05$). It was determined that nearly half of the nurses (49.1%) who had experience working with patients diagnosed with delirium in the past month evaluated delirium routinely. Contrary to this result, in a study, it was found that nurses' experience in critically ill patient care did not reduce the risk of delirium.[35] In particular, it was pointed out that professional experience should be supported by delirium training. In a study evaluating the knowledge and practices of oncology nurses in China regarding the care of terminally ill patients; It was determined that nurses' understanding of delirium management was inadequate. This result was attributed to insufficient knowledge and care experience.[36] For this reason, it is thought that providing training and supervision for the service that will support the use of routine screening tools in the early diagnosis of delirium in cancer patients will increase the quality of care.

In patients with cancer, delirium can be confused with conditions such as worsening pain, depression, and anxiety.[37] In a study evaluating the knowledge, beliefs, and practices of doctors and nurses about delirium, the factors that hindered delirium assessment were failure to understand delirium conceptually (48%), the similarity between delirium and dementia (41.4%), and the fluctuating course of delirium symptoms (38.1%).[14] In our study, 38.1% of the nurses stated that they had difficulty diagnosing delirium. The patient groups in which they often had difficulty diagnosing delirium included patients who were diagnosed with dementia (84%), were in hypoactive delirium (79.7%), and were sedated (75.4%). It can be surmised that these difficulties in the diagnosis of delirium were due to not knowing which scales would be used for the evaluation of sedation in sedated patients and what the cut-off point would be to evaluate delirium, the inadequacy of education programs on the differences between dementia, depression, and delirium, and a lack of routine screening at regular intervals due to the fluctuating course of delirium findings.[10,18] It was identified that more than half of the nurses' monitoring of the consciousness and sedation level of the patients, the rates of routine delirium monitoring (38.1%) and use of measurement tools (5.5%) were low. These low rates may have been due to both nurses' inadequate awareness of the issue and the lack of care protocols for delirium diagnosis and management in the institutions where nurses worked. Although no distinction was made in terms of oncology units in the study, it was concluded that as the patient-to-nurse ratio increased, both sedation and delirium monitoring levels decreased significantly ($p<0.05$).

Delirium monitoring and management can be affected by patient characteristics as well as subject-related awareness of healthcare professionals. In this study, it was found that nurses who were male, had an undergraduate degree in formal education, and had 2-10 years of professional work experience performed a higher level of routine delirium monitoring ($p<0.05$). Although it was seen in the study that nurses' education level and professional experience affected their delirium monitoring, it was detected that having an oncology nursing certificate (32.6%) and having an education on delirium (11%) did not affect the frequency of routine delirium monitoring. It is thought that this result was affected by the low number of nurses with education on delirium and the fact that only 5.1% of them had received education on delirium in a certificate program. Contrary to this result, in a randomised controlled study, it was determined that the psycho-oncology education program given to oncology nurses, which also included delirium, significantly increased the nurses' self-confidence and knowledge.[16] Certificate programs are important, especially

in supporting the development of nursing competencies and expertise in the field of oncology nursing. For this reason, it can be said that delirium diagnosis and management should be given more attention in oncology nursing certificate programs.

Delirium in cancer patients is a syndrome that can be prevented with nonpharmacological approaches.[19,20] However, in the study, it was found that 67.4% of the nurses thought that delirium was difficult to prevent in patients diagnosed with cancer. In a meta-analysis study, it was shown that multi-component non-pharmacological delirium prevention interventions (orientation, early mobilisation, supporting hearing and visual impairments, regulation of sleep-wake cycle, hydration support) reduced the incidence of delirium by 44%.[20] In elderly patients hospitalised due to advanced cancer, up to one-third of delirium episodes were prevented through non-pharmacological approaches that supported basic needs, such as physical and cognitive activity, sleep, hydration, vision, and hearing.[33] It was identified that the incidence of delirium decreased from 7.1% to 4.3% with a systematic prevention program for delirium in a hospital that provides special treatment for cancer in Japan.[38]

The goal in delirium management is; It includes presenting preventive approaches, identifying delirium risk factors and eliminating them if possible, and in the final stage, pharmacological and non-pharmacological management of delirium.[39] The use of non-pharmacological approaches is recommended as the first line of treatment in the management of delirium.[6,18] In the study, it was detected that only 17.5% of the nurses first used a non-pharmacological approach to delirium treatment. In a review study evaluating the pharmacological and non-pharmacological management of delirium in oncology hospitals; It was found that in 80% of the ten studies analysed, delirium was managed with a pharmacological agent and haloperidol was used especially frequently in advanced stage cancer patients.[39] In a study evaluating the attitudes, beliefs and opinions of certified palliative care specialists and liaison psychiatrists towards hypoactive delirium in the last days of life; 62% of physicians stated that pharmacological drugs should be used in the management of hypoactive delirium.[40] In a study evaluating the practices of clinicians regarding delirium treatment in Australia; It has been interpreted that 79% of palliative care providers use antipsychotics in delirium management, and this is mainly due to distress and safety concerns for the patient and others nearby.[41] In this context, the importance of a multidisciplinary team approach in delirium management is seen. It is important that all team members work with evidence-based care protocols in the pharmacological and non-pharmacological management of delirium, as it will affect the incidence of delirium, mortality and morbidity rates.[6,18]

In addition to non-pharmacological approaches in the management of delirium, the use of pharmacological approaches in line with the current literature may be beneficial for patients. For example, Maeda et al. reported that the evidence-based use of antipsychotics together with non-pharmacological approaches in patients with terminal cancer, who developed delirium, was effective in the management of delirium syndrome and recommended its use.[42] In the study, it was concluded that the majority of nurses' first approach to the treatment of patients diagnosed with delirium was pharmacological (82.5%). The most commonly used drugs in treatment were haloperidol (35%), benzodiazepine (29.8%), and dexmedetomidine (22.8%), respectively. In the pharmacological treatment of delirium, it is emphasised that haloperidol, atypical antipsychotic, or statin group drugs can be used to manage stress-related symptoms (anxiety, hallucinations, delusions, fear, etc.), but that these drugs do not treat delirium. If antipsychotics are to be used for these conditions, it is recommended to apply them in the smallest doses and for a short time.[10] Although dexmedetomidine has superior properties compared to antipsychotic drugs in the treatment of delirium, the evidence is limited.[43] However, there are also studies showing that dexmedetomidine reduces the incidence and duration of delirium.[44-46] In cancer patients, especially as the prognosis worsens, the number of medications used may increase. There is a relationship between polypharmacy (>6 drugs) and persistence of delirium.[47] Therefore, it is very important for the oncology nurse to monitor drug management and patient outcomes in the pharmacological management of delirium together with the team.[10,18]

STUDY LIMITATION

The study has several limitations. The first of there were difficulties in reaching nurses due to the implementation of the study across the country and the impact of the COVID-19 pandemic on oncology units and nurses. Secondly, research results are limited to the nurses who participated in the sample. Thirdly, whether the nurses used an institutional care protocol for the diagnosis and treatment of delirium in the unit where they worked was not asked in the study. Fourth, the research was completed with volunteer nurses by using the snowball method. Nurses who participated in the study voluntarily may have been more interested in the subject than those who decided not to participate. This may have led to selection/non-response bias.

CONCLUSION

While approximately one third of the nurses participating in the study had worked with patients diagnosed with delirium in the last month, it was found that routine delirium screening and the use of diagnostic scales were low. Additionally, the delirium identification rate of those who had education on delirium diagnosis and management was low. It is recommended that nurses should be supported with in-service/institutional training for developing their delirium diagnosis and management knowledge and skills.

Approximately one-third of the nurses in the study had an oncology nursing certificate. However, the rate of delirium identificatin for those nurses who had received education on delirium within the certificate program was quite low. It was detected that having an oncology nursing certificate did not make a significant difference in affecting nurses' self-confidence in the routine monitoring and management of delirium. It may be recommended that more education on delirium should be included, especially in these certificate programs, to increase oncology nurses' competency.

In the study, it was determined that being male, having a formal undergraduate degree, professional work experience, a decrease in the number of patients given care, using a screening tool, experience working with patients diagnosed with delirium, and positive views on delirium treatment had a significant impact on nurses' routine delirium monitoring. It is recommended to establish and implement evidence-based care procedures for routine monitoring, early diagnosis, and effective management of delirium in oncology units. In addition, nurses' delirium diagnosis, prevention, and management skills can be increased by planning the workforce according to patient/nurse ratios in oncology units.

In the study, it was determined that nurses who routinely monitored delirium had higher self-confidence in diagnosing and managing it. While almost half of the nurses who had experience working with patients diagnosed with delirium could not determine the type of delirium, it was found that those who used a scale in diagnosis were able to identify apathy and lethargy among hypoactive delirium findings at a higher rate. In addition, it was determined that those who worked with patients diagnosed with delirium had less difficulty diagnosing it. Based on this information, it can be recommended to support the education of oncology nurses using scenario-based case examples to increase their skills in making a correct diagnosis of delirium/differentiating delirium types. The study showed that although more than half of the nurses had self-confidence in delirium management, they thought it was difficult to prevent and treat it in patients with cancer. It was concluded that the majority of nurses managed delirium with pharmacological approaches.

IMPLICATIONS FOR RESEARCH, POLICY, AND PRACTICE

The level of education, experience, patient-to-nurse ratio, and positive attitudes towards delirium were found to be effective in routinely monitoring of delirium in patients diagnosed with cancer, using a valid and reliable screening tool, and managing delirium by oncology nurses. Consequently, it was identified that it was important to support the education of oncology nurses by using case examples in in-service or certificate programs and to prepare and implement evidence-based care procedures/algorithms for delirium monitoring, prevention, and treatment. In addition, it is important to start education on delirium at the undergraduate level in order to increase delirium awareness after graduation. It is thought that workforce planning in oncology units according to patient/nurse ratios will improve nurses' delirium diagnosis and management skills. Multidisciplinary collaboration between professionals such as physicians, nurses, physiotherapists and psychiatrists is important in delirium management. For this reason, it is recommended that maintenance procedures be organised in a way that prioritises team cooperation.

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