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SAVREMENI PRISTUPI I EDUKATIVNE POTREBE MEDICINSKIH SESTARA I TEHNIČARA U ONKOLOŠKOJ I PALIJATIVNOJ NEZI

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SAŽETAK

Uvod/Cilj: Savremeni zahtevi u onkološkoj i palijativnoj nezi podrazumevaju visok nivo stručnog znanja, primenu inovativnih terapijskih pristupa i kontinuirano stručno usavršavanje medicinskih sestara i tehničara. Cilj ovog istraživanja bio je da se ispitaju znanje i stavovi medicinskih sestara i tehničra u oblasti onkološke i palijativne nege.
Metode: Istraživanje je sprovedeno u Univerzitetskoj dečjoj klinici u Beogradu. Uzorak je činilo 30 medicinskih sestara i tehničara. Podaci su prikupljeni pomoću upitnika, koji je obuhvatio demografske karakteristike ispitanika, pitanja o znanju iz oblasti onkološke patologije, savremenih terapijskih pristupa, inovacija u sestrinskoj praksi i komplikacija palijativne nege, kao i stavove o edukativnim potrebama u navedenim oblastima. Za statističku obradu podataka korišćeni su softverski paketi Microsoft Excel i IBM SPSS Statistics, verzija 26.0.
Rezultati: Medicinske sestre i tehničari pokazali su visok nivo teorijskog znanja o osnovama onkološke patologije, standardnim terapijskim pristupima i zaštiti na radu. Međutim, uočeno je nedovoljno poznavanje savremenih tehnoloških i kliničkih inovacija. Posebno je izražen nedostatak znanja o primeni centralnih venskih katetera (Port-a-Cath sistema), koju je prepoznalo 3,3% ispitanika. Slično tome, samo 56,7% ispitanika tačno je prepoznalo primenu laserske terapije niskog nivoa u lečenju oralnog mukozitisa, dok je 63,3% ispitanika bilo upoznato sa primenom uređaja Buzzy za smanjenje bola pri venepunkciji.
Zaključak: Sticanje znanja o inovacijama, savremenim terapijskim pristupima i primeni novih tehnologija ključno je za unapređenje stručnih kompetencija medicinskih sestara i tehničara i pružanje kvalitetne onkološke i palijativne nege.

Ključne reči: medicinske sestre i tehničari, znanje, stavovi, onkološka nega, palijativna nega

Uvod

Onkološke bolesti predstavljaju jedan od najznačajnijih izazova savremene medicine (1), kako zbog visoke incidencije i mortaliteta, tako i zbog kompleksnosti terapijskih pristupa i potrebe za dugotrajnom zdravstvenom negom (2). U tom kontekstu, uloga medicinske sestre je od ključnog značaja za pružanje sveobuhvatne, empatične i profesionalne nege, koja, pored sprvođenja dijagnostičkih i terapijskih procedura, obuhvata komunikaciju sa pacijentom, pružanje psihološke podrške i kontinuirano praćenje pacijenata tokom procesa lečenja.

Savremeni trendovi u sestrinstvu ukazuju na potrebu stalnog unapređenja znanja, veština i profesionalnih kompetencija medicinskih sestara i tehničara, naročito u oblasti onkologije, u kojoj brz razvoj terapijskih modaliteta zahteva i kontinuirano prilagođavanje kliničke prakse (3,4). Inovacije u zdravstvenoj nezi obuhvataju primenu novih tehnologija (5), standardizaciju procedura (6,7), personalizovan pristup (6,7), kao i unapređenje edukativnih i komunikacionih veština medicinskih sestara i tehničara (8,9), što može doprineti kvalitetu lečenja i zadovoljstvu pacijenata.

Cilj ovog rada bio je da se ispita znanje medicinskih sestara i tehničara o onkološkoj patologiji, savremenim terapijskim pristupima, inovacijama u sestrinskoj praksi i komplikacijama palijativne nege, kao i njihovi stavovi o potrebama za dodatnom edukacijom u ovim oblastima.

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MODERN APPROACHES AND EDUCATIONAL NEEDS OF NURSES AND TECHNICIANS IN ONCOLOGICAL AND PALLIATIVE CARE

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SUMMARY

Introduction/Aim: Modern requirements in oncology and palliative care imply a high level of knowledge, the application of innovative therapeutic approaches and continuous professional development of nurses and technicians. The aim of this research was to examine the knowledge and attitudes of nurses and technicians in the field of oncology and palliative care.
Methods: The research was conducted at the University Children's Hospital in Belgrade. The sample consisted of 30 nurses and nursing technicians. Data were collected using a questionnaire that included demographic characteristics, questions assessing knowledge of oncological pathology, modern therapeutic approaches, innovations in nursing practice, and complications of palliative care, as well as attitudes towards educational needs in these areas. Microsoft Excel and IBM SPSS Statistics, version 26.0, were used for data analysis.
Results: Nurses and nursing technicians demonstrated a high level of theoretical knowledge regarding the fundamentals of oncological pathology, standard therapeutic protocols, and occupational safety. However, insufficient knowledge of modern technological and clinical innovations was observed. A particularly pronounced lack of knowledge was identified regarding the application of central venous catheters (Port-a-Cath system), which was correctly identified by only 3.3% of participants. Similarly, only 56.7% correctly identified low-level laser therapy as a treatment for oral mucositis, while 63.3% were familiar with the use of the Buzzy device to reduce pain during venipuncture.
Conclusion: Acquiring knowledge about innovations, modern therapeutic approaches and application of new technologies is essential for improving the professional competencies of nurses and technicians and providing high-quality oncology and palliative care.

Key words: nurses and nursing technicians, knowledge, attitudes, oncology care, palliative care

Introduction

Oncological diseases represent one of the most important challenges of contemporary medicine (1), due to high incidence and mortality rates, as well as due to the complexity of therapeutic approaches and long-term health care (2). In this context, the nurse's role stands out as crucial in providing complete, emphatic and professional care, which goes beyond basic technical tasks and includes communication, psychological support and monitoring of patients during the entire treatment process.

Contemporary trends in nursing indicate the need for continuous improvement of knowledge, skills and competences of nurses, especially in the field of oncology, where the rapid development of treatment modalities requires the adaptation of clinical practice (3,4). Innovations in health care include the introduction of new technologies (5), standardization of procedures (6,7), personalization of approach (6,7), as well as strengthening of educational and communication skills of nurses (8,9), which directly affect the quality of treatment and patient satisfaction.

The aim of this study is to examine knowledge about oncological pathology, modern therapies, innovations in nursing practice and complications in palliative care, as well as attitudes about educational needs in these fields.

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Metode

Istraživanje je sprovedeno kao studija preseka. Realizovano je u periodu od 1. do 15. maja 2025. godine u Univerzitetskoj dečjoj klinici u Beogradu. U istraživanju je učestvovalo 30 zaposlenih medicinskih sestara i tehničara koji su dobrovoljno i anonimno pristupili istraživanju. Podaci su prikupljeni pomoću upitnika dizajniranog za potrebe ovog istraživanja. Prvi deo upitnika odnosio se na demografske karakteristike ispitanika i obuhvatio je pitanja o polu, uzrastu, dužini radnog staža i stepenu stručne spreme. Drugi deo upitnika odnosio se na znanje i stavove medicinskih sestara i tehničara o savremenim aspektima onkološke nege i sadržao je 20 pitanja, od kojih je 18 bilo zatvorenog tipa sa jednim tačnim odgovorom, dok su dva pitanja bila otvorenog tipa. Pitanja su obuhvatila sledeće oblasti: osnove onkološke patologije i dijagnostike (šest pitanja), savremene terapijske pristupe (šest pitanja), inovacije u sestrinskoj praksi (tri pitanja), komplikacije i specifičnosti palijativne nege (tri pitanja), stavove i procenu edukativnih potreba medicinskih sestara i tehničara (dva pitanja). Upitnik je kreiran na osnovu relevantne stručne literature i aktuelnih kliničkih smernica.

Podaci su analizirani primenom metoda deskriptivne statistike. Za obradu podataka korišćeni su softverski paketi Microsoft Excel i IBM SPSS Statistics, verzija 26.0. U okviru deskriptivne analize, kategorijalne promenljive prikazane su pomoću apsolutnih i relativnih frekvencija.

Rezultati

U istraživanju je učestvovalo ukupno 30 medicinskih sestara i tehničara, od kojih je 83,3% bilo ženskog i 16,7% muškog pola (tabela 1). Najveći broj ispitanika (60,0%) pripadao je starosnoj grupi od 31 do 40 godina, dok je 20,0% ispitanika bilo starosti od 41 do 50 godina. Ispitanici stariji od 50 godina činili su 13,3%, dok je 6,7% ispitanika bilo starosti od 20 do 30 godina. U pogledu dužine radnog staža, najveći procenat ispitanika imao je između 10 i 20 godina radnog iskustva (40,0%), zatim između 6 i 10 godina (33,3%). Više od 20 godina radnog iskustva imalo je 20,0% ispitanika, dok je 6,7% imalo između jedne i pet godina radnog iskustva. Prema stepenu stručne spreme, najveći procenat ispitanika imao je srednju stručnu spremu (73,3%), zatim visoku stručnu spremu (20,0%), višu stručnu spremu (3,3%) i stručno-specijalističko obrazovanje (3,3%).

Tabela 1. Demografske karakteristike medicinskih sestara i tehničara

KARAKTERISTIKE		N=30	
		n	%
Pol	muški	5	16,7
	ženski	25	83,3
Starost (godine)	20–30	2	6,7
	31–40	18	60,0
	41–50	6	20,0
	≥51	4	13,3
Radni staž	1–5	2	6,7
	6–10	10	33,3
	10–20	12	40,0
	≥21	6	20,0
Stručna sprema	Srednja stručna sprema	22	73,3
	Viša stručna sprema	1	3,3
	Visoka stručna sprema	6	20,0
	Strukovna specijalizacija	1	3,3

Analiza podataka prikazanih u tabeli 2 pokazala je da je najveći procenat ispitanika tačno odgovorio na pitanja koja su se odnosila na prepoznavanje simptoma karcinoma debelog creva (100,0%), kao i razlikovanje melanoma od mladeža (86,7%). Niži procenat tačnih odgovora zabeležen je na pitanjima koja su se odnosila na stadijumime kancerogeneze (60%), najčešća mesta metastaziranja karcinoma pluća (53,3%), najčešća onkološka opstruktivna stanja (60,0%) i skrining smernice za maligne bolesti (60,0%).

Methods

The research was conducted as a cross-sectional study. It was realized from May 1st to May 15th, 2025 at the University Children's Hospital "Tiršova" in Belgrade. The study included thirty employed nurses and technicians, who voluntarily and anonymously participated in the study. Data were collected using a general questionnaire designed for the purposes of this study. The first part referred to the demographic characteristics of respondents: gender, age, length, of service and level of their qualifications. The second part referred to the examination of knowledge and attitudes of nurses and technicians about modern aspects of oncological care and it included 20 questions, of which 18 were closed-ended with one correct answer and two questions were open-ended. The questionnaire was designed in accordance with the current professional and clinical guidelines and it included the following fields: fundamentals of oncological pathology and diagnostics (6 questions), modern therapeutic approaches (6 questions), innovations in nursing practice (3 questions), complications and specificities of palliative care (3 questions), attitudes and assessment of educational needs of nurses and technicians (2 questions).

The data collected in the study were analyzed with the help of descriptive statistics methods. The software packages Microsoft Excel and IBM SPSS (version 26.0) were used for the analysis of data. Within this descriptive analysis, categorical variables were presented using absolute and relative frequencies.

Results

The study included 30 nurses and technicians, and among them 83.3% were females and 16.7% males (Table 1). When it comes to age structure, the majority of respondents (60%) were in the age group 31 to 40 years, while 20% of them were in the age group 41 to 50 years. Persons older than 50 accounted for 13.3%, while persons aged 20 to 30 accounted for 6.7% of respondents. When it comes to work experience, the largest percentage of respondents had between 10 and 20 years of work experience (40%), followed by 6 to 10 years (33.3%), over 20 years (20%) and 1 to 5 years (6.7%). When it comes to their qualifications, the largest percentage of respondents had secondary school education (73.3%), followed by university education (20%), college education (3.3%) and professional-specialist education (3.3%).

Table 1. Demographic characteristics of nurses and nursing technicians

CHARACTERISTICS		N=30	
		n	%
Gender	Male	5	16.7
	Female	25	83.3
Age	20–30	2	6.7
	31–40	18	60.0
	41–50	6	20.0
	≥51	4	13.3
Years of service	1–5	2	6.7
	6–10	10	33.3
	10–20	12	40.0
	≥21	6	20.0
Level of education	Secondary school	22	73.3
	College	1	3.3
	University degree	6	20.0
	Professional specialization	1	3.3

The analysis of data from Table 2 shows that nurses and technicians demonstrated a high level of knowledge related to recognizing the symptoms of colon cancer (100%), as well as distinguishing melanoma from moles (86.7%). However, a smaller percentage of respondents knew about the stages of carcinogenesis (60%), the most common sites of lung cancer metastases (53.3%), the most common oncological obstructive conditions (60.0%), and screening guidelines for malignant diseases (60.0%).

Tabela 2. Znanje medicinskih sestara i tehničara o osnovama onkološke patologije i dijagnostike

Pitanja	Odgovori	n	%
Koji su stadijumi kancerogeneze?	**Stadijum inicijacije, promocije i progresije**	18	60,0
	Stadijum inicijacije i progresije	8	26,7
	Stadijum promocije i progresije	4	13,3
Koja su najčešća mesta metastaza karcinoma pluća?	Pankreas, slezina, kolon	9	30,0
	Jetra, nadbubrežna žlezda, kosti, mozak	16	53,3
	Želudac, srce, polni organi	5	16,7
Koji simptomi upućuju na karcinom debelog creva?	Okultno ili manifestno krvarenje, izmene u crevnom pražnjenju	0	0,0
	Bolovi i grčevi u trbuhu, nadimanje, mučnina	0	0,0
	Gubitak težine, zamaranje, anemija	0	0,0
	Svi odgovori su tačni	30	100,0
Po čemu se melanom razlikuje od mladeža?	**Melanom je asimetričan, nepravilnih ivica sa varijacijom boja i tendencijom rasta dok je mladež simetričan, pravilnih ivica, ujednačene boje i stalne veličine**	26	86,7
	Melanom je simetričan, pravilnih ivica, ujednačene boje i stalne veličine, dok je mladež asimetričan, nepravilnih ivica sa varijacijom boja i tendencijom rasta	4	13,3
Koja stanja spadaju u grupu najčešćih opstruktivnih poremećaja u onkologiji?	Sindrom gornje šuplje vene, tamponada perikarda	0	0,0
	Kompresija kičmene moždine, urinarna opstrukcija	12	40,0
	Oba odgovora su tačna	18	60,0
Koja populacija predstavlja ciljnu grupu za skrining u cilju prevencije i ranog otkrivanja malignih bolesti?	Rak dojke – žene od 40 do 50 godina, karcinom grlića materice – žene od 35 do 50 godina, rak debelog creva – žene od 60 do 70 godina	2	6,7
	Rak dojke – žene od 50 do 69 godina, karcinom grlića materice – žene od 25 do 64 godine, rak debelog creva – oba pola od 50 do 74 godine	18	60,0
	Rak dojke – žene od 55 do 75 godina, karcinom grlića materice – žene od 20 do 40 godina, rak debelog creva – muškarci od 50 do 74 godine	10	33,3

*Boldovani su tačni odgovori.

Prema podacima prikazanim u tabeli 3, najveći procenat ispitanika tačno je odgovorio na pitanje o razlici između ciljane terapije i standardne hemioterapije malignih bolesti (96,7%), podnošljivosti bioloških lekova (90,0%) i obaveznoj upotrebi lične zaštitne opreme pri pripremi citostatske terapije (100,0%). Takođe, 86,7% ispitanika tačno je identifikovalo operaciju kao prvi izbor terapije kod lokalizovanog karcinoma prostate. Sa druge strane, 46,7% ispitanika tačno je navelo sve vrste onkološke terapije, dok je 76,7% ispitanika prepoznalo prednosti robotske hirurgije.

Table 2. Knowledge of nurses and nursing technicians regarding the fundamentals of oncological pathology and diagnostics

Questions	Answers	n	%
What are the stages of carcinogenesis?	**Initiation, promotion, and progression**	18	60.0
	Initiation and progression	8	26.7
	Promotion and progression	4	13.3
What are the most common sites of lung cancer metastases?	Pancreas, spleen, colon	9	30.0
	Liver, adrenal gland, bones, brain	16	53.3
	Stomach, heart, reproductive organs	5	16.7
Which symptoms indicate colorectal cancer?	Occult or overt bleeding, changes in bowel habits	0	0,0
	Abdominal pain and cramps, bloating, nausea	0	0,0
	Weight loss, fatigue, anemia	0	0,0
	All answers are correct	30	100,0
How does melanoma differ from a mole?	**Melanoma is asymmetrical, with irregular borders, color variation, and a tendency to grow, whereas a mole is symmetrical, has regular borders, uniform color, and a stable size**	26	86.7
	Melanoma is symmetrical, has regular borders, uniform color, and a stable size, whereas a mole is asymmetrical, with irregular borders, color variation, and a tendency to grow	4	13.3
Which conditions are among the most common obstructive disorders in oncology?	Superior vena cava syndrome, pericardial tamponade	0	0,0
	Spinal cord compression, urinary obstruction	12	40.0
	Both answers are correct	18	60.0
Which population constitutes the target group for screening for the prevention and early detection of malignant diseases?	Breast cancer – women aged 40 to 50 years, cervical cancer – women aged 35 to 50 years, colorectal cancer – women aged 60 to 70 years	2	6.7
	Breast cancer – women aged 50 to 69 years, cervical cancer – women aged 25 to 64 years, colorectal cancer – both sexes aged 50 to 74 years	18	60.0
	Breast cancer – women aged 55 to 75 years, cervical cancer – women aged 20 to 40 years, colorectal cancer – men aged 50 to 74 years	10	33.3

*Correct answers are in bold.

Table 3 shows a high level of respondents' knowledge regarding the difference between targeted therapy and standard chemotherapy for malignant diseases (96.7%), the tolerability of biological medications (90.0%) and the mandatory use of personal protective equipment when preparing cytostatic therapy (100%). In addition, the majority of respondents correctly identified surgery as the first-line treatment for localized prostate cancer (86.7%). On the other hand, only every second respondent (46.7%) knew all types of oncological therapy, and only 76.7% knew the advantages of robotic surgery.

Tabela 3. Znanje medicinskih sestara i tehničara o savremenim terapijskim pristupima

Pitanja	Odgovori	n	%
Koji je prvi izbor lečenja lokalizovanog karcinoma prostate ako se bolest nije proširila na druge organe?	Radioterapija	1	3,3
	Hemioterapija	1	3,3
	Operacija	26	86,7
	Hormonska terapija	2	6,7
Koje su vrste onkološkog tretmana?	**Potpuno tačan odgovor: hirurški tretman, radioterapija, hemioterapija, biološka, hormonska terapija, imunoterapija**	14	46,7
	Delimično tačan odgovor	16	53,3
Po čemu se ciljana terapija razlikuje od standardne hemioterapije?	**Ciljana terapija deluje na specifične receptore kojih najviše ima na tumorskim ćelijama, dok hemioterapija neselektivno deluje na sve ćelije koje se brzo dele**	29	96,7
	Standardna hemoterapija deluje na specifične receptore tumorskih ćelija, dok ciljana terapija deluje neselektivno na sve ćelije koje se brzo dele	1	3,3
Da li je podnošljivost bioloških lekova uglavnom bolja od podnošljivosti standardne hemioterapije?	**Da**	27	90,0
	Ne	0	0
	Zavisi od vrste maligniteta	3	10
Zašto je upotreba lične zaštitne opreme obavezna prilikom pripreme citostatske terapije?	**Zato što su medicinske sestre u radu s citostaticima izložene apsorpciji toksičnih supstanci preko kože i njihovoj inhalaciji u disajne puteve**	30	100
	Zato što prilikom pripreme citostatske terapije može doći do kontaminacije	0	0
	Upotreba lične zaštitne opreme nije obavezna	0	0
Da li robotska hirurgija pruža brojne prednosti u odnosu na tradicionalne otvorene operacije i laparoskopiju?	**Da, predstavlja minimalno invazivnu hiruršku tehniku**	23	76,7
	Ne, tradicionalne operacije su sigurnije	4	13,3
	Ne, laparoskopija je sigurnija i manje invazivna tehnika	3	10

*Boldovani su tačni odgovori.

U oblasti inovacija, 56,7% ispitanika tačno je prepoznalo lasersku terapiju niskog nivoa (engl. *Low Level Laser Therapy* – LLLT) kao inovaciju u lečenju oralnog mukozitisa, dok je 63,3% ispitanika tačno prepoznalo da se uređaj Buzzy koristi za smanjenje bolnih senzacija pri venepunkciji (tabela 4). Posebno nizak procenat tačnih odgovora zabeležen je na pitanju koje se odnosilo na prednosti Port-a-Cath sistema: samo 3,3%, dok 60% ispitanika nije odgovorilo na ovo pitanje.

Table 3. Knowledge of nurses and nursing technicians about contemporary therapeutic approaches

Questions	Answers	n	%
What is the first-line treatment for localized prostate cancer if the disease has not spread to other organs?	Radiotherapy	1	3.3
	Chemotherapy	1	3.3
	Surgery	26	86.7
	Hormone therapy	2	6.7
What are the types of oncological treatment?	**Fully correct answer: surgical treatment, radiotherapy, chemotherapy, biological therapy, hormone therapy, immunotherapy**	14	46.7
	Partially correct answer	16	53.3
How does targeted therapy differ from standard chemotherapy?	**Targeted therapy acts on specific receptors that are predominantly present on tumor cells, whereas chemotherapy acts non-selectively on all rapidly dividing cells**	29	96.7
	Standard chemotherapy acts on specific receptors of tumor cells, whereas targeted therapy acts non-selectively on all rapidly dividing cells	1	3.3
Is the tolerability of biological drugs generally better than that of standard chemotherapy?	**Yes**	27	90.0
	No	0	0.0
	It depends on the type of malignancy	3	10.0
Why is the use of personal protective equipment mandatory when preparing cytostatic therapy?	**Because nurses working with cytostatic drugs are exposed to the absorption of toxic substances through the skin and their inhalation into the respiratory tract**	30	100.0
	Because contamination may occur during the preparation of cytostatic therapy	0	0.0
	The use of personal protective equipment is not mandatory	0	0.0
Does robotic surgery offer numerous advantages over traditional open surgery and laparoscopy?	**Yes, it is a minimally invasive surgical technique**	23	76.7
	No, traditional surgery is safer	4	13.3
	No, laparoscopy is a safer and less invasive technique	3	10.0

*Correct answers are in bold.

A smaller percentage of respondents recognized low-level laser therapy (LLLT) as an innovation in the treatment of oral mucositis (56.7%) and that the function of the Buzzy device is to reduce painful sensations during venipuncture (63.3%) (Table 4). However, a particularly worrying fact is that only 3.3% of respondents correctly stated all advantages of the Porth-a-cath system, while 60% did not answer this question.

Tabela 4. Znanje medicinskih sestara i tehničara o inovacijama u sestrinskoj praksi

Pitanja	Odgovori	n	%
Koja od navedenih metoda predstavlja inovativni pristup u lečenju oralnog mukozitisa?	Lokalna primena antibiotskih gelova	4	13,3
	Lokalna primena kortikosteroidnih gelova	9	30,0
	Laserska terapija niskog nivoa (LLLT)	17	**56,7**
Čemu služi Buzzy uređaj?	**Smanjuje bolne senzacije tokom venepunkcije**	19	63,3
	Pomaže boljoj vizuelizaciji vena	6	20,0
	Sprečava ekstravazaciju leka	5	16,7
Koje su prednosti Port-a-cath sistema?	**Potpuno tačan odgovor: komforno uzorkovanje krvi, postizanje adekvatne koncentracije leka u krvi, kao i u ciljnim tkivima, čuvanje perifernih vena, mogućnost punktiranja porta preko 2.000 puta, može se koristiti mesecima ili godinama uz pravilno rukovanje**	1	3,3
	Delimično tačan	8	26,7
	Netačan	3	10,0
	Bez odgovora	18	60,0

*Boldovani su tačni odgovori.

Podaci prikazani u tabeli 5 pokazuju da je najveći procenat ispitanika tačno odgovorio na pitanja koja su se odnosila na osnovne principe palijativne nege i najčešće komplikacije onkološke terapije. Ukupno 73,3% ispitanika tačno je prepoznalo da je cilj palijativne nege ublažavanje simptoma i unapređenje kvaliteta života. Takođe, 83,3% ispitanika tačno je odgovorilo na pitanje o uzroku i kliničkoj slici oralnog mukozitisa, dok je 70,0% tačno identifikovalo karakteristike radijacijskog dermatitisa.

Tabela 5. Znanje medicinskih sestara i tehničara o palijativnoj nezi i komplikacijama onkološkog lečenja

		n	%
Koja je uloga palijativne nege kod onkoloških bolesnika?	Omogućava sprovođenje individualnog pristupa	2	6,7
	Omogućava efikasnije planiranje, programiranje i realizaciju nege	6	20,0
	Omogućava ublažavanje simptoma i unapređenje kvaliteta života pacijenata	22	73,3
Šta je oralni mukozitis?	Bezbolni oblik upale sluznice usne duplje koji nastaje kao posledica lečenja imunoterapijom	3	10,0
	Bolna inflamatorna promena sluznice usne duplje koja se može javiti kao posledica hemioterapije i/ili radioterapije	25	83,3
	Bolni oblik upale sluznice usne duplje koji nastaje kao posledica lečenja imunoterapijom	2	6,7
Šta karakteriše radijacijski dermatitis?	Pojava urtikarije sa edemom nakon radioterapije	6	20,0
	Pojava tamnih fleka na koži nakon radioterapije sa kasnijom pojavom vlažne deskvamacije	3	10,0
	Pojava crvene, nadražene i suve kože nakon radioterapije uz moguću kasniju pojavu vlažne deskvamacije, fibrinskog eksudata, edema i bula	21	70,0

*Boldovani su tačni odgovori.

Table 4. Knowledge of nurses and nursing technicians regarding innovations in nursing practice

Questions	Answers	No.	%
Which of the following is considered an innovative approach to the treatment of oral mucositis?	Topical use of antibiotic gels	4	13.3
	Topical use of corticosteroid gels	9	30.0
	Low-level laser therapy (LLLT)	17	**56.7**
What is the Buzzy device used for?	**Reduces pain during venipuncture**	19	63.3
	Helps improve vein visualization	6	20.0
	Prevents drug extravasation	5	16.7
What are the advantages of the Port-a-cath system?	**Completely correct answer: comfortable blood sampling, achieving an adequate drug concentration in the blood as well as in the target tissues, preservation of peripheral veins, the possibility of accessing the port more than 2,000 times, and use for months or years with proper handling**	1	3.3
	Partially correct	8	26.7
	Incorrect	3	10.0
	No answer	18	60.0

*Correct answers are in bold.

The data presented in Table 5 show that the majority of respondents demonstrated a satisfactory level of knowledge regarding the basic principles of palliative care and the most common complications of oncological therapy. The majority of respondents (73.3%) recognized that the aim of palliative care is to relieve symptoms and improve the quality of life. Also, 83.3% of them answered correctly the question about the cause and clinical presentation of oral mucositis, while 70.0% identified correctly the characteristics of radiation dermatitis.

Table 5. Knowledge of nurses and nursing technicians regarding palliative care and complications of cancer treatment

		n	%
What is the role of palliative care for oncology patients?	It enables the implementation of an individualized approach	2	6.7
	It enables more effective planning, programming, and provision of care	6	20.0
	It aims to relieve symptoms and improve patients' quality of life	22	73.3
What is oral mucositis?	A painless inflammation of the oral mucosa resulting from immunotherapy	3	10.0
	A painful inflammatory condition of the oral mucosa that may occur following chemotherapy and/or radiotherapy	25	83.3
	A painful inflammation of the oral mucosa resulting from immunotherapy	2	6.7
What characterizes radiation dermatitis?	The occurrence of urticaria with edema after radiotherapy	6	20.0
	The appearance of dark spots on the skin after radiotherapy, followed by moist desquamation	3	10.0
	The appearance of red, irritated, and dry skin after radiotherapy, with possible subsequent moist desquamation with fibrinous exudates, edema, and blister formation	21	70.0

*Correct answers are shown in bold.

Iako je 66,7% ispitanika smatralo da su dovoljno obučeni za rad sa onkološkim pacijentima, isti procenat ispitanika (66,7%) istakao je potrebu za dodatnom obukom (tabela 6).

Tabela 6. Stavovi medicinskih sestara i tehničara i procena potreba za dodatnom edukacijom

Pitanja	Odgovori	n	%
Smatrate li da ste dovoljno obučeni za pružanje zdravstvene nege onkološkim pacijentima?	Da	20	66,7
	Ne	2	6,6
	Delimično	8	26,7
Smatrate li da vam je potrebno dodatno stručno usavršavanje?	Da	20	66,7
	Ne	10	33,3

Diskusija

Rezulatati ovog istraživanja pokazuju da visok procenat medicinskih sestara i tehničara dobro poznaje razliku između ciljane terapije i hemioterapije (96,7%) i važnost korišćenja lične zaštitne opreme pri pripremi citostaika (100%). Ovakvi nalazi mogu ukazivati na uspešno usvajanje osnovnih principa kliničke onkologije tokom školovanja. Slični nalazi opisani su u istraživanju Rostami i saradnika (8), u kojem se ističe značaj sistemskog uključivanja osnovnih znanja i veština iz oblasti onkološke zdravstvene nege u nastavne planove studijskih programa iz oblasti zdravstvene nege.

Slabiji rezultati u razumevanju inovativnih tehnologija, kao što je Port-a-Cath sistem, gde je samo 3,3% naših ispitanika znalo svrhu sistema, ukazuju na nedostatak praktičnog znanja o savremenim kliničkim procedurama i medicinskoj opremi. Takođe, manje od polovine ispitanika (46,7%) tačno je navelo sve vrste onkološke terapije, što ukazuje na potrebu za unapređenjem znanja o različitim modalitetima lečenja malignih bolesti, uključujući ciljane i imunoterapijske pristupe. Ovi nalazi zajedno ukazuju na potrebu za modernizacijom nastavnih planova i većom zastupljenošću savremenih tehnoloških i kliničkih inovacija u kontinuiranoj edukaciji medicinskih sestara i tehničara. Rezultati ovog istraživanja su u skladu sa nalazima Komatsu i saradnika (4), koji ukazuju na nedovoljnu zastupljenost pojedinih tehnoloških inovacija u kurikulumima, naročito u zemljama sa ograničenim resursima, što može imati negativan uticaj na kvalitet i bezbednost nege.

U oblasti palijativne nege, 73,3% ispitanika tačno je prepoznalo osnovni cilj palijativne nege – ublažavanje simptoma i unapređenje kvaliteta života, što ukazuje na razumevanje tog koncepta koji se sve više promoviše u savremenoj onkološkoj praksi. Međutim, Mao i saradnici (1) pokazuju da implementacija efikasne palijativne nege zahteva šire kompetencije medicinskih sestara i tehničara u ovoj oblasti, uključujući adekvatnu komunikaciju sa pacijentima i porodicom, upravljanje bolom i donošenje etičkih odluka.

Posebno značajan nalaz predstavlja činjenica da, iako 66,7% ispitanika smatra da su dovoljno obučeni za rad sa onkološkim pacijentima, isti procenat izražava i potrebu za dodatnom edukacijom. Ovakav nalaz može ukazivati na nesklad između subjektivne procene sopstvene osposobljenosti i prepoznate potrebe za daljim stručnim usavršavanjem. Istovremeno, ovakav stav može predstavljati osnov za planiranje ciljanih edukativnih programa usmerenih na oblasti u kojima je utvrđen niži procenat tačnih odgovora. Komatsu i saradnici (4) i Rostami i saradnici (8), ukazuju na značaj kontinuiranog obrazovanja i razvoja kliničkih veština medicinskih sestara i tehničara za unapređenje sigurnosti pacijenata i efikasnosti zdravstvenog sistema.

Posmatrano u celini, rezultati pokazuju dobro poznavanje osnovnih aspekata onkološke i palijativne nege, uz istovremeno postojanje nedostataka u poznavanju određenih savremenih terapijskih i tehnoloških inovacija. Ovakav nalaz ukazuje na potrebu za unapređenjem nastavnih sadržaja u pravcu integrativne onkologije i visokopouzdanih sistema nege. Ovi nalazi su u skladu sa preporukama iz rada Mao i saradnika (1), u kojem se ističe važnost uvođenja integrativnih i personalizovanih pristupa u obrazovanje zdravstvenih radnika, naročito u kontekstu savremenih izazova u onkologiji.

Rezultati ovog istraživanja potvrđuju važnost sveobuhvatnog i inovativnog pristupa edukaciji medicinskih sestara i tehničara, zasnovanog na utemeljenim dokazima, kliničkoj praksi i tehnološkom

Although 66.7% of respondents claimed that they were sufficiently trained to work with oncological patients, even the same percentage (66.7%) pointed out the need for additional training (Table 6).

Table 6. Attitudes of nurses and nursing technicians and assessment of the need for additional training

Questions	Answers	n	%
Do you consider yourself sufficiently trained to provide nursing care to oncology patients?	Yes	20	66.7
	No	2	6.6
	Partially	8	26.7
Do you feel that you need further professional training?	Yes	20	66.7
	No	10	33.3

Discussion

A high percentage of nurses and technicians knew the difference between targeted therapy and chemotherapy (96.7%) and the importance of using personal protective equipment (100.0%), which indicates the successful adoption of basic concepts related to clinical oncology during their schooling. These results are consistent with the findings of Rostami et al. (8), who pointed out that basic skills and knowledge related to conventional therapies are most often systematically incorporated into the curricula of study programs in the field of health care.

Poorer results related to understanding of innovative technologies, such as the Porth-a-cath system, where only 3.3% of our respondents knew the purpose of the system, indicates the lack of practical knowledge of modern clinical procedures and medical equipment. Also, every second nurse or technician knew the types of oncological therapies, suggesting the need for more in-depth education about differences between conventional, targeted and immunotherapy. Together, these findings indicate the need for modernization of curricula and a greater focus on the application of modern therapeutic innovations in the education of healthcare workers. The results of this study correspond with the findings of Komatsu et al. (4), who indicate that technological innovations in oncology are often insufficiently represented in curricula, especially in middle-income countries, which can have a negative impact on the quality and safety of care.

In the field of palliative care, it is an encouraging fact that 73.3% of respondents identified its essence correctly, that is, that palliative care aims to relieve symptoms and improve the quality of life. This indicates the basic understanding of the concept that is increasingly being promoted in contemporary oncological practice. However, insights from the study by Mao et al. (1) show that in-depth education and better clinical preparation of nurses in this field, including communication with patients and their families, pain management and making ethical decisions, are necessary for the implementation of effective palliative care.

A particularly significant finding is the fact that, although 66.7% of respondents believed that they were sufficiently trained to work with oncology patients, the same percentage expressed the need for additional education. This ambivalence indicates professional responsibility and awareness of one's own knowledge limits, which is a positive basis for the creation of continuous programs of professional training. This trend was also observed in the studies by Komatsu et al. (4) and Rostami et al. (8), who concluded that systemic investments into education and development of clinical skills of nurses and technicians significantly contribute to the safety of patients and the efficiency of the health system.

Finally, the results show that although there is basic knowledge of traditional therapies and palliative approach, there are limitations related to the understanding of contemporary therapeutic innovations, which confirms the need to improve curricula in terms of integrative oncology and highly reliable care systems. These findings are consistent with the recommendations from the study by Mao et al. (1), who emphasize the importance of introducing integrative and personalized approaches in the education of health workers, especially in the context of contemporary challenges in oncology.

This study confirms the importance of a comprehensive and innovative approach in the education of nurses and technicians, based on evidence,

razvoju. Dalja istraživanja i edukativne intervencije trebalo bi usmeriti ka razvoju kompetencija koje omogućavaju bezbednu, humanu i savremenu negu onkoloških pacijenata. Osnovni nedostatak ovog istraživanja jeste mali uzorak ispitanika (n=30) sproveden u jednoj zdravstvenoj ustanovi, što ograničava mogućnost generalizacije dobijenih rezultata na širu populaciju medicinskih sestara i tehničara.

Zaključak

Rezultati istraživanja ukazuju na visok nivo teorijskog znanja o osnovama onkološke patologije, standardnim terapijama i zaštiti na radu, ali i na nedovoljno poznavanje određenih savremenih tehnoloških i kliničkih inovacija, posebno primene Port-a-Cath Sistema, laserske terapije niskog nivoa u uređaja Buzzy. Istovremeno, ispitanici su pokazali visoku profesionalnu svest izražavajući jasnu potrebu za dodatnim usavršavanjem, što ukazuje na neophodnost modernizacije obrazovnih programa i kontinuirane edukacije u cilju pružanja bezbedne, savremene i kvalitetne onkološke nege.

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clinical practice and technological development. Further research and educational interventions should be directed towards the development of competencies that enable safe, humane and modern care of oncology patients. The main limitation of this study is the small sample of respondents (N=30) and the fact that it was conducted in one health care institution, which limits the possibility of generalizing the obtained results to a wider population of nurses and technicians.

Conclusion

The research results show that nurses and technicians demonstrated a high level of theoretical knowledge regarding the fundamentals of oncological pathology, standard therapeutic protocols and occupational safety. However, there is a noticeable gap in knowledge concerning modern technological and clinical innovations (such as the application of Port-a-cath system and LLLT therapy). At the same time, the respondents demonstrated high professional awareness by expressing a clear need for additional training, which indicates the necessity of modernization of educational programs and continuous education aimed at providing safe, modern and quality oncological care.

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