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Understanding and Practices of Oral Hygiene in the Intensive Care Units: Perspectives of Medical Staff at Two University Hospital Centers

Razumijevanje i provedba oralne higijene u jedinicama intenzivne skrbi: stajališta medicinskog osoblja u dvama sveučilišnim kliničkim centrima

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Abstract

Objective: This study assesses the knowledge, practices, and attitudes of medical staff in intensive care units (ICUs) regarding oral hygiene care for critically ill, bedridden patients. **Material and methods:** A cross-sectional study included 65 employees from the Intensive Care Units of the Sestre Milosrdnice Clinical Hospital Centre (CHC SM) and the Clinic for Anesthesiology and Intensive Care at the University Clinical Hospital Centre Zagreb (CHC ZG). A self-administered questionnaire was used to assess knowledge, methods, frequency, and attitudes towards oral care for mechanically ventilated patients. The data were examined through descriptive statistical methods, presented in terms of proportions (percentages). For the purpose of comparing the feedback across the two hospital centers and different educational backgrounds, the Chi-square and Fisher's exact tests were employed. **Results:** Results of a survey of 65 participants (18 from CHC SM and 47 from CHC ZG) revealed a notable disparity in oral hygiene knowledge, with graduate nurses displaying the highest proportion of adequate knowledge (100%) and regular nurses showing the least (30.3%) ($p < .001$). Although the execution of oral care practices did not vary significantly among the groups, graduate nurses performed oral care more frequently (80% vs. baccalaureate technicians 33.33% and nurses 57.6%, three or more times a day) and demonstrated better proficiency in both mechanical ($p = .005$) and chemical ($p < .001$) biofilm management compared to their counterparts. No significant difference was observed in the delivery of oral care to orotracheally intubated patients across different educational levels ($p = .127$). However, a marked difference was noted in the perception of being adequately trained for such care, with nurses feeling less prepared (12.1%, $p < .001$). Despite these variances, all respondents recognized the importance of oral hygiene, thus showing a strong dedication to oral health care. **Conclusions:** This study highlights variability in ICU oral hygiene practices and points to the importance of standardized care protocols and improved training for healthcare staff.

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Introduction

In Intensive Care Units (ICUs), the critical nature of oral hygiene for patient health is well-documented, with numerous studies emphasizing its paramount importance (1, 2). Oral care is not just about maintaining oral health; it plays a significant role in preventing the progression of severe complications in critically ill patients. One of the primary concerns in ICUs is the risk of nosocomial infections, particularly hospital-acquired pneumonia (HAP) and ventilator-associated pneumonia (VAP), which are notorious for causing significant morbidity and mortality among this vulnerable population (3, 4). The mortality rate associated with these conditions can reach as high as 13%, highlighting the grave implications of these infections (3). Moreover, the incidence of VAP varies significantly, leading to severe adverse outcomes for patients, including increased mortality, financial burden, and extended hospital stays (5-7). A notable factor contributing to the increased risk of these infections is the shift in oral microflora towards gram-negative bacteria, which occurs typically within 48 hours of ICU admission. This shift is a key contributor to the development of nosocomial infections (8, 9), emphasizing the need for timely and effective oral hygiene practices. Indeed, studies have shown that diligent oral care can markedly reduce the risk of developing such infections, thus underscoring the vital role of oral hygiene in the overall management and care of ICU patients (10-15). Despite widespread recognition of its importance, there remains a considerable variability in oral care practices among healthcare professionals. This inconsistency points to a significant gap in the standardization of oral care protocols and the need for improved training programs tailored for ICU settings (16-27). The disparities in knowledge and skills concerning oral care practices further underline the critical need for evidence-based training and education. Such initiatives are essential for enhancing the competence of nursing staff in providing effective oral hygiene care, which is paramount to prevent complications and improving patient outcomes in ICUs (28). This study aimed to assess the level of knowledge among ICU nurses in two major hospitals in Zagreb, Croatia, regarding oral hygiene in critically ill patients. It focuses on the methods employed by these nurses and the challenges they encounter in maintaining effective oral hygiene in ICUs.

Material and methods

This study was carried out in May 2022 at two prominent hospital centers: the Clinical Hospital Center Sestre Milosrdnice (CHC SM) and the Clinic for Anesthesiology and Intensive Care at the Clinical Hospital Center Zagreb (CHC ZG). The research protocol received approval from the Research Ethics Committee of CHC SM and the School of Dental Medicine, University of Zagreb, Croatia. An introductory section of the questionnaire provided participants with a concise overview of the study's objectives, along with assurances regarding data confidentiality, anonymity, and the voluntary nature of participation. A comprehensive questionnaire served as the primary research tool to evaluate various aspects

Uvod

U jedinicama intenzivnog liječenja (JIL) oralna higijena, iznimno važna za zdravlje pacijenata, dobro je dokumentirana u mnogobrojnim studijama u kojima se ističe njezina golemu važnost (1, 2). Oralna njega nije samo održavanje oralnoga zdravlja, veoma je važna u sprječavanju napredovanja teških komplikacija kod kritično bolesnih pacijenata. Jedan od primarnih zadataka u JIL-u jest spriječiti rizik od bolničkih infekcija, posebno bolnički stečene pneumonije (HAP) i pneumonije povezane s ventilatorom (VAP). Naime, obje uzrokuju značajni morbiditet i smrtnost među tom ranjivom populacijom (3, 4). Stopa smrtnosti povezana s tim stanjima može dosegnuti visokih 13 %, što pokazuje ozbiljne posljedice tih infekcija (3). Štoviše, incidencija VAP-a znatno varira i rezultira teškim nepovoljnim ishodom za pacijente, uključujući povećanu smrtnost, financijsko opterećenje i produljeni boravak u bolnici (5 – 7). Značajan čimbenik koji pridonosi povećanom riziku od tih infekcija jest promjena oralne mikroflore prema gram-negativnim bakterijama, a obično se događa unutar 48 sati od prijma u JIL (8, 9). Ta promjena ključni je čimbenik u razvoju bolničkih infekcija te se ističe potreba za pravodobnom i učinkovitom provedbom oralne higijene. Doista, u studijama su autori pokazali da redovita oralna njega može znatno smanjiti rizik od pojave takvih infekcija, te ističu vitalnu ulogu oralne higijene u ukupnom upravljanju i u skrbi za pacijente u JIL-u (10 – 15). Unatoč priznanju da je itekako važna, i dalje se među zdravstvenim profesionalcima uočava znatna varijabilnost u praksama oralne njege. Ta nedosljednost upozorava na veliki jaz u standardizaciji protokola oralne njege i na to da je nužno poboljšati programe izobrazbe i prilagoditi ih potrebama JIL-a (16 – 27). Razlike u znanju i vještinama, kad je riječ o prakticanju oralne njege, dodatno dokazuju koliko je nužna dobra i temeljita edukacija. Takve inicijative ključne su za poboljšanje kompetencija medicinskog osoblja u pružanju učinkovite njege oralne higijene, što je iznimno važno za sprječavanje komplikacija i poboljšanje stanja pacijenata u JIL-u (28). Ova studija ima za cilj procijeniti razinu znanja među medicinskim sestrama u JIL-u u dvjema velikim bolnicama u Zagrebu (Hrvatska) u vezi s oralnom higijenom kritično bolesnih pacijenata. Fokusira se na metode kojima se koriste sestre i na izazove s kojima se suočavaju u održavanju učinkovite oralne higijene u JIL-u.

Materijali i metode

Ovo istraživanje provedeno je u svibnju 2022. godine u dvama istaknutim bolničkim centrima: Kliničkome bolničkom centru Sestre milosrdnice (KBC SM) i u Klinici za anesteziologiju i intenzivno liječenje Kliničkoga bolničkoga centra Zagreb (KBC ZG). Protokol istraživanja odobrio je Etički odbor za istraživanje KBC-a SM-a i Stomatološkog fakulteta Sveučilišta u Zagrebu. Uvodni dio upitnika omogućio je sudionicima sažet pregled ciljeva studije, zajedno s jamstviima o povjerljivosti podataka, anonimnosti i dobrovoljnom sudjelovanju. Sveobuhvatni upitnik poslužio je kao primarno istraživačko sredstvo za procjenu različitih aspekata praksi oralne higijene u JIL-u. Ovaj upitnik nastao je sintezom ele-

of oral hygiene practices in the ICU. This questionnaire was developed by synthesizing elements from previous studies in this field (29, 30). It consisted of four distinct sections: demographic information (gender, professional experience in the ICU, level of education, length of work shift), three YES/NO questions regarding knowledge considering three terms ("Have you ever heard of coated tongue/biofilm/nosocomial pneumonia?"), 6 YES/NO and multiple-choice questions regarding methods and frequency of oral hygiene procedures (questions: "Do you perform oral care on patients?", "Do you perform oral care in patients with orotracheal intubation?", "Do you use vacuum aspiration after cleaning the oral cavity?", frequency of performing oral care, mechanical and chemical control of biofilm) and one YES/NO question as well as three YES/NO statements regarding the medical staff's attitude and motivation towards oral care ("Are you adequately trained in performing oral hygiene?", "Oral hygiene has a very high priority for mechanically ventilated patients.", "Cleaning the oral cavity is an unpleasant task.", "The oral cavity is difficult to clean."). The knowledge was considered "adequate" only if the participants had all three answers to knowledge questions answered positively.

Data were analyzed using the SPSS Statistics for Windows, version 17.0 software (SPSS Inc., Chicago, IL, USA). The variables were analyzed using descriptive statistics reported as proportions (percentages). To compare responses between the two hospital centers and among education levels, the Chi-square and Fisher's exact tests were utilized. A p-value threshold of less than .05 ($p < .05$) was set for determining statistical significance.

Results

The study surveyed 65 health professionals in the ICUs of two major hospitals in Zagreb, Croatia. The majority were nurses (50.7%) and baccalaureate technicians (41.5%). They typically worked 12-hour days, with most having 1–5 years (30.8%) or over 10 years (29.2%) of ICU experience. The study found varied knowledge among professionals about coated tongues, biofilms, and nosocomial pneumonia. While 66.6% of them were aware of coated tongue and 50.7% understood nosocomial pneumonia, 40.0% of professionals lacked knowledge about biofilm. Oral cavity cleaning was common practice, with 93.8% of them cleaning both intubated and non-intubated patients' oral cavities. Approximately half of the professionals practiced oral care at least twice daily, while about 39.3% of them did so three times a day. The methods used for oral care varied: 70.5% of professionals used toothbrushes and foam swabs, 29.5% of them used spatulas and gauze, 46.9% of them used 0.12% CHX mouthwash, 22.2% of professionals used toothpaste, and 9.9% of them used both. Interestingly, 21% of professionals only used water without chemical agents for biofilm control. Most professionals viewed oral care for ICU patients positively, with 97.0% of them considering it a high-priority for ventilated patients. Only 53.8% of professionals felt adequately trained in oral hygiene, and 81 of them 5% used an aspiration vacuum for these procedures. However, nearly half of profes-

sioners were not adequately trained in oral hygiene, as shown in data from previous studies in this field (29, 30). Sastojao se od četiri različita odjeljka: demografske informacije (spol, profesionalno iskustvo u JIL-u, razina obrazovanja, duljina radne smjene), tri pitanja DA/NE u vezi s poznavanjem triju pojmova ("Jeste li ikada čuli za obloženi jezik/biofilm/bolnički pneumoniju?"), 6 pitanja DA/NE i višestruki izbor kad je riječ o metodama i učestalosti postupaka oralne higijene (pitanja: "Provodite li oralnu higijenu pacijentima?", "Obavljate li oralnu higijenu pacijentima s orotrachealnom intubacijom?", "Koristite li se vakuumskom aspiracijom poslije čišćenja usne šupljine?", učestalost provođenja njege usne šupljine, meha nička i kemijska kontrola biofilma) i jedno pitanje DA/NE te tri tvrdnje DA/NE u vezi sa stajalištem i motivacijom medicinskog osoblja kad je riječ o njezi usne šupljine ("Jeste li adekvatno poučeni za provođenje oralne higijene?", "Oralna higijena veoma je važna za pacijente na mehaničkoj ventilaciji?", "Čišćenje usne šupljine neugodan je zadatak?", "Usnu šupljinu teško je čistiti"). Znanje se smatralo „adekvatnim” samo ako su sudionici na sva tri pitanja o znanju odgovorili pozitivno.

Podatci su analizirani korištenjem softvera SPSS Statistics za Windows, verzija 17.0 (SPSS Inc., Chicago, IL, SAD). Varijable su analizirane korištenjem deskriptivne statistike i prikazane kao proporcije (postotci). Za usporedbu odgovora između dvaju bolničkih centara i među razinama obrazovanja, korišteni su Chi-kvadrat test i Fisherov egzaktni test. Za određivanje statističke značajnosti postavljen je prag vrijednosti p manji od .05 ($p < .05$).

Rezultati

U studiji je anketirano 65 zdravstvenih profesionalaca u JIL-ima u dvjema velikim bolnicama u Zagrebu (Hrvatska). Većina su bile medicinske sestre (50,7 %), a slijede tehničari s diplomom (41,5 %). Obično su radili 12-satne smjene, pri čemu je većina imala od 1 do 5 godina iskustva u JIL-u (30,8 %) ili više od 10 godina (29,2 %). Zabilježeno je različito znanje među profesionalcima o obloženim jezicima, biofilmu i bolničkim pneumonijama. Dok je 66,6 % sudionika bilo svjesno obloženog jezika i 50,7 % razumjelo je bolničku pneumoniju, 40,0 % nije imalo dovoljno znanja o biofilmu. Čišćenje usne šupljine bila je uobičajena praksa – njih 93,8 % čistili su usnu šupljinu pacijentima s intubacijom i bez nje. Otprilike polovina profesionalaca prakticirala je oralnu njegu najmanje dva puta na dan, a oko 39,3 % to je činilo tri puta na dan. Metode korištene za oralnu njegu varirale su: 70,5 % koristilo se četkicama i pjenom za zamjenu, 29,5 % koristilo se špatulom i gazom, 46,9 % koristilo se 0,12-postotnim klorheksidinom (CHX) za ispiranje usta, 22,2 % koristilo se pastom za zube, a 9,9 % i jednim i drugim. Zanimljivo je da je 21 % upotrebljavalo samo vodu bez kemijskih sredstava za kontrolu biofilma. Većina profesionalaca pozitivno je gledala na oralnu higijenu pacijenata u JIL-u pa je njih 97,0 % smatralo da je to prioritet za pacijente na ventilaciji. Samo 53,8 % smatralo se adekvatno educiranima za oralnu higijenu, a 81,5 % koristilo se vakuumskom aspiracijom za te postupke.

nals found cleaning the oral cavity challenging. Comparison of knowledge and awareness about oral hygiene depending on the education level is presented in Table 1. There were notable differences between the two hospitals. ICU of the CHC ZG had more baccalaureate technicians ($p=.009$) and higher knowledge levels about coated tongue ($p<.001$), biofilm ($p=.017$), and nosocomial pneumonia ($p=.007$) compared to the ICU of the CHC SM. Moreover, the use of 0.12% CHX ($p<.001$) was also more common at CHC ZG. These findings are detailed in Table 2.

Discussion

Oral care within hospital settings, particularly emphasized for ICUs, emerges as a cornerstone in averting dental issues and bolstering the overall health status of critically ill or me-

No gotovo polovina isticala je da je čišćenje usne šupljine izazovno. Usporedba znanja i svijesti o oralnoj higijeni, ovisno o razini obrazovanja, prikazana je u tablici 1. Zabilježene su značajne razlike između dviju bolnica. JIL KBC-a ZG imao je više tehničara s diplomom ($p=.009$) i veću razinu znanja o obložnom jeziku ($p<.001$), biofilmu ($p=.017$) i bolničkoj pneumoniji ($p=.007$) u usporedbi s JIL-om KBC-a SM-a. Uz to, korištenje 0,12-postotnoga CHX-a ($p<.001$) također je bilo češće u KBC-u ZG. Ti nalazi detaljno su prikazani u tablici 2.

Rasprava

Oralna njega u bolničkim uvjetima, posebno u JIL-u, temeljni je kamen u sprječavanju dentalnih problema i poboljšanju općega zdravstvenog stanja kritično bolesnih ili me-

Table 1 Comparison of knowledge and awareness about oral hygiene implementation in ICU patients, depending on the education level
Tablica 1. Usporedba znanja i svijesti o provođenju oralne higijene pacijentima u JIL-u, ovisno o razini obrazovanja

Education level • Razina obrazovanja					
Question • Pitanje		Graduate nurse • Diplomirana sestra	baccalaureate technician • Tehničar	Nurse • Sestra	p value • p vrijednost
Knowledge • Znanje	Adequate • Adekvatno	100.0%	66.7%	30.3%	<.001
	Inadequate • Neadekvatno	0.0%	33.3%	69.7%	
Do you perform oral care on patients? • Provodite li pacijentima oralnu higijenu?	Yes • Da	100.0%	100.0%	87.9%	.127
	No • Ne	0.0%	0.0%	12.1%	
Frequency of performing oral care • Učestalost provođenja oralne higijene	3x times or more • Tri puta dnevno ili više	80.0%	33.3%	57.6%	<.001
	Twice a day • Dvaput dnevno	20.0%	59.3%	42.4%	
	Once a day • Jednom dnevno	0.0%	7.4%	0.0%	
Mechanical control of biofilm • Mehanička kontrola biofilma	Spatulas and gauze • Špatule i gaze	40.0%	59.3%	18.2%	.005
	Toothbrush/foam swap • Četkica za zube/pjene za zamjenu	60.0%	40.7%	81.8%	
Chemical control of biofilm • Kemijska kontrola biofilma	Water • Voda	0.0%	11.1%	27.3%	<.001
	Toothpaste • Pasta za zube	0.0%	14.8%	24.2%	
	0.12% chlorhexidine • 0.12% klorheksidin	0.0%	70.4%	48.5%	
	0.12% chlorhexidine and toothpaste • 0.12% klorheksidin i pasta za zube	100.0%	3.7%	0.0%	
Do you perform oral care in patients with orotracheal intubation? • Provodite li oralnu higijenu pacijentima s orotrahealnom intubacijom?	Yes • Da	100.0%	100.0%	87.9%	.127
	No • Ne	0.0%	0.0%	12.1%	
Are you adequately trained in performing oral hygiene? • Jeste li dobili adekvatnu pouku o provođenju oralne higijene?	Yes • Da	100.0%	96.3%	12.1%	<.001
	No • Ne	0.0%	3.7%	87.9%	
Oral hygiene has a very high priority for mechanical ventilated patients • Oralna higijena ima vrlo visok prioritet za pacijente na mehaničkoj ventilaciji.	Yes • Da	100.0%	100.0%	93.9%	.368
	No • Ne	0.0%	0.0%	6.1%	
Cleaning the oral cavity is an unpleasant task • Čišćenje usne šupljine neugodan je zadatak.	Yes • Da	80.0%	51.9%	27.3%	.003
	No • Ne	20.0%	48.1%	72.7%	
The oral cavity is difficult to clean • Usnu šupljinu teško je čistiti.	Yes • Da	20.0%	66.7%	39.4%	.043
	No • Ne	80.0%	33.3%	60.6%	
Do you use vacuum aspiration after cleaning the oral cavity? • Koristite li vakuuskom aspiracijom poslije čišćenja usne šupljine?	Yes • Da	100.0%	100.0%	63.6%	<.001
	No • Ne	0.0%	0.0%	36.4%	

*Chi-squared/Fisher exact test • Chi-kvadrat test / Fisherov egzakti test

Table 2 Comparative analysis of oral hygiene implementation in ICU patients at two Zagreb hospitals: CHC SM and CHC ZG, based on survey questionnaire results. Chi square or Fisher Exact test (*)**Tablica 2.** Komparativna analiza provođenja oralne higijene pacijentima u JIL-u u dvjema zagrebačkim bolnicama: KBC-u SM i KBC-u ZG, na temelju rezultata ankete. Chi-kvadrat test ili Fisherov egzaktni test (*)

Questionnaire • Upitnik	CHC SM (n=18)	CHC ZG (n=47)	P
Gender • Spol Male • Muški Female • Ženski	4 (22.2%) 14 (77.8%)	11 (23.4%) 36 (76.6%)	.919
Professional experience in the ICU • Radno iskustvo u JIL-u < 1 year • < 1 godine 1-5 years • 1 – 5 godina 5-10 years • 5 – 10 godina > 10 years • > 10 godina	3 (23.0%) 5 (27.8%) 4 (22.3%) 6 (33.3%)	7 (14.9%) 15 (31.9%) 12 (25.5%) 13 (27.6%)	.960
Level of education • Razina obrazovanja graduate nurse • Diplomirana sestra baccalaureate technician • Tehničar nurse • Sestra	2 (11.1%) 2 (11.1%) 14 (77.7%)	3 (6.4%) 25 (53.2%) 19 (40.4%)	.009
Length of work shift • Trajanje radne smjene 8h/day • 8 sati/na dan 12h/day • 12 sati/na dan 24 h • 24 sata	1 (11.1%) 16 (89.0%) 1 (11.1%)	3 (9.7%) 25 (80.6%) 3 (9.7%)	.753
Knowledge about coated tongue • Znanje o obloženoj jeziku Yes • Da No • Ne	18 (100%) 0 (0%)	25 (53.2%) 22 (46.8%)	< .001
Knowledge about biofilm • Znanje o biofilmu Yes • Da No • Ne	15 (83.3%) 3 (16.7%)	24 (51.0%) 23 (49.0%)	.017
Knowledge about nosocomial pneumonia • Znanje o nozokomijalnoj pneumoniji Yes • Da No • Ne	14 (77.7%) 4 (22.3%)	19 (40.4%) 28 (59.6%)	.007
Do you perform oral care on patients? • Obavljate li oralnu higijenu pacijenata? Yes • Da No • Ne	16 (88.9%) 2 (11.1%)	45 (95.7%) 2 (4.3%)	.303
Frequency of performing oral care • Učestalost provođenja oralne higijene Once a day • Jedanput na dan Twice a day • Dvapat na dan Three times a day or more • Triput na dan ili više	3 (16.7%) 10 (55.6%) 5 (27.7%)	4 (8.5%) 21 (44.7%) 22 (46.8%)	.323
Mechanical control of biofilm • Mehanička kontrola biofilma Spatulas and gauze • Špatule i gaze Toothbrush / Foam swap (for toothless patients) • Četkica za zube/pjene za zamjenu (za bezube pacijente)	4 (20%) 16 (80%)	20 (42.6%) 27 (57.4%)	.078
Chemical control of biofilm • Kemijska kontrola biofilma Water • Voda Toothpaste • Pasta za zube 0,12 % chlorhexidine • 0,12-postotni klorheksidin 0,12 % chlorhexidine and toothpaste • 0,12-posdtotni klorheksidin i pasta za zube	11 (32.3%) 13 (38.3%) 6 (17.6%) 4 (11.8%)	6 (12.8%) 5 (10.6%) 32 (68.1%) 4 (8.5%)	< .001
Do you perform oral care in patients with orotracheal intubation? • Obavljate li oralnu higijenu pacijentima s orotrahealnom intubacijom? Yes • Da No • Ne	16 (88.8%) 2 (11.2%)	45 (95.7%) 2 (4.3%)	.303
Are you adequately trained in performing oral hygiene? • Jeste li adekvatno podučeni o provođenju oralne higijene? Yes • Da No • Ne	8 (44.5%) 10 (55.5%)	27 (57.4%) 20 (42.6%)	.347
Oral hygiene has a very high priority for mechanically ventilated patients • Oralna higijena ima vrlo visok prioritet za pacijente na mehaničkoj ventilaciji Yes • Da No • Ne	18 (100%) 0 (0%)	45 (95.7%) 2 (4.3%)	.374
Cleaning the oral cavity is an unpleasant task • Čišćenje usne šupljine neugodan je zadatak Yes • Da No • Ne	7 (38.9%) 11 (61.1%)	20 (42.6%) 27 (57.4%)	.789
The oral cavity is difficult to clean • Usnu šupljinu teško je čistiti Yes • Da No • Ne	10 (55.6%) 8 (44.4%)	22 (46.8%) 25 (53.2%)	.528
Do you use vacuum aspiration after cleaning the oral cavity? • Koristite li se vakuumskom aspiracijom poslije čišćenja usne šupljine? Yes • Da No • Ne	16 (88.8%) 2 (11.2%)	37 (78.7%) 10 (21.3%)	.344

CHC SM - the Clinical Hospital Center Sestre Milosrdnice; CHC ZG - the Clinic for Anesthesiology and Intensive Care at the Clinical Hospital Center Zagreb; ICU – Intensive care unit • KBC SM – Klinički bolnički centar Sestre milosrdnice; KBC ZG – Klinika za anesteziologiju, reanimatologiju i intenzivno liječenje Kliničkoga bolničkoga centra Zagreb; JIL – jedinica intenzivnog liječenja

dically fragile patients (23, 31, 32). Despite its crucial importance, oral care frequently finds itself relegated to the background, often perceived as an unwelcome chore by nursing staff, which unfortunately leads to its oversight and neglect (32-34). This situation beckons a paradigm shift in nursing perceptions, highlighting the necessity for nurses to acknowledge oral care as a quintessential element of comprehensive patient care, pivotal for diminishing aspiration risks and fostering enhanced patient outcomes. Spearheading efforts to rectify this issue involves a robust push towards enriching educational and training frameworks, alongside the formulation and dissemination of clear, actionable oral care guidelines (33, 35).

Insightful research delineates that an overwhelming majority, exceeding 90%, of nurses and technicians actively partake in oral care regimens within ICUs, spotlighting the critical role of plaque eradication and meticulous tongue cleansing in warding off potential complications (36). Such findings illuminate the path forward, underscoring an urgent need for the elevation of educational standards and the harmonization of oral care practices to mitigate knowledge disparities among the nursing cadre, especially with a lens towards the prevention of VAP - a prevalent challenge among mechanically ventilated patients (19, 21, 37, 38). Nurses, fully cognizant of their indispensable role in upholding oral hygiene in ICUs, face the intricacies posed by intubated patients head-on, harboring a strong inclination towards mastering more efficacious oral care methodologies, a resolve shaped significantly by their hands-on experiences and the regularity of oral care engagement (23, 33, 39-42). The discourse extends to the intricate landscape of oral care in ICU environments, where peculiar challenges such as xerostomia (dry mouth) and the employment of endotracheal tubes necessitate an uncompromising approach to oral hygiene (15, 43-50). A commanding majority of nurses advocate for the strategic inclusion of dental professionals within ICU teams, thus acknowledging the incontrovertible link between dental plaque accumulation, microbial colonization, and the heightened risk of VAP, affecting a notable 10-20% of mechanically ventilated patients across Europe (29, 51-54). This stance dovetails with the overarching goals of dental programs, squarely aimed at prevention and curtailing healthcare resource utilization (55-57). Focusing on the hospitals in Zagreb, our investigations reveal a steadfast dedication to oral hygiene in ICU settings, with a remarkable 93.8% of respondents actively participating in oral care routines, though in the absence of a universally adopted protocol. The lean towards mechanical cleaning methods by a substantial 70.5% of the surveyed group, coupled with the strategic use of 0.12% CHX by 46.9%, mirrors a proactive orientation towards oral health (58-62). Additionally, the inquiry brings to light the significant influence of the nursing staff's educational background on the embracement of specialized biofilm management protocols, accentuating the criticality of standardized hygiene protocols for the delivery of consistent and efficacious care (55, 56, 59-63). The practice of vacuum aspiration by 81.5% of the participants is spotlighted as a pivotal regimen for the maintenance of oral health within ICUs (1, 60, 62). Scholarly reviews and studies champion the synergistic application of chemical and mechanical clean-

dicinski ranjivih pacijenata (23, 31, 32). Unatoč važnosti, oralna njega često je u drugom planu i često je medicinsko osoblje percipira kao neželjeni zadatak, što nažalost rezultira njezinim previdom i zanemarivanjem (32 – 34). Ta situacija zahtijeva promjenu paradigme u percepciji medicinskih sestara te se ističe potreba da medicinske sestre shvate oralnu njegu kao bitan element sveobuhvatne skrbi za pacijenta, ključan za smanjenje rizika od aspiracije i postizanje poboljšanog ishoda za pacijente. Na vrhu napora za ispravljanje toga problema jest snažan poticaj za obogaćivanje edukativnih i vježbovnih okvira, uz formulaciju i diseminaciju jasnih i provedivih smjernica za oralnu njegu (33, 35).

Istraživanja pokazuju da premoćna većina, više od 90 %, medicinskih sestara i tehničara, aktivno sudjeluje u provođenju oralne njege u JIL-u, te autori ističu koliko je važno ukloniti plak i temeljito očistiti jezik da bi se spriječile potencijalne komplikacije (36). Takvi nalazi omogućuju napredak i pokazuju koliko je važno podignuti edukativne standarde i uskladiti prakse oralne njege kako bi se ublažile razlike u znanju među medicinskim osobljem, posebno kad je riječ o prevenciji VAP-a, čestog izazova među pacijentima na mehaničkoj ventilaciji (19, 21, 37, 38). Medicinske sestre, potpuno svjesne svoje nezamjenjive uloge u održavanju oralne higijene u JIL-u, izravno se suočavaju s izazovima koje postavljaju intubirani pacijenti i trude se usvojiti učinkovitije metode oralne njege, a ta odluka uglavnom se temelji na njihovu praktičnom iskustvu i redovitosti angažmana u oralnoj njezi (23, 33, 39 – 42). Diskurs se proteže na složenost oralne njege u okruženjima JIL-a, gdje posebni izazovi poput kserostomije (suha usta) i upotrebe endotrahealnih cijevi zahtijevaju redovito održavanje oralne higijene (15, 43 – 50). Priznajući nedvojbenu vezu između nakupljanja dentalnog plaka, mikrobijalne kolonizacije i povećanog rizika od VAP-a koji pogađa čak od 10 do 20 % pacijenata na mehaničkoj ventilaciji diljem Europe (29, 51 – 54), znatna većina medicinskih sestara zagovara strateško uključivanje dentalnih profesionalaca u timove JIL-a. To stajalište usklađuje se s općim ciljevima dentalnih programa usmjerenih izravno na prevenciju i smanjenje korištenja zdravstvenih resursa (55 – 57). Fokusrajući se na bolnice u Zagrebu, naše istraživanje otkriva čvrstu predanost oralnoj higijeni u JIL-ima – čak 93,8 % ispitanika aktivno sudjeluje u rutinama oralne njege, iako nema univerzalno prihvaćenog protokola. Mehaničke metode čišćenja preferira čak 70,5 % ispitanika, što zajedno sa strateškom uporabom 0,12-postotnoga CHX-a od 46,9 %, odražava proaktivnu orijentaciju kad je riječ o oralnome zdravlju (58 – 62). Nadalje, istraživanje osvjetljava znatan utjecaj obrazovne pozadine medicinskog osoblja na prihvaćanje specijaliziranih protokola za upravljanje biofilmom, te ističe kritičnost standardiziranih higijenskih protokola za pružanje dosljedne i učinkovite njege (55, 56, 59 – 63). Vakuumsku aspiraciju prakticira 81,5 % sudionika i smatra je ključnom za održavanje oralnoga zdravlja unutar JIL-a (1, 60, 62). U znanstvenim pregledima i studijama zagovara se sinergijska primjena kemijskih i mehaničkih metoda čišćenja kao strateška mjera za smanjenje stopa bolničkih infekcija, te se ističe integralna uloga dentalnih profesionalaca u oblikovanju strategija oralne njege za kontekste JIL-a (9, 30, 58, 64 – 75). Promatrana heteroge-

sing methodologies as a strategic measure to slash hospital infection rates, spotlighting the integral role dental professionals play in sculpting oral care stratagems for ICU contexts (9, 30, 58, 64-75). The observed heterogeneity in oral care practices underscores an acute need for the establishment of uniform protocols aimed at amplifying the effectiveness of these regimens in curtailing pathogen proliferation and reducing the incidence of pneumonia (11, 15, 17, 60). In addressing these multifaceted challenges, it becomes imperative to craft and promulgate clear oral care policies, bolster educational initiatives, and champion the practical application of knowledge through the active engagement of dental professionals. These strategic measures are envisioned to elevate the standards of oral care within ICUs, subsequently enhancing patient outcomes (24, 76-83). While the focus of this study on a limited number of hospitals might constrain its broader applicability across Croatia, it nonetheless offers invaluable insights into prevailing practices and perceptions surrounding oral care in ICUs, thus laying a solid foundation for targeted enhancements in the realm of ICU oral healthcare.

Conclusions

The study reveals that while ICU personnel have a high level of knowledge about oral hygiene, there is noticeable variability in the frequency and methods of oral care. Nurses, as primary caregivers, are well-aware of the importance of oral hygiene on systemic health. These findings emphasize the need for standardizing oral care protocols in ICUs and advocate for ongoing education of medical professionals to ensure effective and consistent oral hygiene practices, which are crucial for patient outcomes.

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nost u praksama oralne njege ističe akutnu potrebu za uspostavom jedinstvenih protokola usmjerenih na pojačavanje učinkovitosti tih režima u suzbijanju proliferacije patogena i smanjenju incidencije pneumonije (11, 15, 17, 60). Među tim višestrukim izazovima imperativ postaje osmisliti i promicati jasnu politiku oralne njege, pojačati edukativne inicijative i zagovarati praktičnu primjenu znanja angažirajući dentalne profesionalce. Te strateške mjere zamišljene su da bi se podignulo standarde oralne njege unutar JIL-a, naknadno poboljšavajući ishode za pacijente (24, 76 – 83). Iako se fokus studije na ograničenom broju bolnica ne može ograničiti na širu primjenjivost diljem Hrvatske, ipak nudi neprocjenjive uvide u prevladavajuću praksu i percepciju o oralnoj njezi u JIL-ima te postavlja čvrstu osnovu za ciljana poboljšanja u području oralnoga zdravlja u JIL-u.

Zaključak

Iako osoblje JIL-a ima visoku razinu znanja o oralnoj higijeni, studija otkriva da postoji primjetna varijabilnost u učestalosti i metodama oralne njege. Medicinske sestre, kao primarne njegovateljice, itekako su svjesne važnosti oralne higijene za zdravlje sustava. Ovi nalazi pokazuju da je potrebna standardizacija protokola oralne njege u JIL-ima i zagovaraju kontinuirano obrazovanje medicinskih stručnjaka kako bi se osigurala učinkovita i dosljedna praksa oralne higijene zato što je ključna za stanje pacijenata.

Sukob interesa: Autori nisu bili u sukobu interesa.

Doprinos autora: V. V., B. Š. – dizajn, pretraživanje literature, interpretacija podataka, pisanje rada, slaganje referencija prema uputama, podešavanje referencija; V. Brailo – dizajn, pretraživanje literature, interpretacija podataka, pisanje teksta; D. N. V., A. T. A., V. D., L. Š. – dizajn, interpretacija podataka; V. Bratić, Z. M., S. R., I. P. K. – interpretacija podataka. Svi su autori potvrdili konačnu verziju teksta.

Sažetak

Cilj: U ovoj studiji autori su procjenjivali znanje, prakse i stajališta medicinskog osoblja u jedinicama intenzivnog liječenja (JIL) povezana s provođenjem oralne higijene kad je riječ o kritično bolesnim, nepokretnim liječnicima. **Materijali i metode:** Presječna studija obuhvatila je 65 zaposlenika iz jedinica intenzivne skrbi Kliničkoga bolničkoga centra Sestre milosrdnice (KBC SM) i Klinike za anesteziologiju i intenzivno liječenje Kliničkoga bolničkoga centra Zagreb (KBC ZG). Za procjenu znanja, metoda, učestalosti i stajališta o oralnoj njezi mehanički ventiliranih pacijenata korišten je samoprocijenjeni upitnik. Podatci su analizirani deskriptivnim statističkim metodama, a predstavljeni su u obliku proporcija (postotaka). Za usporedbu povratnih informacija između dvaju bolničkih centara i različitih obrazovnih profila, korišteni su Chi-kvadrat i Fisherovi egzaktni testovi. **Rezultati:** Rezultati anketne dobiveni od 65 sudionika (18 iz KBC-a SM i 47 iz KBC-a ZG) otkrili su značajne razlike u znanju o oralnoj higijeni, pri čemu su diplomirane medicinske sestre pokazale najveći udio adekvatnog znanja (100 %), a redovite medicinske sestre najmanji (30,3 %) ($p < 0,001$). Iako obavljanje oralne njege među grupama nije znatno variralo, diplomirane medicinske sestre provodile su oralnu njegu češće (80 % prema tehničarima s diplomom – 33,33 % i medicinskim sestrama – 57,6 %, tri ili više puta na dan) i pokazale su veću vještinu u mehaničkoj ($p = 0,005$) i kemijskoj ($p < 0,001$) kontroli biofilma u usporedbi s kolegama. Nije zabilježena značajna razlika u pružanju oralne njege pacijentima intubiranim orotrahealno među različitim obrazovnim razinama ($p = 0,127$). Ne uočena je veoma velika razlika u percepciji odgovarajuće izobrazbe za takvu njegu, pri čemu su se medicinske sestre osjećale manje pripremljenima (12,1 %, $p < 0,001$). Unatoč tim varijacijama, svi ispitanici prepoznali su važnost oralne higijene i isticali snažnu posvećenost njezi oralnoga zdravlja. **Zaključci:** U ovoj studiji istaknuta je varijabilnost u praksama oralne higijene u JIL-u i važnost standardiziranih protokola njege te poboljšane izobrazbe za zdravstveno osoblje.

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