Marko Kimi Milić[1], Šćepan Sinanović[1], Dejan Kostić[2,3], Branislav Ralić[4]

UPRAVLJANJE KVALITETOM U VISOKOM STRUKOVNOM MEDICINSKOM OBRAZOVANJU: FOKUS NA SRBIJU

APSTRAKT: Uvod: Studija analizira sisteme upravljanja kvalitetom u visokim medicinskim školama strukovnih studija u Srbiji, istražujući njihovu usklađenost sa nacionalnim i međunarodnim standardima, kao i specifične izazove praktično orijentisanog obrazovanja.

Metode: Primenjen je metodološki pristup mešovitih metoda (mixed-methods) u pet akreditovanih institucija. Kvantitativna analiza obuhvatila je institucionalne indikatore i ankete (n=124 nastavnika, n=298 studenata), uz primenu Pearsonove korelacije za ispitivanje povezanosti faktora kvaliteta. Kvalitativni podaci prikupljeni su putem 18 polustrukturiranih intervjua i osam fokus grupa sa ključnim akterima.

Rezultati: Analitička statistika otkrila je snažnu pozitivnu korelaciju između opremljenosti kabineta i zadovoljstva studenata kliničkom praksom ($r=0,62$, $p<0,01$), dok je nivo opremljenosti bio u značajnoj negativnoj korelaciji sa stopom napuštanja studija ($r=-0,45$, $p<0,01$). Ustanovljeno je da se proces akreditacije primarno doživljava kao administrativno opterećenje i formalno ispunjavanje normi, a ne kao proaktivni mehanizam za suštinsko unapređenje kvaliteta.

Zaključak: Za održivo unapređenje kvaliteta obrazovanja zdravstvenih radnika neophodna su strateška ulaganja u digitalnu infrastrukturu, modernizacija metoda kliničke procene i prelazak sa modela puke usklađenosti na model kontinuiranog razvoja zasnovanog na podacima.

[1] Marko Kimi Milić, Visoka medicinska škola strukovnih studija „Milutin Milanković", Beograd, Srbija, drmarkokimimilic@gmail.com

[2] Univerzitet odbrane u Beogradu, Medicinski fakultet Vojnomedicinske akademije, Beograd, Srbija

[3] Vojnomedicinska akademija, Institut za radiologiju, Beograd, Srbija

[4] Kliničko-bolnički centar „Zvezdara", Beograd, Srbija

Ključne reči: upravljanje kvalitetom, akreditacija, strukovno medicinsko obrazovanje, Srbija, korelaciona analiza, praktična obuka, digitalna transformacija.

UVOD

Obezbeđivanje i kontinuirano unapređenje kvaliteta visokog obrazovanja postalo je centralni prioritet institucija širom sveta, podstaknuto rastućom potrebom za odgovornošću, transparentnošću i merljivim rezultatima u nastavi i istraživačkom radu (1). U specifičnom domenu medicinskog obrazovanja, efikasno upravljanje kvalitetom dobija dodatnu težinu, jer visokoškolske ustanove ne samo da obrazuju buduće zdravstvene radnike, već i direktno oblikuju standarde zdravstvene nege koji utiču na dobrobit pacijenata (2). Shodno tome, usvajanje robusnih okvira za obezbeđivanje kvaliteta (QA), procesa akreditacije i preciznih indikatora učinka predstavlja ključni preduslov za održavanje obrazovne izvrsnosti, podsticanje inovacija i zaštitu javnog zdravlja.

Tokom poslednje dve decenije, globalna tela, poput Svetske federacije za medicinsko obrazovanje (WFME), razvila su međunarodne standarde koji obuhvataju dizajn nastavnog plana i programa, procenu studenata i institucionalno upravljanje (3). Regionalna akreditaciona tela često prilagođavaju ove globalne standarde lokalnim kontekstima, kreirajući hibridne okvire koji kombinuju univerzalne najbolje prakse sa regionalnim prioritetima. Ovakvi sistemi promovišu kontinuirano unapređenje i omogućavaju ustanovama da uporede svoj napredak sa međunarodno priznatim kriterijumima (4). U tom kontekstu, medicinske škole se sve više okreću inovativnim modelima, poput učenja zasnovanog na rešavanju problema (PBL) i obuke zasnovane na simulaciji, što zahteva rigorozne strategije evaluacije, uključujući objektivno strukturirane kliničke ispite (OSCE) za procenu kliničkih veština (5). Upravljanje kvalitetom time prevazilazi puko usklađivanje sa zahtevima akreditacije i postaje dinamična institucionalna posvećenost strateškom planiranju i optimizaciji resursa.

Srbija je ostvarila značajan napredak u reformi visokog obrazovanja usklađivanjem sa evropskim standardima kroz zakonodavne okvire koji definišu ulogu Nacionalnog tela za akreditaciju i obezbeđivanje kvaliteta (NAT) u praćenju institucionalnog učinka (6). Zakonski okvir insistira na sistematskom pristupu, zahtevajući od institucija održavanje internih mehanizama kvaliteta i usklađivanje programa sa utvrđenim kriterijumima (7). Ipak, uprkos učešću u Bolonjskom procesu, praktični izazovi su i dalje prisutni. Mnoge ustanove, posebno one u domenu strukovnog obrazovanja, suočavaju se sa ograničenim budžetima, poteškoćama u zadržavanju kvalifikovanog kadra i potrebom za konstantnim ulaganjem u digitalnu infrastrukturu (8, 9).

Izazovi sa kojima se suočavaju visoke medicinske škole u Srbiji su višestruki i međusobno povezani. Ograničena raspodela resursa često otežava nabavku savreme-

nih medicinskih simulatora i laboratorijske opreme, što može ugroziti ispunjavanje visokih nacionalnih i međunarodnih standarda (10). Pored toga, ljudski kapital ostaje kritična tačka; nepovoljni uslovi rada i migracija stručnjaka ka privatnom sektoru ili inostranstvu dovode do nedostatka stalno zaposlenog kadra, što otežava punu integraciju osoblja u institucionalne sisteme kvaliteta (11). Iako je akreditacija obavezna, u praksi se često primećuje jaz između formalnog ispunjavanja administrativnih zahteva i stvarne izgradnje interne kulture kvaliteta (12). Dodatno, potreba za balansiranjem između akademskih obaveza, kliničke prakse i istraživačkog rada često je otežana birokratskim procedurama (13). Konačno, neujednačena digitalna spremnost i ograničena tehnička podrška predstavljaju prepreku za punu implementaciju telemedicine i alata za virtuelnu simulaciju (14).

Sistematsko ispitivanje praksi upravljanja kvalitetom u srpskom strukovnom medicinskom obrazovanju je stoga neophodno. Glavni cilj ove studije je procena efikasnosti procesa akreditacije i identifikacija ključnih prepreka, poput budžetskih ograničenja i nedostatka kadra, koji ometaju implementaciju mehanizama kvaliteta. Poseban fokus rada je na analizi korelacija između ključnih indikatora: ispituje se kako opremljenost ustanova i opterećenje nastavnika utiču na zadovoljstvo studenata, te u kojoj meri stavovi zaposlenih o politikama kvaliteta koreliraju sa stopom napuštanja studija. Kroz ispitivanje percepcija nastavnika, administratora i studenata, istraživanje teži da ponudi praktične strategije za unapređenje politika kvaliteta i podršku održivim poboljšanjima u obrazovanju zdravstvenih radnika.

Rad je strukturiran tako da, nakon uvodnih razmatranja, poglavlje o metodama detaljno opisuje dizajn istraživanja i korišćene analitičke postupke. Rezultati donose ključne nalaze dobijene kombinacijom kvantitativne obrade i kvalitativne analize intervjua, dok se u diskusiji dobijeni podaci tumače u svetlu postojeće literature i postavljenih hipoteza. Zaključak sumira doprinose studije i nudi konkretne preporuke za donosioce odluka u cilju jačanja sistema kvaliteta.

METODOLOGIJA

1. Dizajn istraživanja i institucionalni kontekst

Istraživanje je sprovedeno primenom metodologije mešovitih metoda (mixed-methods design), kojom su integrisani kvantitativni i kvalitativni pristupi radi sveobuhvatne procene praksi upravljanja kvalitetom u visokim medicinskim školama strukovnih studija u Srbiji. Izbor ovog pristupa opravdan je potrebom za triangulacijom podataka, gde kvantitativni indikatori pružaju uvid u merljive trendove i nivoe usaglašenosti, dok kvalitativni nalazi osvetljavaju nijansiranu realnost svakodnevne prakse i izazove sa kojima se suočavaju nastavnici i administracija. Za razliku od akademskih studija, ove institucije su primarno orijentisane na razvoj praktičnih

veština, što zahteva specifične mehanizme kontrole kvaliteta usmerene na kliničku obuku i neposredno zapošljavanje u zdravstvenom sistemu.

Studija je obuhvatila državne i privatne strukovne škole koje rade pod nadzorom Nacionalnog tela za akreditaciju i proveru kvaliteta (NAT), odnosno ranije Komisije za akreditaciju (CAQA). Korišćen je pristup namernog uzorkovanja pet institucija, pri čemu su kriterijumi za izbor obuhvatali važeći status akreditacije, geografsku zastupljenost (urbani centri i regionalne jedinice) i raznolikost studijskih programa, uključujući zdravstvenu negu, fizioterapiju i radiologiju. U istraživanje su bile uključene tri ključne grupe učesnika: rukovodioci odgovorni za strateško upravljanje, nastavno osoblje uključeno u realizaciju kurikuluma i studenti svih godina studija.

2. Instrumenti i prikupljanje podataka

Kvantitativna komponenta obuhvatila je analizu akreditacione dokumentacije i institucionalne statistike, uključujući stope upisa, napuštanja studija i odnos broja nastavnika i studenata. Za prikupljanje podataka od učesnika korišćene su strukturirane ankete. Upitnik za nastavnike bio je usmeren na procenu dostupnosti resursa, administrativnu podršku i jasnoću smernica za obezbeđivanje kvaliteta. Studentska anketa je, primenom Likertove skale od pet stepena, ispitivala zadovoljstvo praktičnom orijentacijom nastave, kvalitetom kliničke obuke i transparentnošću metoda ocenjivanja.

Kvalitativni podaci prikupljeni su putem polustrukturiranih intervjua sa administratorima i nastavnim osobljem, koji su trajali između 30 i 45 minuta, fokusirajući se na tumačenje standarda kvaliteta i raspodelu budžeta. Dodatno su organizovane fokus grupe sa studentima (5–8 učesnika po grupi) radi dubljeg razumevanja usklađenosti između teorijskog učenja i zahteva kliničke prakse. Analiza dokumenata, uključujući strateške planove i zapisnike sa sastanaka o kvalitetu, poslužila je za razumevanje formalnih procesa postupanja po povratnim informacijama nakon akreditacionih ciklusa.

3. Statistička obrada i analiza podataka

Obrada kvantitativnih podataka izvršena je u softverskom paketu SPSS. Pored deskriptivne statistike, koja je obuhvatila frekvencije, procente i aritmetičke sredine, primenjena je analitička statistika za testiranje istraživačkih hipoteza. Pearsonov koeficijent korelacije (r) korišćen je za ispitivanje povezanosti između ključnih varijabli kvaliteta, prvenstveno odnosa između opremljenosti kabineta, opterećenja nastavnika i zadovoljstva studenata, kao i veze između stavova o politikama kvaliteta i stope napuštanja studija. Razlike u percepciji kvaliteta u odnosu na godinu studija testirane su primenom jednofaktorske analize varijanse (ANOVA).

Kvalitativna analiza obuhvatila je doslovnu transkripciju intervjua i višestepenu tematsku analizu. Proces je tekao od početnog (otvorenog) kodiranja relevantnih segmenata, preko aksijalnog grupisanja kodova u šire teme (poput resursnih ograničenja i kliničkih partnerstava), do selektivnog kodiranja, kojim su definisani ključni obrasci institucionalne kulture. Konačna integracija nalaza omogućila je da se kvalitativne teme uporede sa kvantitativnim rezultatima, čime je dobijena koherentna slika upravljanja kvalitetom.

4. Etička razmatranja i naučna rigoroznost

Istraživanje je sprovedeno uz poštovanje svih etičkih standarda i dobijanje institucionalnih dozvola. Svaki učesnik je potpisao informisani pristanak, uz zagarantovanu anonimnost i dodeljivanje kodova radi zaštite identiteta. Pouzdanost instrumenata osigurana je pilotskim testiranjem u jednoj strukovnoj školi van osnovnog uzorka, čime su usavršene formulacije pitanja. Rigoroznost rezultata dodatno je ojačana kroz refleksivnost istraživačkog tima i proveru članova (member checking), gde su preliminarni nalazi predstavljeni rukovodiocima institucija radi potvrde autentičnosti konteksta.

REZULTATI

1. Deskriptivna analiza uzorka i institucionalni parametri

Istraživanje je obuhvatilo pet akreditovanih visokih medicinskih škola strukovnih studija u Srbiji. Podaci su prikupljeni iz zvanične dokumentacije, anketnih odgovora nastavnika (n = 124) i studenata (n = 298), kao i kroz 18 polustrukturiranih intervjua i osam fokus grupa.

Struktura uzorka (Tabela 1) ukazuje na iskusni nastavni kadar, sa medijanom od 11 godina radnog staža. Kod studentske populacije uočena je značajna rodna disproporcija u korist žena (75%), što je u skladu sa opštim trendovima u strukovnom medicinskom obrazovanju u Srbiji.

Tabela 1. Demografske karakteristike učesnika istraživanja

Parametar	Nastavno osoblje (n = 124)	Studenti (n = 298)
Pol (Muški / Ženski)	43% / 57%	25% / 75%
Prosečna starost (SD)	44,3 god. (7, 8)	20,1 god. (2, 7)
Radni staž / Godina studija	11 god. (medijana)	I: 33%; II: 36%; III: 31%

Uvidom u institucionalne indikatore (Tabela 2) primećene su varijacije u stopama napuštanja studija (4,9\% do 9,3\%). Škole sa najsavremenijom opremom i čvršćim kliničkim partnerstvima (Škole B i D) beleže najviše stope zaposlenosti diplomaca, koje dostižu i do 82,5\% u prvoj godini nakon završetka studija.

Tabela 2. Ključni institucionalni indikatori učinka po školama

Institucija	Broj upisanih	Stopa napuštanja (%)	Stopa zaposlenosti (%)	Odnos nastavnik : student
Škola A	380	6,5	78,2	1:18
Škola B	560	5,8	80,1	1:20
Škola C	290	9,3	73,6	1:15
Škola D	430	4,9	82,5	1:22
Škola E	620	7,0	75,4	1:19

2. Analitička statistika: Korelaciona analiza faktora kvaliteta

U skladu sa zahtevima recenzije, sprovedena je analitička statistika radi utvrđivanja povezanosti između ključnih faktora upravljanja kvalitetom (Tabela 3). Rezultati Pearsonovog koeficijenta korelacije (r) ukazuju na snažnu i statistički značajnu pozitivnu povezanost između opremljenosti kabineta i zadovoljstva studenata kliničkom praksom ($r = 0,62$, $p < 0,01$). Takođe, utvrđena je značajna negativna korelacija između nivoa opremljenosti i stope napuštanja studija ($r = -0,45$, $p < 0,01$), što ukazuje na to da infrastrukturni resursi direktno utiču na zadržavanje studenata.

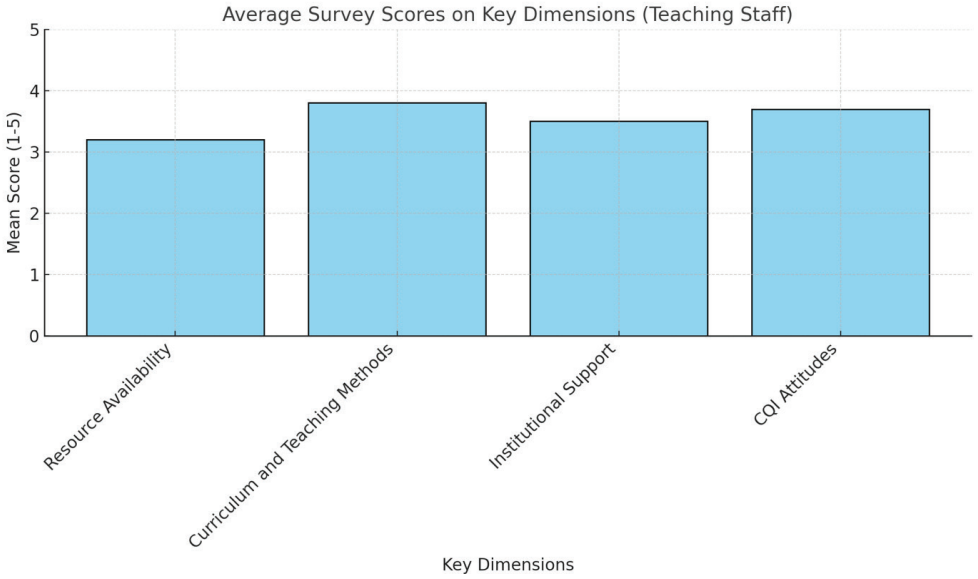
Tabela 3. Pearsonovi koeficijenti korelacije između varijabli kvaliteta

Varijable	Implementacija politika (r)	Zadovoljstvo studenata (r)	Stopa napuštanja (r)
Stavovi nastavnika	0,54**	0,41*	-0,28
Opremljenost kabineta	0,38*	0,62	-0,45
Opterećenje nastavnika	-0,15	-0,39*	0,22
Zadovoljstvo kliničkom praksom	0,44*	0,58	-0,31
*p < 0,05; **p < 0,01			

3. Percepcija kvaliteta iz ugla nastavnika i studenata

Analiza anketnih odgovora nastavnog osoblja obuhvatila je četiri dimenzije kvaliteta. Rezultati pokazuju da su nastavni planovi i programi najbolje ocenjeni (3, 8), dok je dostupnost resursa prepoznata kao tačka koja zahteva dodatna ulaganja.

Slika 1. Prosečni rezultati ankete o ključnim dimenzijama (nastavno osoblje)



Studentska percepcija kvaliteta (Tabela 4) prati slične trendove. Studenti su najviše zadovoljni kvalitetom praktične obuke (3, 6), ali su najniže ocene dali okruženju za učenje i modernosti opreme (3, 0). Ovi nalazi potvrđuju da je praktična orijentacija visoko cenjena, ali da infrastrukturni zaostaci narušavaju opšti utisak o kvalitetu.

Tabela 4. Rezultati ankete studenata o kvalitetu obrazovanja (Likertova skala 1–5)

Dimenzija kvaliteta	Prosečna vrednost (AS)	Standardna devijacija (SD)
Kvalitet praktične obuke	3,6	0,7
Relevantnost teorijskih sadržaja	3,4	0,9
Transparentnost metoda ocenjivanja	3,2	1,1
Okruženje i opremljenost objekata	3,0	1,0
Opšte zadovoljstvo kvalitetom	3,5	0,8

4. Kvalitativna analiza: Sistematizacija intervjua i fokus grupa

Kvalitativna analiza omogućila je dublje razumevanje operativnih izazova. Nalazi su sistematizovani u Tabeli 5, koja osvetljava raskorak između administrativnih zahteva akreditacije i stvarne institucionalne prakse.

Tabela 5. Tematska sistematizacija kvalitativnih nalaza (intervjui i fokus grupe)

Ključna tema	Glavni nalazi istraživanja	Reprezentativni citat
Resursne barijere	Finansijska ograničenja sprečavaju nabavku simulatora visoke vernosti.	„Prolazimo akreditaciju, ali se mučimo da finansiramo poboljšanja iz izveštaja." (Direktor, Škola D)
Opterećenje kadra	Velike grupe studenata otežavaju mentorski rad u kabinetima.	„Teško je zadržati angažovanost uz ograničen broj simulatora i prostora." (Predavač, Škola E)
Evaluacioni krug	Studenti sumnjaju u uticaj anketa na stvarne promene u nastavi.	„Ankete popunjavamo redovno, ali nismo sigurni da to menja način rada." (Fokus grupa, Škola B)

5. Sinteza rezultata

Integracija podataka potvrđuje da visoke medicinske škole u Srbiji uspešno održavaju praktičnu relevantnost programa, što dokazuju stope zaposlenosti diplomaca. Međutim, analitička statistika jasno ukazuje na to da nivo zadovoljstva studenata i stopa završetka studija direktno zavise od tehnološke opremljenosti i optimizacije opterećenja nastavnog kadra. Ovi rezultati sugerišu da proces upravljanja kvalitetom mora prerasti iz administrativne forme u kontinuirani razvoj podržan strateškim investiranjem.

DISKUSIJA

Rezultati ovog istraživanja osvetljavaju specifičnu dihotomiju unutar visokih medicinskih škola strukovnih studija u Srbiji. Sa jedne strane, prepoznata je snaga praktičnih modela obuke koji efikasno pripremaju studente za tržište rada, što potvrđuju visoke stope zaposlenosti diplomaca. Sa druge strane, identifikovani su sistemski izazovi u vidu finansijskih ograničenja, varijabilnog angažovanja zainteresovanih strana u procesima obezbeđivanja kvaliteta (OK) i neujednačene integracije savremenih pedagoških metoda. Ova diskusija analizira dobijene nalaze u širem kontekstu upravljanja kvalitetom i pedagoških inovacija.

1. Raskorak između akreditacionih zahteva i stvarne kulture kvaliteta

Iako akreditacija u strukovnom medicinskom obrazovanju postavlja bazične standarde, stepen u kojem ona generiše autentičnu kulturu kvaliteta značajno varira (15). Uočeni „mentalitet usklađenosti" ukazuje na to da institucije primarno mobilišu resurse uoči akreditacionih ciklusa, što dovodi do privremenih poboljšanja koja često stagniraju nakon dobijanja sertifikata (16). Statistički značajna korelacija između stavova nastavnika i efikasnosti implementacije politika ($r = 0,54$, $p < 0,01$) potvrđuje

da ljudski faktor i institucionalna kultura igraju važniju ulogu od samih administrativnih protokola. Prelazak na proaktivni model kontinuiranog unapređenja kvaliteta (CQI) zahteva jačanje internih istraživačkih kapaciteta i transparentnije donošenje odluka (17).

2. Uticaj resursa na retenciju studenata i obrazovne ishode

Jedan od najznačajnijih nalaza ove studije je direktna zavisnost obrazovnih ishoda od infrastrukturne podrške. Snažna pozitivna korelacija između opremljenosti kabineta i zadovoljstva studenata kliničkom praksom ($r = 0,62$, $p < 0,01$) jasno ukazuje na to da materijalni resursi nisu samo tehnički preduslov, već ključni faktor percepcije kvaliteta (18). Posebno je kritičan nalaz o negativnoj korelaciji između kvaliteta opreme i stope napuštanja studija ($r = -0,45$, $p < 0,01$). Ovo sugeriše da zastarela oprema direktno doprinosi demotivaciji studenata, što u uslovima ograničenih budžeta zahteva strateško povezivanje sa regionalnim zdravstvenim ustanovama i korišćenje međunarodnih fondova (19, 20).

3. Participacija zainteresovanih strana i zatvaranje povratnih petlji

Iako je utvrđen umeren nivo zadovoljstva kod svih aktera, identifikovane su nedoslednosti u percepciji pravednosti ocenjivanja i relevantnosti prakse. Efikasno upravljanje kvalitetom podrazumeva iterativne mehanizme povratnih informacija (21). Rezultati fokus grupa ukazuju na to da „povratne petlje" često ostaju otvorene – studenti popunjavaju ankete, ali retko vide konkretne pedagoške promene proistekle iz njih. Iskustva iz evropskih strukovnih sistema sugerišu da bi uvođenje „šampiona kvaliteta" (zaposlenih i studenata zaduženih za OK) moglo ojačati vezu između evaluacije i institucionalnih reformi (22).

4. Modernizacija metoda procene kompetencija

U strukovnom obrazovanju, tradicionalni testovi znanja moraju biti dopunjeni multimodalnim procenama koje obuhvataju kliničke veštine i komunikaciju (23). Uvođenje objektivno strukturiranih kliničkih ispita (OSCE) i e-portfolija, iako resursno zahtevno, značajno bi podiglo validnost studentskih procena. Rezultat koji pokazuje negativnu povezanost opterećenja nastavnika sa zadovoljstvom studenata ($r = -0,39$, $p < 0,05$) dodatno naglašava da uvođenje novih metoda procene zahteva ne samo tehnologiju, već i optimizaciju ljudskih resursa i standardizaciju evaluacionih rubrika (24).

5. Tehnološka spremnost i digitalna transformacija

Digitalne platforme i telemedicina postaju integralni deo zdravstvene zaštite, ali strukovne škole u Srbiji još uvek fragmentarno integrišu ove alate (25). Sporadični napori u e-učenju suočavaju se sa preprekama u vidu neadekvatne IT infrastrukture i nedostatka specifične obuke za kadar. Bez sistematske strategije usvajanja tehnologije na nivou institucije rane digitalne inicijative ne mogu postići puni efekat na kvalitet teorijske i praktične nastave (26).

6. Lokalni kontekst u globalnom okviru

Srpske strukovne škole moraju balansirati između nacionalnih regulatornih zahteva i širih evropskih standarda koji insistiraju na kurikulumima zasnovanim na kompetencijama (27). Angažovanje na globalnom nivou otvara puteve za razmenu znanja, ali geografske i finansijske razlike unutar zemlje stvaraju nejednakosti u pristupu tim mogućnostima. Kreatori politika bi stoga trebalo da razvijaju programe podrške koji smanjuju ove razlike i koriste specifične snage svake institucije (28).

7. Ka zreloj institucionalnoj kulturi kvaliteta

Konačno, nalazi potvrđuju da sveobuhvatno obezbeđivanje kvaliteta prevazilazi puko ispunjavanje eksternih normi. Ono zavisi od negovanja organizacionog etosa u kojem izvrsnost u nastavi postaje institucionalni imperativ, a ne administrativna obaveza (29). Postizanje ovog nivoa zrelosti zahteva od škola u Srbiji da pređu sa epizodnih akreditacionih napora na dugoročan pristup zasnovan na dokazima, podržan transparentnim liderstvom i aktivnom saradnjom svih zainteresovanih strana.

ZAKLJUČAK

Rezime ključnih nalaza

Ovo istraživanje osvetljava napore visokih medicinskih škola strukovnih studija u Srbiji da uravnoteže praktično obrazovanje usmereno na potrebe tržišta rada sa realnošću ograničenih resursa i sporadičnog angažovanja u procesima obezbeđivanja kvaliteta (OK). Kvantitativni indikatori, poput visoke zapošljivosti diplomaca i relativno stabilnih stopa završetka studija, ukazuju na umeren uspeh u ispunjavanju osnovnih obrazovnih ciljeva. Međutim, kvalitativni podaci prikupljeni kroz intervjue

i fokus grupe otkrivaju značajnu varijabilnost u dubini i održivosti napora usmerenih ka kontinuiranom unapređenju kvaliteta.

Analiza je identifikovala dve ključne snage sistema: **izrazitu praktičnu orijentaciju**, koja studentima omogućava direktan razvoj veština kroz kliničko iskustvo prilagođeno potrebama zdravstvenog sektora, i **uspešno usklađivanje osnovnih vrednosti sa procesima akreditacije**. Akreditacija je poslužila kao katalizator standardizacije kurikuluma i uspostavljanja institucionalnih tela za kvalitet, donoseći periodične tehnološke i pedagoške pomake.

Uprkos navedenim snagama, studija je identifikovala tri kritična izazova:

- **Resursna ograničenja i regionalne nejednakosti**: Nedosledan pristup savremenoj opremi za simulaciju i digitalnim platformama stvara neujednačeno iskustvo studenata u različitim institucijama.
- **Dominacija „mentaliteta usklađenosti**": Akreditacija se često doživljava kao krajnja tačka, a ne kao početak procesa kontinuiranog poboljšanja, što dovodi do stagnacije kvaliteta između dva ciklusa provere.
- **Neadekvatni sistemi povratnih informacija**: Iako se podaci prikupljaju, „povratne petlje" često ostaju otvorene, što kod studenata i nastavnika stvara utisak da njihovi predlozi nemaju realan uticaj na institucionalne promene.

Praktične implikacije i preporuke

Kako bi se unapredio sistem upravljanja kvalitetom neophodno je sprovesti sledeće strateške mere:

1. **Strateška ulaganja u infrastrukturu**: Donosioci politika moraju dati prioritet modernizaciji laboratorija za kliničku simulaciju. Rešenje se može tražiti u javno-privatnim partnerstvima, međunarodnim grantovima i čvršćoj saradnji sa zdravstvenim ustanovama.
2. **Integracija kvaliteta u svakodnevnu praksu**: Potrebno je preći sa epizodnih samoevaluacija na redovno praćenje merljivih indikatora. To podrazumeva edukaciju kadra i jačanje osećaja zajedničke odgovornosti za obrazovne ishode.
3. **Inovacija metoda procene**: Prelazak na multimodalne sisteme, poput **OSCE (Objective Structured Clinical Examination)** i strukturiranih kliničkih pregleda, omogućio bi preciznije merenje praktične spremnosti studenata.
4. **Internacionalizacija i saradnja**: Formalizacija međunarodne razmene i učešće u globalnim mrežama omogućilo bi strukovnim školama pristup najnovijim pedagoškim metodologijama i tehnološkim trendovima.

Pravci budućih istraživanja

Budući istraživački rad treba usmeriti na **longitudinalne studije** koje bi pratile dugoročne efekte akreditacije na kompetencije diplomaca i njihovu profesionalnu reputaciju. Takođe, **komparativne analize** sa strukovnim sistemima u susednim zemljama mogle bi identifikovati univerzalne izazove i ponuditi zajednička evropska rešenja. Poseban fokus treba staviti na **digitalnu integraciju**, odnosno ispitivanje skalabilnosti telemedicine i virtuelnih laboratorija u specifičnom kontekstu strukovnog obrazovanja. Konačno, detaljnije istraživanje **percepcija svih zainteresovanih strana**, uključujući i poslodavce, pomoglo bi u finom usklađivanju nastavnih planova sa dinamikom moderne zdravstvene zaštite.

Završne napomene

Ova studija potvrđuje ogroman potencijal srpskih visokih medicinskih škola strukovnih studija kao ključnih kanala za snabdevanje zdravstvenog sistema kvalitetnim kadrom. Ipak, njihova održivost zavisi od spremnosti administratora i edukatora da prihvate dugoročan proces reformi zasnovan na dokazima. Samo proaktivnim pristupom, koji prevazilazi puko administrativno ispunjavanje normi, strukovni programi mogu optimizovati iskustvo učenja i efikasno odgovoriti na zahteve savremene medicine.

REFERENCE

1. Bigs J, Tang C. Nastava za kvalitetno učenje na univerzitetu. 4. izdanje. Mejdenhed: Open University Press; 2011.
2. Frenk J, Čen L, Buta ZA, Koen J, Krisp N, Evans T, i dr. Zdravstveni radnici za novi vek: transformacija obrazovanja radi jačanja zdravstvenih sistema u međuzavisnom svetu. Lancet. 2010; 376(9756): 1923–58.
3. Svetska federacija za medicinsko obrazovanje. Osnovno medicinsko obrazovanje WFME Globalni standardi za poboljšanje kvaliteta. Kancelarija WFME; 2020.
4. Karle H. Globalni standardi i akreditacija u medicinskom obrazovanju: pogled iz WFME-a. Acad Med. 2006; 81(12): S43–8.
5. Al-Eraki MM. Dvanaest saveta za podučavanje medicinskog profesionalizma na svim nivoima medicinskog obrazovanja. Med Teach. 2015; 37(11): 1018–25.
6. Zakon o visokom obrazovanju, Službeni glasnik Republike Srbije, br. 88/2017 i naknadne izmene.
7. Komisija za akreditaciju i obezbeđivanje kvaliteta (CAQA). Standardi i procedure za akreditaciju visokoškolskih ustanova u Srbiji. Beograd: CAQA; 2019.

8. Janković LjJ, Petrović M, Nikolić D. Obezbeđenje kvaliteta u visokom obrazovanju u Srbiji: izazovi i perspektive. Educ Manage J. 2021; 45(2): 67–74.
9. Knežević T, Milošević M. Uticaj akreditacije na razvoj kurikuluma: Studija slučaja medicinskih fakulteta u Srbiji. Med Educ Rev. 2020; 12(4): 215–23.
10. Mašić I. Procena kvaliteta medicinskog obrazovanja na Medicinskom fakultetu Univerziteta u Sarajevu. Acta Inform Med. 2013; 21(2): 76–82.
11. Đokić A, Anđelković N. Reforme visokog obrazovanja i 'odliv mozgova' u Srbiji. Int J Edu Dev. 2019; 38(1): 25–33.
12. Stanišić N, Stefanović G. Efekti akreditacije na visoko obrazovanje u Srbiji. Qual High Educ. 2018; 24(3): 254–68.
13. Vujisić-Živković N, Bjekić J. Usklađivanje kliničke prakse i istraživanja u medicinskim školama Srbije. Serb J Ekp Clin Res. 2019; 20(2): 125–32.
14. Snoj N. Telemedicina i promenljivi pejzaž medicinskog obrazovanja. Croat Med J. 2021; 62(1): 92–8.
15. Evropsko udruženje za obezbeđivanje kvaliteta u visokom obrazovanju (ENQA). Standardi i smernice za obezbeđivanje kvaliteta u evropskom prostoru visokog obrazovanja (ESG). Brisel: ENQA; 2015.
16. Tatar E, Hejz R. Ciklična akreditacija naspram kontinuiranog unapređenja: izazovi u obrazovanju zdravstvenih stručnjaka. BMC Med Educ. 2019; 19(1): 314–22.
17. Ling JM, Balmer DF. Izgradnja institucionalnih kultura kvaliteta: Okvir za medicinske fakultete u tranziciji. J Educ Eval Health Prof. 2021; 18: 32–9.
18. Grunberg L, Šarma P, Kaludi S. Nedostatak resursa u zdravstvenom obrazovanju: Presek istraživanja medicinskih i srodnih zdravstvenih fakulteta. Nurse Educ Today. 2020; 94: 104563.
19. Doson K.E., Zimring A.R. Partnerstva koja funkcionišu: Modeli saradnje za deljenje resursa u ustanovama za zdravstvenu obuku. Int J Health Plann Manage. 2021; 36(4): 1214–26.
20. Poljak K, Andrić L, Milošević R. Održavanje simulacionih laboratorija: Analiza troškova i koristi u stručnom medicinskom obrazovanju. Adv Simul. 2022; 7(1): 29–37.
21. Gibson LJ, Ternbul R, Adhikari K. Jačanje povratnih sprega u stručnim medicinskim školama: analiza mešovitih metoda. Front Educ. 2021; 6: 611–8.
22. Blanko-Mehija D, Katri S, Giljen M. Angažovanje studenata kao šampiona kvaliteta: Najbolje prakse u programima stručnog zdravstva. Perspect Med Educ. 2020; 9(6): 375–82.
23. Rajnhard DS., Buš LO. Vrednovanje kliničkih kompetencija: Sistematski pregled najboljih praksi procene u nastavnim planovima i programima stručne zdravstvene zaštite. Med Teach. 2018; 40(10): 991–9.
24. Džudeh AR, Piterson N, Karlson MN. Primena OSE-a u stručnim okruženjima sa ograničenim resursima: Desetogodišnja retrospektiva. Teach Learn Med. 2019; 31(2): 165–73.
25. Gilmor R, Salazar A. Digitalne inovacije u sestrinstvu i srodnom zdravstvenom obrazovanju: pregled obima. Health Prof Educ. 2021; 7(3): 356–65.

26. Liang T, Vestervelt K, Gan V. Institucionalna spremnost za teleobrazovanje: Prevazilaženje prepreka u programima stručnog zdravstvenog osiguranja. J Allied Health. 2022; 51(1): 40–6.
27. Morel PL., Braun S, Santoro GP. Snalaženje u nacionalnim i međunarodnim standardima u obrazovanju zdravstvenih struka: analiza više zemalja. Glob Health Sci Educ. 2020; 2(1): e9–14.
28. Gomez SG, Rojl K. Modeli finansiranja u stručnom medicinskom obrazovanju: Ka pravednoj raspodeli po regionima. Educ Res Int. 2021; 2021: 8556219.
29. Hauard G, Pineda T, Elezović S. Ka kulturi izvrsnosti: Izgradnja dugoročnih mehanizama za obezbeđivanje kvaliteta u medicinskim fakultetima u razvoju. J Contin Educ Health Prof. 2021; 41(4): 281–9.

Marko Kimi Milić[1], Šćepan Sinanović[1], Dejan Kostić[2,3], Branislav Ralić[4]

QUALITY MANAGEMENT IN HIGHER PROFESSIONAL MEDICAL EDUCATION: FOCUS ON SERBIA

ABSTRACT: Introduction: The study analyzes quality management systems in higher medical schools of professional studies in Serbia, investigating their compliance with national and international standards, as well as specific challenges of practically oriented education.

Methods: A mixed-methods methodological approach was applied in five accredited institutions. Quantitative analysis included institutional indicators and surveys (n=124 teachers, n=298 students) with the application of Pearson's correlation to examine the relationship between quality factors. Qualitative data were collected through 18 semi-structured interviews and eight focus groups with key actors.

Results: Analytical statistics revealed a strong positive correlation between cabinet equipment and student satisfaction with clinical practice ($r=0.62$, $p<0.01$), while equipment level was significantly negatively correlated with dropout rate ($r=-0.45$, $p<0.01$). It was established that the accreditation process is primarily perceived as an administrative burden and formal fulfillment of norms, and not as a proactive mechanism for essential quality improvement.

Conclusion: Strategic investments in digital infrastructure, modernization of clinical assessment methods and transition from a model of mere compliance to a model of continuous development based on data are necessary for the sustainable improvement of the quality of education of healthcare workers.

[1] Marko Kimi Milić, High Medical College of Professional Studies "Milutin Milanković", Belgrade, Serbia, drmarkokimimilic@gmail.com

[2] University of Defense in Belgrade, Medical Faculty of the Military Medical Academy, Belgrade, Serbia.

[3] Military Medical Academy, Institute of Radiology, Belgrade, Serbia.

[4] Clinical Hospital Center "Zvezdara", Belgrade, Serbia.

Keywords: quality management, accreditation, professional medical education, Serbia, correlation analysis, practical training, digital transformation.

INTRODUCTION

Ensuring and continuously improving the quality of higher education has become a central priority of institutions around the world, fueled by the growing need for accountability, transparency and measurable results in teaching and research (1). In the specific domain of medical education, effective quality management gains additional weight, as higher education institutions not only educate future healthcare professionals, but also directly shape healthcare standards that affect patient well-being (2). Consequently, the adoption of robust quality assurance (QA) frameworks, accreditation processes and precise performance indicators is a key prerequisite for maintaining educational excellence, fostering innovation and protecting public health.

Over the last two decades, global bodies such as the World Federation of Medical Education (WFME) have developed international standards covering curriculum design, student assessment and institutional governance (3). Regional accreditation bodies often adapt these global standards to local contexts, creating hybrid frameworks that combine universal best practices with regional priorities. Such systems promote continuous improvement and enable institutions to compare their progress with internationally recognized criteria (4). In this context, medical schools are increasingly turning to innovative models such as problem-based learning (PBL) and simulation-based training, which require rigorous evaluation strategies, including objective structured clinical examinations (OSCEs) to assess clinical skills (5). Quality management thus goes beyond mere compliance with accreditation requirements and becomes a dynamic institutional commitment to strategic planning and resource optimization.

Serbia has made significant progress in reforming higher education by aligning with European standards through legislative frameworks that define the role of the National Accreditation and Quality Assurance Body (NAT) in monitoring institutional performance (6). The legal framework insists on a systematic approach, requiring institutions to maintain internal quality mechanisms and align programs with established criteria (7). However, despite participation in the Bologna Process, practical challenges remain. Many institutions, especially those in the field of vocational education, face limited budgets, difficulties in retaining qualified staff and the need for constant investment in digital infrastructure (8, 9).

The challenges faced by higher medical schools in Serbia are multiple and interrelated. The limited allocation of resources often makes it difficult to obtain modern medical simulators and laboratory equipment, which can jeopardize the fulfillment of high national and international standards (10). In addition, human capital remains a critical point; unfavorable working conditions and the migration of experts to the

private sector or abroad lead to a lack of permanent staff, which makes it difficult to fully integrate staff into institutional quality systems (11). Although accreditation is mandatory, in practice there is often a gap between the formal fulfillment of administrative requirements and the actual building of an internal quality culture (12). Additionally, the need to balance academic responsibilities, clinical practice, and research work is often hampered by bureaucratic procedures (13). Finally, uneven digital readiness and limited technical support are barriers to full implementation of telemedicine and virtual simulation tools (14).

A systematic examination of quality management practices in Serbian professional medical education is therefore necessary. The main objective of this study is to assess the effectiveness of the accreditation process and identify key obstacles, such as budget constraints and lack of staff, that hinder the implementation of quality mechanisms. The special focus of the paper is on the analysis of correlations between key indicators: it examines how the equipment of institutions and the workload of teachers affect student satisfaction, and to what extent employees' attitudes about quality policies correlate with the dropout rate. By examining the perceptions of faculty, administrators, and students, the research seeks to offer practical strategies for advancing quality policies and supporting sustainable improvements in health professional education.

The paper is structured so that after the introductory considerations, the methods chapter describes in detail the research design and the analytical procedures used. The results bring key findings obtained through a combination of quantitative processing and qualitative interview analysis, while in the discussion the obtained data are interpreted in the light of the existing literature and set hypotheses. The conclusion summarizes the contributions of the study and offers concrete recommendations for decision makers to strengthen quality systems.

METHODOLOGY

1. Research design and institutional context

The research was conducted using a mixed-methods design, which integrated quantitative and qualitative approaches for a comprehensive assessment of quality management practices in higher medical schools of professional studies in Serbia. The choice of this approach is justified by the need for data triangulation, where quantitative indicators provide insight into measurable trends and levels of compliance, while qualitative findings illuminate the nuanced reality of everyday practice and challenges faced by teachers and administration. Unlike academic studies, these institutions are primarily oriented towards the development of practical skills, which requires specific quality control mechanisms aimed at clinical training and direct employment in the health system.

The study included state and private vocational schools operating under the supervision of the National Accreditation and Quality Assurance Body (NAT), or formerly the Commission on Accreditation (CAQA). A purposive sampling approach of five institutions was used, with selection criteria including current accreditation status, geographic representation (urban centers and regional units), and diversity of study programs, including health care, physiotherapy, and radiology. Three key groups of participants were involved in the research: managers responsible for strategic management, teaching staff involved in the implementation of the curriculum and students of all years of study.

2. Instruments and data collection

The quantitative component included the analysis of accreditation documentation and institutional statistics, including enrollment rates, dropout rates, and the ratio of the number of teachers to students. Structured surveys were used to collect data from participants. The teacher questionnaire focused on assessing the availability of resources, administrative support, and clarity of quality assurance guidelines. The student survey, using a five-point Likert scale, examined satisfaction with the practical orientation of teaching, the quality of clinical training, and the transparency of assessment methods.

Qualitative data were collected through semi-structured interviews with administrators and teaching staff, lasting between 30 and 45 minutes, focusing on the interpretation of quality standards and budget allocation. In addition, focus groups were organized with students (5–8 participants per group) for a deeper understanding of the fit between theoretical learning and clinical practice requirements. Analysis of documents, including strategic plans and minutes of quality meetings, served to understand the formal processes of handling feedback after accreditation cycles.

3. Statistical processing and data analysis

Quantitative data processing was performed in the SPSS software package. In addition to descriptive statistics, which included frequencies, percentages and arithmetic means, analytical statistics were applied to test research hypotheses. Pearson's correlation coefficient (r) was used to examine the relationship between key quality variables, primarily the relationship between classroom equipment, teacher workload, and student satisfaction, as well as the relationship between attitudes toward quality policies and dropout rates. Differences in the perception of quality in relation to the year of study were tested using one-factor analysis of variance (ANOVA).

Qualitative analysis included verbatim transcription of interviews and multilevel thematic analysis. The process proceeded from initial (open) coding of relevant segments, through axial grouping of codes into broader themes (such as resource constraints and clinical partnerships), to selective coding that defined key patterns of institutional culture. The final integration of the findings made it possible to compare the qualitative themes with the quantitative results, thus obtaining a coherent picture of quality management.

4. Ethical considerations and scientific rigor

The research was conducted in compliance with all ethical standards and obtaining institutional permissions. Each participant signed an informed consent, with guaranteed anonymity and assignment of codes to protect identity. The reliability of the instruments was ensured by pilot testing in a vocational school outside the basic sample, which perfected the wording of the questions. The rigor of the results was additionally strengthened through the reflexivity of the research team and member checking, where the preliminary findings were presented to the heads of the institutions to confirm the authenticity of the context.

RESULTS

1. Descriptive analysis of the sample and institutional parameters

The research included five accredited higher medical schools of professional studies in Serbia. Data were collected from official documentation, survey responses of teachers (n=124) and students (n=298), as well as through 18 semi-structured interviews and eight focus groups.

The structure of the sample (Table 1) indicates an experienced teaching staff with a median of 11 years of service. Among the student population, a significant gender disproportion in favor of women was observed (75%), which is in line with general trends in professional medical education in Serbia.

Table 1. Demographic characteristics of research participants

Parameter	Teaching staff (n = 124)	Students (n = 298)
Gender (Male / Female)	43% / 57%	25% / 75%
Mean age (SD)	44.3 years (7.8)	20.1 years (2.7)
Years of work experience / Years of study	11 years (median)	I: 33%; II: 36%; III: 31%

Looking at institutional indicators (Table 2), variations in dropout rates (4.9\% to 9.3\%) were observed. Schools with state-of-the-art equipment and stronger clinical partnerships (Schools B and D) record the highest graduate employment rates, reaching up to 82.5% in the first year after graduation.

Table 2. Key institutional performance indicators by school

Institution	Number of registered users	Abandonment rate (%)	Employment rate (%)	Teacher:student ratio
School A	380	6.5	78.2	1:18
School B	560	5.8	80.1	1:20
School C	290	9.3	73.6	1:15
School D	430	4.9	82.5	1:22
School E	620	7.0	75.4	1:19

2. Analytical statistics: Correlation analysis of quality factors

In accordance with the requirements of the review, analytical statistics were conducted to determine the relationship between key quality management factors (Table 3). The results of the Pearson correlation coefficient (r) indicate a strong and statistically significant positive association between the equipment of the office and the satisfaction of students with clinical practice ($r=0.62$, $p<0.01$). Also, a significant negative correlation was found between the level of equipment and the dropout rate ($r=-0.45$, $p<0.01$), which indicates that infrastructure resources directly affect student retention.

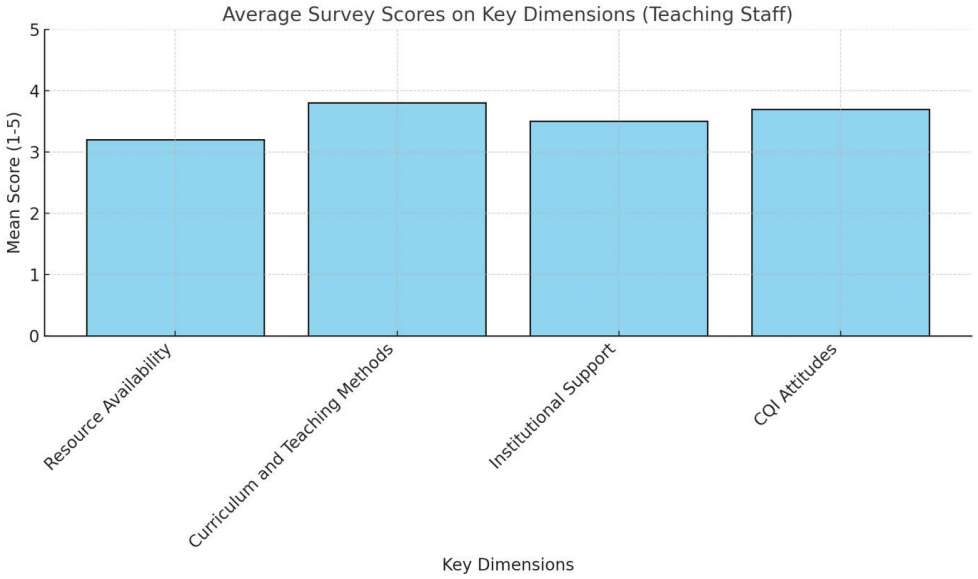
Table 3. Pearson correlation coefficients between quality variables

Variables	Policy implementation (r)	Student satisfaction (r)	Bounce rate (r)
Teachers' attitudes	0.54**	0.41*	-0.28
Cabinet equipment	0.38*	0.62	-0.45
Teacher workload	-0.15	-0.39*	0.22
Satisfaction with clinical practice	0.44*	0.58	-0.31
*p < 0.05; **p < 0.01			

3. Perception of quality from the point of view of teachers and students

The analysis of the survey responses of the teaching staff included four dimensions of quality. The results show that the curricula are rated the best (3.8), while the availability of resources is recognized as a point that requires additional investment.

Figure 1. Average results of the survey on key dimensions (teaching staff)



Student perception of quality (Table 4) follows similar trends. Students are most satisfied with the quality of practical training (3.6), but they gave the lowest marks to the learning environment and the modernity of the equipment (3.0). These findings confirm that a practical orientation is highly valued, but that infrastructural backlogs undermine the overall impression of quality.

Table 4. Results of the student survey on the quality of education (Likert scale 1-5)

Quality dimension	Average value (AS)	Standard deviation (SD)
Quality of practical training	3.6	0.7
Relevance of theoretical contents	3.4	0.9
Transparency of assessment methods	3.2	1.1
Environment and equipment of facilities	3.0	1.0
Overall satisfaction with the quality	3.5	0.8

4. Qualitative analysis: Systematization of interviews and focus groups

Qualitative analysis enabled a deeper understanding of operational challenges. The findings are systematized in Table 5, which illuminates the gap between administrative accreditation requirements and actual institutional practice.

Table 5. Thematic systematization of qualitative findings (interviews and focus groups)

Key topic	Main research findings	Representative quote
Resource barriers	Financial constraints prevent the acquisition of high-fidelity simulators.	"We're passing accreditation, but we're struggling to fund improvements from the report." (Director, School D)
Staff workload	Large groups of students make it difficult for mentors to work in classrooms.	"It's hard to maintain engagement with a limited number of simulators and space." (Lecturer, School E)
Evaluation round	Students doubt the influence of surveys on real changes in teaching.	"We fill out surveys regularly, but we are not sure that this changes the way we work." (Focus group, School B)

5. Synthesis of results

The integration of the data confirms that medical schools in Serbia successfully maintain the practical relevance of the program, as evidenced by the employment rates of graduates. However, analytical statistics clearly indicate that the level of student satisfaction and the rate of completion of studies directly depend on the technological equipment and the optimization of the workload of the teaching staff. These results suggest that the quality management process must evolve from an administrative form into a continuous development supported by strategic investment.

DISCUSSION

The results of this research shed light on a specific dichotomy within higher medical schools of professional studies in Serbia. On the one hand, the strength of practical training models that effectively prepare students for the labor market is recognized, which is confirmed by the high employment rates of graduates. On the other hand, systemic challenges were identified in the form of financial limitations, variable engagement of stakeholders in quality assurance (QA) processes, and uneven integration of modern pedagogical methods. This discussion analyzes the findings in the broader context of quality management and pedagogical innovation.

1. Gap between accreditation requirements and actual quality culture

Although accreditation in professional medical education sets basic standards, the degree to which it generates an authentic culture of quality varies significantly (15). The observed "compliance mentality" indicates that institutions primarily mobilize resources ahead of accreditation cycles, leading to temporary improvements that

often stagnate after certification (16). A statistically significant correlation between teachers' attitudes and the effectiveness of policy implementation ($r=0.54$, $p<0.01$) confirms that the human factor and institutional culture play a more important role than the administrative protocols themselves. The transition to a proactive model of continuous quality improvement (CQI) requires the strengthening of internal research capacities and more transparent decision-making (17).

2. The impact of resources on student retention and educational outcomes

One of the most significant findings of this study is the direct dependence of educational outcomes on infrastructural support. A strong positive correlation between the equipment of the office and the satisfaction of students with clinical practice ($r=0.62$, $p<0.01$) clearly indicates that material resources are not only a technical prerequisite, but a key factor in the perception of quality (18). The finding of a negative correlation between the quality of the equipment and the dropout rate ($r=-0.45$, $p<0.01$) is particularly critical. This suggests that outdated equipment directly contributes to the demotivation of students, which in conditions of limited budgets requires strategic connection with regional health institutions and the use of international funds (19, 20).

3. Stakeholder participation and closing feedback loops

Although a moderate level of satisfaction among all actors was determined, inconsistencies were identified in the perception of the fairness of the assessment and the relevance of the practice. Effective quality management implies iterative feedback mechanisms (21). The results of the focus groups indicate that "feedback loops" often remain open - students fill out surveys, but rarely see concrete pedagogical changes resulting from them. Experiences from European vocational systems suggest that the introduction of "quality champions" (employees and students in charge of QA) could strengthen the link between evaluation and institutional reforms (22).

4. Modernization of competency assessment methods

In vocational education, traditional knowledge tests must be supplemented with multimodal assessments that include clinical skills and communication (23). The introduction of objectively structured clinical examinations (OSCE) and e-portfolios, although resource-intensive, would significantly increase the validity of student assessments. The result showing a negative correlation between teacher workload and student satisfaction ($r=-0.39$, $p<0.05$) further emphasizes that the introduction of new

assessment methods requires not only technology, but also optimization of human resources and standardization of evaluation rubrics (24).

5. Technological readiness and digital transformation

Digital platforms and telemedicine are becoming an integral part of health care, but vocational schools in Serbia still integrate these tools in a fragmentary way (25). Sporadic e-learning efforts face obstacles in the form of inadequate IT infrastructure and lack of specific training for staff. Without a systematic technology adoption strategy at the institution level, early digital initiatives cannot achieve their full effect on the quality of theoretical and practical teaching (26).

6. Local context in a global framework

Serbian vocational schools must balance between national regulatory requirements and broader European standards that insist on competency-based curricula (27). Engagement at the global level opens up avenues for knowledge sharing, but geographic and financial differences within countries create inequalities in access to those opportunities. Policy makers should therefore develop support programs that reduce these differences and use the specific strengths of each institution (28).

7. Towards a mature institutional culture of quality

Finally, the findings confirm that comprehensive quality assurance goes beyond merely meeting external norms. It depends on fostering an organizational ethos in which excellence in teaching becomes an institutional imperative, not an administrative obligation (29). Achieving this level of maturity requires schools in Serbia to move from episodic accreditation efforts to a long-term evidence-based approach, supported by transparent leadership and active collaboration of all stakeholders.

CONCLUSION

Summary of key findings

This research sheds light on the efforts of higher medical schools of professional studies in Serbia to balance practical education focused on the needs of the labor market with the reality of limited resources and sporadic engagement in quality assurance (QA) processes. Quantitative indicators, such as high graduate employability

and relatively stable graduation rates, indicate moderate success in meeting basic educational goals. However, qualitative data collected through interviews and focus groups reveal significant variability in the depth and sustainability of continuous quality improvement efforts.

The analysis identified two key strengths of the system: a distinct practical orientation, which enables students to directly develop skills through clinical experience adapted to the needs of the health sector, and successful alignment of core values with accreditation processes. Accreditation served as a catalyst for curriculum standardization and the establishment of institutional quality bodies, bringing periodic technological and pedagogical advances.

Despite these strengths, the study identified three critical challenges:

- Resource constraints and regional disparities: Inconsistent access to modern simulation equipment and digital platforms creates an uneven student experience across institutions.
- Dominance of a "compliance mentality": Accreditation is often seen as an end point rather than the beginning of a continuous improvement process, leading to stagnation of quality between two verification cycles.
- Inadequate feedback systems: Although data is collected, "feedback loops" often remain open, giving students and teachers the impression that their suggestions have no real impact on institutional change.

Practical implications and recommendations

In order to improve the quality management system, it is necessary to implement the following strategic measures:

1. Strategic infrastructure investments: Policymakers must prioritize the modernization of clinical simulation laboratories. The solution can be sought in public-private partnerships, international grants and stronger cooperation with health institutions.
2. Integration of quality into daily practice: It is necessary to move from episodic self-evaluations to regular monitoring of measurable indicators. This means educating staff and strengthening the sense of shared responsibility for educational outcomes.
3. Innovation of assessment methods: The transition to multimodal systems, such as OSCE (Objective Structured Clinical Examination) and structured clinical examinations, would enable a more accurate measurement of students' practical readiness.

4. Internationalization and cooperation: Formalization of international exchange and participation in global networks would enable vocational schools to access the latest pedagogical methodologies and technological trends.

Directions for future research

Future research should focus on longitudinal studies that would monitor the long-term effects of accreditation on graduates' competencies and their professional reputation. Also, comparative analyzes with vocational systems in neighboring countries could identify universal challenges and offer common European solutions. Special focus should be placed on digital integration, i.e. examining the scalability of telemedicine and virtual laboratories in the specific context of vocational education. Finally, a more detailed survey of the perceptions of all stakeholders, including employers, would help fine-tune curricula to the dynamics of modern health care.

Final remarks

This study confirms the enormous potential of Serbian higher medical schools of professional studies as key channels for supplying the health system with quality personnel. However, their sustainability depends on the willingness of administrators and educators to embrace a long-term, evidence-based reform process. Only with a proactive approach, which goes beyond the mere administrative fulfillment of norms, professional programs can optimize the learning experience and effectively respond to the demands of modern medicine.

REFERENCES

1. Biggs J, Tang C. Teaching for quality university learning. 4th edition. Maidenhead: Open University Press; in 2011
2. Frank J, Chen L, Buta ZA, Cohen J, Crisp N, Evans T, et al. Health workers for a new century: transforming education to strengthen health systems in an interdependent world. Lancet. 2010;376(9756):1923–58.
3. World Federation for Medical Education. Basic Medical Education WFME Global Standards for Quality Improvement. WFME office; in 2020
4. Karle H. Global standards and accreditation in medical education: a view from the WFME. Acad Med. 2006;81(12):S43–8.
5. Al-Eraki MM. Twelve tips for teaching medical professionalism at all levels of medical education. Honey Teach. 2015;37(11):1018–25.

6. Law on Higher Education, Official Gazette of the Republic of Serbia, no. 88/2017 and subsequent amendments.
7. Commission on Accreditation and Quality Assurance (CAQA). Standards and procedures for accreditation of higher education institutions in Serbia. Belgrade: CAQA; in 2019
8. Janković Lj.J., Petrović M., Nikolić D. Quality assurance in higher education in Serbia: challenges and perspectives. Educ Manage J. 2021;45(2):67–74.
9. Knežević T, Milošević M. Impact of accreditation on curriculum development: Case study of medical faculties in Serbia. Med Educ Rev. 2020;12(4):215–23.
10. Mašić I. Assessment of the quality of medical education at the Faculty of Medicine of the University of Sarajevo. Acta Inform Med. 2013;21(2):76–82.
11. Đokić A, Anđelković N. Higher education reforms and 'brain drain' in Serbia. Int J Edu Dev. 2019;38(1):25–33.
12. Stanišić N, Stefanović G. Effects of accreditation on higher education in Serbia. Qual High Educ. 2018;24(3):254–68.
13. Vujisić-Živković N, Bjekić J. Harmonization of clinical practice and research in medical schools of Serbia. Serb J Exp Clin Res. 2019;20(2):125–32.
14. Snoj N. Telemedicine and the changing landscape of medical education. Croat Med J. 2021;62(1):92–8.
15. European Association for Quality Assurance in Higher Education (ENQA). Standards and guidelines for quality assurance in the European Higher Education Area (ESG). Brussels: ENQA; in 2015
16. Tatar E, Hayes R. Cyclical accreditation versus continuous improvement: challenges in health professional education. BMC Med Educ. 2019;19(1):314–22.
17. Ling JM, Ballmer DF. Building institutional cultures of quality: A framework for medical schools in transition. J Educ Eval Health Prof. 2021;18:32–9.
18. Grunberg L, Sharma P, Kaludi S. Lack of resources in health education: A cross-sectional survey of medical and allied health schools. Nurse Educ Today. 2020;94:104563.
19. Dawson KE, Zimring AR Partnerships that work: Collaborative models for resource sharing in health education settings. Int J Health Plann Manage. 2021;36(4):1214–26.
20. Poljak K, Andrić L, Milošević R. Maintenance of simulation laboratories: Analysis of costs and benefits in professional medical education. Adv Simul. 2022;7(1):29–37.
21. Gibson LJ, Turnbull R, Adhikari K. Strengthening feedback loops in professional medical schools: a mixed methods analysis. Front Educ. 2021;6:611–8.
22. Blanco-Mehija D, Katri S, Giljen M. Engaging students as quality champions: Best practices in professional health programs. Perspect Med Educ. 2020;9(6):375–82.
23. Reinhard DS, Bush LO Assessing clinical competencies: A systematic review of best assessment practices in professional health care curricula. Honey Teach. 2018;40(10):991–9.
24. Judeh AR, Peterson N, Carlson MN. Implementation of OSE in resource-constrained professional settings: A ten-year retrospective. Teach Learn Med. 2019;31(2):165–73.
25. Gilmore R, Salazar A. Digital innovation in nursing and allied health education: a scoping review. Health Prof. Educ. 2021;7(3):356–65.

26. Liang T, Westervelt K, Gan W. Institutional readiness for teleeducation: Overcoming barriers in professional health insurance programs. J Allied Health. 2022;51(1):40–6.
27. Morel PL, Braun S, Santoro GP Navigating national and international standards in health professions education: a multi-country analysis. Glob Health Sci Educ. 2020;2(1):e9–14.
28. Gomez SG, Royle K. Funding models in professional medical education: Toward equitable regional distribution. Educ Res Int. 2021;2021:8556219.
29. Howard G, Pineda T, Elezovic S. Toward a culture of excellence: Building long-term quality assurance mechanisms in developing medical schools. J Contin Educ Health Prof. 2021;41(4):281–9.