

UNDERSTANDING PUBLIC HEALTH PROFESSIONALS:  
THEIR ROLES, SIGNIFICANCE, AND CHALLENGESKatica Tripković<sup>1</sup><sup>1</sup> Gradski zavod za javno zdravlje Beograd, Beograd, Srbija<sup>1</sup> Institute of Public Health of Belgrade, Belgrade, Serbia

## SAŽETAK

Bez angažovanja profesionalaca, koji čine javnozdravstvenu radnu snagu odgovornu za upravljanje, koordinaciju i pružanje osnovnih javnozdravstvenih usluga, ne bi mogao biti postignut dramatični napredak javnog zdravlja u 20. veku povezan sa produženjem očekivanog trajanja životnog veka i unapređenjem kvaliteta života, smanjenjem smrtnosti odojčadi i dece, smanjenjem i eliminacijom brojnih zaraznih bolesti. U sisteme javnog zdravlja u zemljama širom sveta, uključujući i Republiku Srbiju, „hronično“ se nedovoljno ulaže, te se isti suočavaju sa poteškoćama da obezbede adekvatan broj i odgovarajuću distribuciju kvalifikovanih javnozdravstvenih radnika. Brojni izazovi u vezi sa javnozdravstvenom radnom snagom mogu se sagledati kroz podelu na: društvene (starenje radnika, niska atraktivnost profesije, nizak moral i motivacija, izazovi zadržavanja), tehnološke (heterogena ponuda obrazovanja i obuke, nedostatak mogućnosti za profesionalni razvoj), ekonomske (nedovoljno finansiranje i niske plate), ekološke (antibiotska rezistencija, zagađenje, bezbednost hrane, klimatske promene, urbanizacija), političke (niska pozicija na listi prioriteta političkih lidera, nedostatak pravnih i zakonskih okvira za razvoj radne snage) i pravne i etičke (nedostatak jasno formulisano etičkog kodeksa u javnom zdravlju). Za pružanje visokokvalitetnih javnozdravstvenih usluga, smanjenje zdravstvenih nejednakosti i adekvatan odgovor na nove izazove javnog zdravlja neophodno je unapređenje kapaciteta kvalifikovane i kompetentne radne snage kroz dobro razumevanje interesa i potreba javnozdravstvenih radnika, svrsishodno planiranje sukcesije, zapošljavanje i zadržavanje radnika i efikasnije raspolaganje resursima. Sveobuhvatno sagledavanje upravljanja javnozdravstvenim kadrovima, kao i kreiranje strateških i operativnih kadrovskih politika u zdravstvenom sistemu Republike Srbije neophodni su da bi se odgovorilo na zahteve koje donose krizne situacije, kakva je pandemija nove zarazne bolesti.

**Ključne reči:** javno zdravlje, osnovne javnozdravstvene funkcije, javnozdravstveni radnici, Republika Srbija

## ABSTRACT

The dramatic progress in public health throughout the 20th century, including the extension of life expectancy, enhancement of quality of life, and significant reductions in infant and child mortality rates, as well as the successful reduction and eradication of some infectious diseases, could not have been achieved without public health professionals responsible for the management, coordination, and provision of essential public health services. Public health systems in countries around the world, including the Republic of Serbia, are “chronically” underinvested, and face difficulties in ensuring an adequate number and appropriate distribution of qualified public health workers. Numerous challenges related to the public health workforce can be classified into several groups: social (aging workers, the profession’s lack of appeal, diminished morale and motivation, retention challenges); technological (the diverse array of education and training options, scarce opportunities for professional development); economic (insufficient financing and low salaries); environmental (antibiotic resistance, pollution, food safety, climate change, urbanization); political (lack of prominence on the agendas of political leaders, lack of legal frameworks for workforce development); and legal and ethical (absence of a well-defined ethical framework in public health). To deliver high-quality public health services, mitigate health disparities, and effectively tackle emerging health crises, enhancing the capabilities of a skilled and competent workforce is imperative. This involves gaining a comprehensive understanding of the interests and needs of public health professionals, implementing strategic succession planning, optimizing recruitment and retention of workers, and ensuring more efficient use of resources. A thorough examination of public health personnel management, together with the development of strategic and operational personnel policies within the healthcare system of the Republic of Serbia, is necessary for effectively addressing the demands posed by crises such as the outbreak of a novel infectious disease pandemic.

**Keywords:** public health, essential public health function, public health professionals, the Republic of Serbia

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## UVOD

### Javno zdravlje

Iako su principi i aktivnosti javnog zdravlja prepoznati i primenjuju se vekovima, nastanak same discipline vezuje se za kraj 19. veka i industrijsku revoluciju. Nakon prve faze razvoja nauke i prakse javnog zdravlja koja se odnosila na poboljšanje higijenskih i sanitarnih uslova, sledi faza individualne zdravstvene zaštite, a zatim faza terapijskih postupaka koja vodi ka reorganizaciji rada institucija javnog zdravlja u pravcu angažovanja u društvenim aktivnostima zajednice i zdravstvenom vaspitanju i međunarodnoj organizaciji javnog zdravlja. U drugoj polovini 20. veka započinje faza novog javnog zdravlja nastala na bazi holističkog pristupa zdravlju, a koja je usmerena na sistematsko identifikovanje zdravstvenih potreba, unapređenje zdravlja i kvaliteta života, prevenciju bolesti i organizaciju zdravstvene službe u cilju obezbeđenja sveobuhvatne i kvalitetne zdravstvene zaštite za definisanu populaciju [1].

Tokom čitavog jednog veka, koliko traju napori da se definiše javno zdravlje, nije ustanovljena jedinstvena definicija koja bi u potpunosti oslikala kompleksnost ove oblasti [2]. U literaturi se najčešće nalazi Ačesonova definicija koju je i Svetska zdravstvena organizacija (SZO) prepoznala kao dobru polaznu osnovu za proučavanje javnog zdravlja, a prema kojoj javno zdravlje predstavlja „nauku i umetnost unapređenja i zaštite zdravlja i blagostanja, prevencije bolesti i produženja života kroz organizovane napore društva“ [3]. Međutim, imajući u vidu promenljivu prirodu javnozdravstvenih izazova, kao i činjenicu da najnovije originalne definicije javnog zdravlja datiraju od pre nekih 20 godina, nameće se potreba za njihovim preispitivanjem i ažuriranjem [2].

### JAVNOZDRAVSTVENI RADNICI

Javno zdravlje zahteva snažnu i održivu radnu snagu, odnosno dovoljan broj obrazovanih, veštih i motivisanih multidisciplinarnih javnozdravstvenih radnika sposobnih za pružanje visokokvalitetnih javnozdravstvenih usluga [4].

Ne postoji univerzalna i opšteprihvaćena definicija javnozdravstvene radne snage. Rotem i saradnici su u svojoj definiciji javnozdravstvene radne snage kao „osoba koje su uključene u zaštitu, promovisanje i/ili obnavljanje kolektivnog zdravlja cele ili određene populacije (za razliku od aktivnosti usmerenih na brigu o pojedincima)“ [5] potencirali usmerenost aktivnosti javnozdravstvenih radnika na celokupnu populaciju i naglasili razliku između javnog zdravlja i medicinske prakse. U definiciji Beglehola i Dal Poza, prema kojoj je javnozdravstvena radna snaga „raznovrsna radna

## INTRODUCTION

### Public health

Although the principles and practices of public health have been acknowledged and utilized for centuries, the origin of the discipline traces back to the end of the 19th century and the era of the industrial revolution. Following the initial phase related to the development of scientific and practical aspects of public health and enhancing hygienic and sanitary conditions, the evolution of public health entered subsequent stages. This transition included focus on individual healthcare, followed by the integration of therapeutic interventions, which led to a reorganization in public health institutions with a focus on community engagement, health education, and participation in international public health activities. In the latter half of the 20th century, a new era of public health emerged, based on a holistic approach to health. This approach aimed at systematically identifying health needs, enhancing health and quality of life, preventing diseases, and structuring health services to deliver comprehensive, high-quality care tailored to specific populations [1].

During the entire century of efforts to define public health, a single definition that fully reflects the complexity of this field has remained elusive [2]. In literature, Acheson's definition, which has also been acknowledged by the World Health Organization (WHO) as a valuable starting point for exploring public health, is most often cited. According to this definition, public health is the science and art of preventing disease, prolonging life and promoting health through the organized efforts of society" [3]. However, considering the ever-changing nature of public health challenges, coupled with the realization that the most recent original definitions of public health were formulated nearly 20 years ago, it becomes imperative to undertake a comprehensive review and revision of these definitions [2].

### PUBLIC HEALTH PROFESSIONALS

Public health requires a strong and sustainable workforce, comprising a sufficient number of educated, skilled and motivated multidisciplinary public health professionals capable of providing high-quality public health services [4].

There is no universally recognized and widely accepted definition of the public health workforce. Rotem et al., in their definition of the public health workforce as "persons who are involved in the protection, promotion and/or restoration of the collective health of the entire or certain population (as opposed to activities aimed at caring for individuals)" [5] underscored the scope of public health workers' endeavors, empha-

snaga čija je primarna odgovornost obezbeđivanje ključnih aktivnosti javnog zdravlja, bez obzira na njihovu organizacionu osnovu" [6], naglašena je njena multidisciplinarnost. Definicija Američkog instituta za medicinu navodi da javnozdravstvenu radnu snagu čine „osobe obrazovane u oblasti javnog zdravlja ili srodnoj disciplini koje su zaposlene da poboljšaju zdravlje fokusirajući se na stanovništvo" [7] i ukazuju na važnost postojanja formalnog sistema obrazovanja javnozdravstvenih profesionalaca i naučnog pristupa javnozdravstvenim intervencijama zasnovanog na dokazima. Evropski akcioni plan za jačanje kapaciteta i usluga javnog zdravlja, oslanjajući se na Vitfildov koncept [8], prepoznao je tri grupe u okviru javnozdravstvene radne snage: specijaliste za javno zdravlje koji čine jezgro javnozdravstvene radne snage (npr. epidemiolozi, radnici u promociji zdravlja, biostatističari itd), zdravstvene radnike bez eksplicitne funkcije u javnom zdravlju ali koji pružaju usluge promocije zdravlja i prevencije bolesti (npr. lekari opšte prakse, medicinske sestre, farmaceuti, socijalni radnici, psiholozi), i profesionalce koji nisu u zdravstvenom sektoru ali čije aktivnosti i odluke utiču na zdravlje ljudi (npr. profesionalce na različitim nivoima vlasti koji sprovode politike i upravljaju programima u sektorima urbanizma, obrazovanja, transporta, itd.) [9], a ovaj pristup prilikom definisanja javnozdravstvene radne snage i danas je aktuelan [10].

Vats i saradnici, u nedavnom sistematskom pregledu literature, podelili su definicije javnozdravstvene radne snage na pragmatične, u kojima se javnozdravstveni radnici definišu na osnovu tipa poslodavca (tj., na osnovu toga gde rade), funkcije koju obavljaju (šta rade), zanimanja (ko su), ili obuke (šta su naučili) i konceptualne definicije koje uglavnom naglašavaju fokus aktivnosti javnozdravstvenih radnika na unapređenje zdravlja celokupne populacije. Ovi autori, kao najprikladniju definiciju javnozdravstvene radne snage ističu pragmatičnu definiciju koja identifikuje javnozdravstvene radnike prema onome šta rade, odnosno definiše ih kao osobe koje obavljaju funkcije javnog zdravlja [11].

## OSNOVNE JAVNOZDRAVSTVENE FUNKCIJE

Krajem dvadesetog veka, u kontekstu brzih zdravstvenih, demografskih, društvenih i političkih promena u zemljama širom sveta, pojavio se koncept osnovnih javnozdravstvenih funkcija, a sa ciljem uspostavljanja optimalnog načina funkcionisanja sistema javnog zdravlja i odgovora na nove i prioritetne javnozdravstvene izazove [12]. Procena zdravlja populacije i identifikovanje zdravstvenih prioriteta, razvoj politike za rešavanje nacionalnih zdravstvenih problema

sizing the distinction between public health and clinical practice. Beaglehole and Dal Poz's definition highlights the multidisciplinary nature of the public health workforce. They describe it as a diverse workforce whose primary responsibility is to provide key public health activities, regardless of their organizational basis [6]. The definition of the American Institute of Medicine states that the public health workforce consists of individuals educated in the field of public health or a related discipline who are employed to improve health by focusing on the population [7], emphasizing the significance of formal education and evidence-based approaches in public health interventions. Building upon Whitfield's framework [8], the European Action Plan for Strengthening Public Health Capacity and Services recognizes three distinct groups within the public health workforce. These include public health specialists who constitute the nucleus of the workforce (epidemiologists, health promotion specialists, and biostatisticians), healthcare professionals who, while not exclusively tasked with public health roles, deliver health promotion and disease prevention services (general practitioners, nurses, pharmacists, social workers, and psychologists), and professionals outside the health sector whose decisions and activities impact public health (government officials involved in urban planning, education, transportation, etc.) [9]. This comprehensive approach to defining the public health workforce remains relevant today [10].

In a recent systematic literature review, Watts et al. categorized definitions of the public health workforce into pragmatic and conceptual frameworks. Pragmatic definitions delineate public health workers based on their employer, the functions they fulfill, their occupational roles, or their training. On the other hand, conceptual definitions primarily emphasize the focus of public health workers' activities on enhancing the health of entire populations. These authors advocate for the pragmatic definition of the public health workforce, which identifies individuals based on their roles and functions. According to this perspective, public health workers are defined as individuals engaged in executing specific public health functions [11].

## ESSENTIAL PUBLIC HEALTH FUNCTIONS

Toward the end of the twentieth century, amidst rapid transformations in health, demographics, society, and politics around the world, the notion of essential public health functions emerged. This concept aimed at establishing an optimal framework for the operation of public health systems, effectively addressing emergent and pressing public health challenges [12]. In 1988, the American Institute of Medicine defined three fun-

i prioriteta i obezbeđivanje pristupa odgovarajućoj zdravstvenoj zaštiti su tri osnovne funkcije koje je, 1988. godine, definisao Američki institut za medicinu u svrhu opisivanja usluga i odgovornosti u javnom zdravlju [13]. Navedene funkcije predstavljale su osnovu za kreiranje delokruga rada za osnovne usluge javnog zdravlja u Sjedinjenim Američkim Državama (SAD) 1994. godine [14]. Četiri godine kasnije, SZO je sproveda prvu Delfi studiju na osnovu koje je definisana lista funkcija javnog zdravlja kao prva globalna referenca prema kojoj bi zemlje mogle da sagledaju svoje kapacitete javnog zdravlja i tako istakla značaj upravljanja ovom oblašću [15]. Tokom protekle dve decenije, smenjivali su se brojni programi SZO i njenih regionalnih kancelarija, kao i drugih globalnih javnozdravstvenih aktera uključujući Centar za kontrolu i prevenciju bolesti, Svetsku banku, Evropsku komisiju i pojedinačne regione i zemlje, za razvoj i rad na osnovnim javnozdravstvenim funkcijama [16].

Osnovne javnozdravstvene funkcije sastoje se od minimalnog skupa povezanih i međusobno zavisnih kolektivnih akcija koje su potrebne za ostvarivanje ciljeva javnog zdravlja, uključujući dostizanje i održavanje najvišeg mogućeg nivoa zdravlja stanovništva u okviru datih resursa, a za čije sprovođenje je odgovorna država [16,17]. Liste osnovnih javnozdravstvenih funkcija su dinamični konstrukti, podložni periodičnim revizijama i poboljšanjima, a iste se razlikuju po vrsti, broju, kombinaciji i načinima operacionalizacije funkcija u zavisnosti od shvatanja javnog zdravlja u datom društvenom konetkstu [16].

Prvobitna lista osnovnih javnozdravstvenih funkcija Evropskog regiona SZO bazirala se na prevenciji bolesti, nadzoru i kontroli, zaštiti životne sredine, zdravlju na radu i promociji zdravlja kao tradicionalnim javnim zdravstvenim uslugama. Svetski zdravstveni izveštaj iz 2000. godine inicirao je napore koji su rezultirali reorganizacijom liste tako što su uzeti u obzir i aspekti upravljanja, finansiranja i ljudskih resursa, a reč „funkcija“ zamenjena je rečju „operacija“ kako bi se napravila razlika između osnovnih operacija javnog zdravlja i funkcija zdravstvenog sistema. Uključena je nova operacija koja se odnosila na komunikaciju, kao odgovor na rastuću relevantnost interneta i društvenih medija [17].

Strategija Zdravlje 2020 [18] i Evropski akcioni plan za jačanje kapaciteta i usluga javnog zdravlja [9] postavili su osnovu da zdravlje stanovništva postane nacionalni i globalni prioritet za sve države članice u Evropskom regionu SZO što je dodatno promenilo i usmerilo fokus osnovnih javnozdravstvenih operacija na pravičnost, angažovanje stanovništva i intersektorsko upravljanje. Na 62. sednici Regionalnog komite-

damental functions to encapsulate the scope of public health services and responsibilities: evaluating population health and discerning health priorities, formulating policies to tackle national health issues and priorities, and guaranteeing access to sufficient healthcare [13]. These functions served as the basis for establishing the scope of work for essential public health services in the United States of America (USA) in 1994 [14]. Four years later, the World Health Organization (WHO) conducted the first Delphi study, laying the groundwork for a comprehensive list of public health functions. This initiative provided the first global reference for countries to evaluate their public health capacities, emphasizing the significance of proficient management in this domain [15]. Over the past two decades, numerous initiatives have been spearheaded by the World Health Organization (WHO) and its regional branches, alongside other prominent global public health stakeholders such as the Centers for Disease Control and Prevention, the World Bank, the European Commission, as well as various regions and nations. These efforts have been dedicated to the refinement and implementation of essential public health functions [16].

Essential public health functions include a fundamental array of interconnected collective actions essential for reaching public health objectives. These functions are necessary for realizing and sustaining optimal population health levels within available resources, and it is the responsibility of the state to ensure their effective implementation [16,17]. Lists of essential public health functions are dynamic constructs, prone to periodic revisions and enhancements. They vary in terms of type, quantity, combination, and methods of operationalization, depending on the prevailing interpretation of public health within a specific social context [16].

The original list of essential public health functions in the WHO European Region was based on traditional public health services, emphasizing disease prevention, surveillance, and control, alongside environmental protection, occupational health, and health promotion efforts. The World Health Report 2000 initiated the restructuring of the list, integrating considerations of management, financing, and human resources. Additionally, the terminology shifted, replacing function with operation to differentiate between the fundamental operations of public health and the broader function of the health system [17].

The Health 2020 Strategy [18] and the European Action Plan for Strengthening Public Health Capacities and Services [9] established a cornerstone, elevating population health to a paramount status within all member states of the WHO European Region, conse-

ta SZO na Malti 2012. godine usvojena je lista od 10 javnozdravstvenih operacija [19]. Kako bi se osiguralo pružanje visokokvalitetnih javnozdravstvenih usluga unutar i izvan granica zdravstvenog sistema, potrebne su složene i multidimenzionalne interakcije između osnovnih javnozdravstvenih operacija. Tako, javnozdravstvene operacije pružanja usluga, odnosno prevencija bolesti, promocija zdravlja i zdravstvena zaštita čine glavne oblasti rada u javnom zdravlju, nadzor i praćenje zdravstvenog stanja oblikuju operacije pružanja usluga i prate njihovu efikasnost, dok je upravljanje i obezbeđivanje ljudskih, finansijskih i materijalnih resursa i znanja neophodno za sprovođenje i za nadzor nad implementacijom osnovnih javnozdravstvenih operacija [17].

Usvojeno je nekoliko globalnih i regionalnih rezolucija SZO o jačanju kapaciteta i usluga javnog zdravlja, kao što je WHA69.1 [20], koja poziva na jačanje osnovnih funkcija javnog zdravlja kao najisplativijeg, sveobuhvatnog i održivog pristupa za ostvarivanje zdravstvenih ciljeva ključnih za dostizanje univerzalne zdravstvene zaštite. Rezolucija naglašava i doprinos osnovnih javnozdravstvenih funkcija agendi ciljeva održivog razvoja, njihovu multisektorsku prirodu i međusobnu povezanost sa aspektima zdravstvene bezbednosti, upravljanjem i širim odrednicama zdravlja [20].

Pandemija Kovida 19 razotkrila je slabosti zdravstvenih sistema u zemljama širom sveta, i istovremeno dala novi podsticaj za revitalizaciju osnovnih javnozdravstvenih funkcija i unapređenje kapaciteta za reagovanje u vanrednim situacijama. SZO je 2021. godine predložila konceptualni pristup utvrđivanju obima, definisanju i izgradnji kapaciteta javnozdravstvene radne snage koji uključuje i kreiranje nove liste od 12 osnovnih javnozdravstvenih funkcija [21] (Tabela 1). Istovremeno, identifikovani su i međusobno povezani pokretači neophodni za obezbeđivanje adekvatnog ulaganja i sprovođenje osnovnih javnozdravstvenih funkcija, a to su politička posvećenost na visokom nivou javnom zdravlju i javnozdravstvenim funkcijama, multisektorski mehanizmi odgovornosti za sprovođenje javnozdravstvenih funkcija i evaluacija njihovog sprovođenja [21]. Drugim rečima, za jačanje zdravstvenih sistema sa snažnom javnozdravstvenom orijentacijom potrebno je osigurati jasno liderstvo u javnom zdravlju i koordinaciju međusektorskih aktivnosti za zdravlje; ojačati multisektorsku odgovornost za sprovođenje osnovnih javnozdravstvenih funkcija; i proceniti trenutno stanje upravljanja i sprovođenja istih. Cilj je postići veću efikasnost, efektivnost i pravičnost u suočavanju sa složenim izazovima javnog zdravlja današnjice i dostizanju održivih ciljeva razvoja [10,21].

quently reshaping and steering the focus of essential public health operations towards equity, community involvement, and intersectoral governance. During the 62nd session of the WHO Regional Committee in Malta in 2012, a set of 10 key public health operations was adopted [19]. To ensure the delivery of high-quality public health services both within and beyond the healthcare system, complex and multidimensional interactions among essential public health operations are required. Hence, within public health, service provision operations—comprising disease prevention, health promotion, and healthcare—are the main areas of focus. Supervision and monitoring of health status shape these operations and monitor their effectiveness. Meanwhile, management and allocation of human, financial, and material resources, alongside the dissemination of essential knowledge, facilitate the implementation and oversight of essential public health operations [17].

Several WHO global and regional resolutions on strengthening public health capacity and services have been adopted, including WHA69.1 [20]. This resolution advocates for enhancing essential public health functions as the most cost-effective, inclusive, and enduring strategy to realize pivotal health objectives essential for attaining universal health coverage. The resolution highlights the key role of essential public health functions in advancing the sustainable development goals agenda, recognizing their multisectoral character and interconnectedness with health security, governance, and broader health determinants [20].

The COVID-19 pandemic has exposed the weaknesses of health systems worldwide, while concurrently igniting fresh momentum for revitalizing essential public health functions and enhancing emergency response capabilities. In 2021, the WHO introduced a conceptual framework aimed at delineating the scope, definition, and capacity development of the public health workforce. This initiative includes the formulation of a novel list comprising 12 essential public health functions [21] (Table 1). Simultaneously, interconnected drivers crucial for securing sufficient investment and execution of essential public health functions were identified. These include high-level political dedication to public health and its functions, the establishment of multisectoral mechanisms accountable for executing public health functions, and the assessment of their implementation effectiveness [21]. In other words, to strengthen health systems with a robust public health emphasis, clear leadership in public health and effective coordination of intersectoral health activities are imperative; it is essential to enhance multisectoral accountability for executing essential public health functions and to evaluate the current management and implementation status

**Tabela 1.** Osnovne javnozdravstvene funkcije, SZO, 2021. godine

**Table 1.** Essential Public Health Functions, WHO, 2021

| Osnovne javnozdravstvene funkcije / Essential Public Health Functions  |
|--|
| 1. Praćenje i evaluacija zdravstvenog stanja stanovništva, korišćenja zdravstvenih usluga i nadzor nad faktorima rizika i pretnjama po zdravlje / 1. Monitoring and evaluating the health status of the population, utilization of healthcare services, and overseeing risk factors and health threats   |
| 2. Upravljanje vanrednim javnozdravstvenim situacijama / 2. Managing emergency public health situations  |
| 3. Obezbeđivanje efektivnog upravljanja, regulative i zakonodavstva u oblasti javnog zdravlja / 3. Ensuring effective management, regulation, and legislation in the field of public health  |
| 4. Podrška efikasnim i efektivnim zdravstvenim sistemima i multisektorskom planiranju, finansiranju i upravljanju zdravljem stanovništva / 4. Supporting efficient and effective health systems and multisectoral planning, financing, and management of population health   |
| 5. Zaštita stanovništva od zdravstvenih pretnji, uključujući opasnosti po životnu sredinu i profesionalne opasnosti, zarazne bolesti, bezbednost hrane, hemijske opasnosti i opasnosti od zračenja / 5. Protecting the population against health threats, including environmental and occupational hazards, infectious diseases, food safety, chemical and radiation hazards |
| 6. Promocija prevencije i ranog otkrivanja bolesti, uključujući nezarazne i zarazne bolesti / 6. Promoting prevention and early detection of diseases, encompassing both non-communicable and communicable diseases  |
| 7. Promocija zdravlja i blagostanja i akcije za rešavanje širih determinanti zdravlja i nejednakosti / 7. Promoting health and well-being while addressing the broader determinants of health and inequalities   |
| 8. Obezbeđivanje angažovanja zajednice, učešća i društvene mobilizacije za zdravlje i dobrobit / 8. Ensuring community engagement, participation and social mobilization for health and well-being   |
| 9. Obezbeđivanje adekvatnog broja kvalitetne javnozdravstvene radne snage / 9. Ensuring an adequate number of quality public health professionals  |
| 10. Obezbeđivanje kvaliteta i pristupa zdravstvenim uslugama / 10. Ensuring quality and access to health services  |
| 11. Unapređenje istraživanja javnog zdravlja / 11. Advancing public health research  |
| 12. Obezbeđivanje ravnopravnog pristupa i racionalnog korišćenja osnovnih lekova i drugih zdravstvenih tehnologija / 12. Ensuring equal access and rational use of essential medicines and other health technologies   |

## ZNAČAJ JAVNOZDRAVSTVENIH RADNIKA

Bez angažovanja profesionalaca, koji čine javnozdravstvenu radnu snagu odgovornu za upravljanje, koordinaciju i pružanje osnovnih javnozdravstvenih usluga, ne bi mogao biti postignut dramatični napredak javnog zdravlja u 20. veku povezan sa produženjem očekivanog trajanja životnog veka i unapređenjem kvaliteta života, smanjenjem smrtnosti odojčadi i dece, smanjenjem i eliminacijom brojnih zaraznih bolesti. Javnozdravstveni radnici imaju suštinsku ulogu u postizanju univerzalne zdravstvene zaštite ulaganjem u osnovne javnozdravstvene funkcije i osiguranje zdravstvene bezbednosti kroz implementaciju Međunarodnih zdravstvenih propisa [22].

Međutim, zdravstveni sistemi širom sveta i dalje se suočavaju sa brojnim javnozdravstvenim izazovima, uključujući starenje stanovništva, nejednakosti u zdravlju, globalizaciju, migracije, urbanizaciju, zagađenje životne sredine i klimatske promene, koji do vode do promena životnog okruženja, načina života i obrazaca bolesti [4]. Preventabilni faktori rizika (pušenje, štetna konzumacija alkohola, prekomerna telesna masa i gojaznost, nezdrave navike u ishrani i nedostatak fizičke aktivnosti) u najvećoj meri doprinose

accordingly. The objective is to improve efficiency, effectiveness, and equity in addressing the multifaceted public health challenges of today while striving to attain sustainable development goals [10,21].

## THE SIGNIFICANCE OF PUBLIC HEALTH PROFESSIONALS

Without the involvement of professionals who comprise the public health workforce—responsible for managing, coordinating, and providing essential public health services—the significant progress in public health during the 20th century, characterized by increased life expectancy, improved quality of life, and reduced infant and child mortality, could not have been achieved; their efforts were crucial in reducing and eliminating numerous infectious diseases. Public health professionals play a crucial role in achieving universal health care by investing in essential public health functions and ensuring health safety through the implementation of International Health Regulations [22].

However, health systems worldwide continue to face numerous public health challenges, including aging populations, health inequalities, globalization, migration, urbanization, environmental pollution, and

povećanju ukupnog tereta hroničnih nezaraznih bolesti (dijabetes, kardiovaskularne bolesti, rak i hronične respiratorne bolesti) koje su povezane sa 90% smrtnih slučajeva i 85% godina proživljenih sa nesposobnošću u Evropskom regionu [23]. Tokom pandemije Kovida 19 došlo je do značajnog porasta učestalosti problema mentalnog zdravlja u opštoj populaciji, a koji su i pre pandemije predstavljali jedan od najznačajnijih uzroka invaliditeta, i ozbiljan globalni javnozdravstveni izazov [23]. I pored dostignuća javnog zdravlja u borbi protiv zaraznih bolesti (iskorenjivanje malih boginja i skoro iskorenjivanje dečije paralize) postoji stalni rizik od pojave novih i ponovne pojave „starih“ zaraznih bolesti (zbog rezistencije na antibiotike, povećanog tempa globalnog kretanja, itd.) [4]. U zemljama u evropskom regionu beleži se najveća stopa multirezistentne tuberkuloze na globalnom nivou, dok su stope koinfekcije HIV-om među osobama sa tuberkulozom porasle sa 7% na 12% u periodu 2010-2019. godine [24]. Vanredne situacije u javnom zdravlju od međunarodnog značaja poslednjih godina (npr. influenza, ebola, zika i bliskoistočni respiratorni sindrom, Kovid 19), posebno su istakle potrebu za kvalifikovanom, dostupnom i efikasnom multidisciplinarnom javnozdravstvenom radnom snagom [10]. Realno je očekivati da će kontrola hroničnih nezaraznih, kao i zaraznih bolesti u budućnosti biti još izazovnija, imajući u vidu indirektno efekte pandemije Kovida 19 u smislu odlaganja zdravstvene zaštite, uključujući i preventivne zdravstvene usluge [23]. Drugi javnozdravstveni izazovi uključuju i sve brojnije političke sukobe, kao i druge humanitarne (npr. hemijski i radijacioni incidenti, terorizam) i prirodne katastrofe (npr. cunami, zemljotresi, poplave) [4,10].

U Rimskoj deklaraciji [25], G20 Italija [26] i nizu rezolucija Svetske zdravstvene skupštine prepoznata je potreba za izgradnjom kapaciteta radne snage odgovorne za sprovođenje osnovnih funkcija javnog zdravlja, uključujući i spremnost i reagovanje u vanrednim situacijama, kao i hitnost sa kojom se akcije moraju sprovesti.

## IZAZOVI U VEZI SA JAVNOZDRAVSTVENIM RADNICIMA

Realnost je da se u sisteme javnog zdravlja širom sveta „hronično“ nedovoljno ulaže, te da se isti suočavaju sa poteškoćama da obezbede adekvatan broj i odgovarajuću distribuciju kvalifikovanih javnozdravstvenih radnika. U Sjedinjenim Američkim Državama, na primer, trenutni i budući nedostatak javnozdravstvene radne snage je dobro dokumentovan, te se procenjuje da će tokom tekuće decenije ovoj zemlji biti potrebno bar 200.000 novih javnozdravstvenih radnika [27]. I druge razvijene zemlje poput Kanade i mnogih evrop-

climate change, which contribute to changes in living environments, lifestyles, and disease patterns [4]. Preventable risk factors such as smoking, harmful alcohol consumption, overweight and obesity, unhealthy eating habits, and lack of physical activity contribute significantly to the overall burden of chronic non-communicable diseases, including diabetes, cardiovascular diseases, cancer, and chronic respiratory diseases. These conditions are linked to 90% of deaths and 85% of years lived with disability in the European region [23]. During the COVID-19 pandemic, the frequency of mental health problems in the general population increased significantly. Even before the pandemic, mental health issues were already among the leading causes of disability and posed a serious global public health challenge [23]. Despite public health achievements in combating infectious diseases, such as the eradication of smallpox and the near eradication of polio, there remains a persistent risk of the emergence of new and the resurgence of “old” infectious diseases. This is due to factors such as antibiotic resistance and the increased pace of global travel [4]. Countries in the European region have the highest rate of multidrug-resistant tuberculosis globally. Additionally, the rate of HIV co-infection among people with tuberculosis increased from 7% to 12% between 2010 and 2019 [24]. Recent public health emergencies of international importance, such as influenza, Ebola, Zika, Middle East Respiratory Syndrome, and COVID-19, have highlighted the need for a well-trained, accessible, and efficient multidisciplinary public health workforce [10]. It is realistic to anticipate that controlling chronic non-communicable and infectious diseases will become even more challenging in the future. This is especially true considering the indirect effects of the COVID-19 pandemic, such as delays in healthcare and preventive services [23]. Other public health challenges include the rising number of political conflicts, as well as humanitarian crises such as chemical and radiation incidents, terrorism, and natural disasters like tsunamis, earthquakes, and floods [4,10].

The Rome Declaration [25], G20 Italy [26], and several resolutions of the World Health Assembly have acknowledged the importance of enhancing the capacity of the workforce responsible for implementing essential public health functions, including preparedness and response during emergencies. They have also emphasized the urgency of implementing these actions.

## CHALLENGES RELATED TO PUBLIC HEALTH PROFESSIONALS

The reality is that public health systems worldwide are chronically underfunded, leading to challenges

skih zemalja suočavaju se sa izazovima nedostatka javnozdravstvene radne snage koji je još kritičniji u većini zemalja u razvoju [4,10]. Brojni problemi u pogledu broja, strukture, distribucije, obučenosti i kompetencija javnozdravstvenih radnika došli su do izražaja sa pojavom pandemije Kovida 19, kada je bilo potrebno povećati aktivnosti na nivo koji verovatno nikada ranije nije bio potreban [10,28].

Raznovrsnost definicija javnozdravstvenih radnika otežava razvoj i primenu standardizovanih metoda za procenu i kontinuirano praćenje veličine, sastava i distribucije javnozdravstvene radne snage [28]. U sistematskom pregledu literature u domenu definisanja i utvrđivanja broja javnozdravstvenih radnika, Vats i saradnici su, od 82 publikacije, identifikovali svega sedam u kojima se navode procene broja javnozdravstvenih radnika na nacionalnom nivou, i to u 11 zemalja (Eritreji, Nemačkoj, Italiji, Poljskoj, Moldaviji, Sloveniji, Engleskoj, Holandiji, Novom Zelandu, Švajcarskoj i SAD) [11].

Javnozdravstveni radnici ne razmatraju se u Direktivi o profesionalnim kvalifikacijama Evropske unije, niti su eksplicitno definisani u Međunarodnoj standardnoj klasifikaciji zanimanja Međunarodne organizacije rada. Da bi se omogućilo predviđanje potrebnog broja javnozdravstvenih radnika zasnovano na dokazima, u skladu sa okvirom za akciju *U susret održivoj zdravstvenoj radnoj snazi u Evropskom regionu SZO*, potrebni su pouzdani izvori podataka i standardizovane metode za praćenje indikatora javnozdravstvene radne snage, uključujući i mobilnost i njene trendove [28].

Neke zemlje se i dalje suočavaju sa izazovima uvođenja javnog zdravlja kao akademske discipline ili sa prepoznavanjem uloge profesionalaca za javno zdravlje [29]. Asocijacija škola javnog zdravlja u evropskom regionu i Regionalna kancelarija za Evropu SZO formulisale su Okvir kompetencija za javnozdravstvenu radnu snagu [30] kao vodič za početnu obuku i opis poslova javnozdravstvenih radnika, ali i kao podršku upravljanju, strateškom i kontinuiranom profesionalnom razvoju javnozdravstvene radne snage i Mapu puta za profesionalizaciju javnozdravstvene radne snage [28] kao podršku zemljama da unaprede kapacitete javnozdravstvene radne snage kompetentne da odgovore na rastuće potrebe javnog zdravlja.

Višestruki uzročni faktori su u osnovi izazova u vezi sa javnozdravstvenom radnom snagom koji su kompleksni i zahtevaju sveobuhvatna rešenja. Izazovi u vezi sa javnozdravstvenom radnom snagom mogu se grupisati u društvene (starenje radnika, niska atraktivnost profesije, nizak moral i motivacija, izazovi zadržavanja), tehnološke (heterogena ponuda obrazovanja i obuke, nedostatak mogućnosti za profesionalni razvoj), ekonomske (nedovoljno finansiranje i niske plate), eko-

in recruiting an adequate number of qualified public health professionals and ensuring their appropriate distribution. In the United States, for example, there is a well-documented shortage of public health workers both presently and projected for the future. It is estimated that the country will require a minimum of 200,000 new public health professionals during the current decade [27]. Other developed nations, including Canada and numerous European countries, are also facing the challenges of public health workforce shortage. This issue is particularly acute in many developing countries [4,10]. The COVID-19 pandemic brought to light numerous issues regarding the number, structure, distribution, training, and competency of public health professionals. It became evident that there was a need to increase activities to a level that had probably never been required before [10,28].

The diverse definitions of public health professionals make it difficult to develop and implement standardized methods for assessing and continuously monitoring the size, composition, and distribution of the public health workforce [28]. In a systematic literature review on defining and determining the number of public health workforce, Watts et al. found that out of 82 publications, only seven offered estimates of the number of public health professionals at the national level. These estimates were provided for 11 countries, including Eritrea, Germany, Italy, Poland, Moldova, Slovenia, England, the Netherlands, New Zealand, Switzerland, and the USA [11].

Public health professionals are not addressed in the European Union's Directive on the recognition of professional qualifications, nor are they explicitly defined in the International Standard Classification of Occupations by the International Labor Organization. To facilitate evidence-based forecasting of the required number of public health professionals, aligned with *the Framework for Action Towards a Sustainable Health Workforce* in the WHO European Region, it is crucial to have reliable data sources and standardized methods for monitoring key public health workforce indicators, including mobility and its trends [28].

Some nations still encounter obstacles in introducing public health as an academic discipline or in acknowledging the vital role of public health professionals [29]. The Association of Schools of Public Health in the European Region, in collaboration with the WHO Regional Office for Europe, developed the Competency Framework for the Public Health Workforce [30]. This framework serves as a guide not only for the initial training and job descriptions of public health workers but also for supporting the management, strategic planning, and continuous professional development of the



loške (antibiotska rezistencija, zagađenje, bezbednost hrane, klimatske promene, urbanizacija), političke (nisko na listi prioriteta političkih lidera, nedostatak pravnih i zakonskih okvira za razvoj radne snage) i pravne i etičke (nedostatak jasno formulisanog etičkog kodeksa u javnom zdravlju) [28].

## JAVNOZDRAVSTVENI RADNICI U REPUBLICI SRBIJI

Aktivnosti usmerene ka zaštiti života i zdravlja ljudi, uključujući organizovanje karantina i sprečavanje i iskojenjivanje zaraznih bolesti koje je sprovodilo „Odeljenje karantinsko sa sanitetom“ osnovano u skladu sa Zemeljskim ustavom Srbije iz 1839. godine, smatraju se prvim organizovanim oblikom delovanja javnozdravstvene službe u Republici Srbiji. Prvu polovinu 20. veka obeležilo je otvaranje niza zdravstvenih ustanova i drugih institucija javnozdravstvenog karaktera, uključujući i Institut za socijalnu medicinu i Centralni higijenski zavod, kao i promocija ideja javnog zdravlja od strane istaknutih pojedinaca. Začetak savremenog pristupa javnom zdravlju vezuje se za pedesete godine 20. veka i analizu značaja i projekta za razvoj zdrave zajednice, dok tokom druge polovine 20. veka zdravlje populacije dobija veći značaj i, na bazi holističkog pristupa zdravlju, uspostavlja se faza novog javnog zdravlja [1]. Početak 21. veka obeležilo je usvajanje Zdravstvene politike Srbije i Strategije reforme zdravstvenog sistema koji su, bazirajući se na pretpostavci da je zdravlje stanovništva pitanje opšteg javnog interesa i najvažniji resurs razvoja, snažno zagovarali promociju zdravlja, preventivne aktivnosti i partnerstva za zdravlje. Tokom poslednje dve decenije usvojeni su brojni drugi multisektorski programi za podršku prioritetima javnog zdravlja [31].

Ministarstvo zdravlja, kao glavni donosilac odluka u zdravstvenom sistemu Republike Srbije, nadležno je za organizaciju, regulisanje i nadzor u oblasti javnog zdravlja. Javno zdravlje je regulisano prvenstveno Zakonom o zdravstvenoj zaštiti [32], a zatim i nizom drugih zakonskih propisa, uključujući Zakon o javnom zdravlju [33] i Zakon o zdravstvenom osiguranju [34].

Uredba o planu mreže zdravstvenih ustanova [35] definiše 26 instituta i zavoda za javno zdravlje koji predstavljaju nosioce javnozdravstvene aktivnosti u Republici Srbiji, a koji pored planiranja i sprovođenja aktivnosti u oblasti promocije zdravlja, prevencije bolesti i zaštite životne sredine, koordiniraju rad ostalih učesnika u sistemu javnog zdravlja. Značajnu ulogu u sprovođenju aktivnosti javnog zdravlja imaju i domovi zdravlja, ustanove socijalne zaštite, inspeksijske službe, obrazovne ustanove, nevladine organizacije, itd.

Obrazovanje kadrova u sistemu javnog zdravlja je u nadležnosti Ministarstva prosvete, nauke i tehnološ-

public health workforce. Additionally, they have created the Roadmap to professionalizing the public health workforce [28], which assists countries in enhancing the capacity of their public health workforce to effectively address the increasing public health challenges.

A multitude of causal factors contribute to the complexity of public health workforce challenges, necessitating comprehensive solutions. Challenges concerning the public health workforce can be categorized into several domains: social (an aging workforce, a lack of attractiveness in the profession, low morale and motivation, and retention difficulties), technological (a diverse range of educational offerings and a lack of opportunities for professional development), economic (inadequate funding and low salaries), environmental (antibiotic resistance, pollution, food safety, climate change, and urbanization), political (a low position on political agendas and lack of legal frameworks for workforce development), and legal and ethical (absence of a well-defined ethical framework in public health) [28].

## PUBLIC HEALTH PROFESSIONALS IN THE REPUBLIC OF SERBIA

The activities aimed at protecting lives and health, such as organizing quarantines and preventing and eradicating infectious diseases, conducted by the “Department of Quarantine and Sanitation,” established in accordance with the Serbian Constitution of 1839, are regarded as the first organized public health service efforts in the Republic of Serbia. The first half of the 20th century was marked by the establishment of numerous healthcare and public health institutions, including the Institute of Social Medicine and the Central Institute of Hygiene. This period was also characterized by the promotion of public health concepts by prominent individuals. The modern approach to public health began in the 1950s with the analysis and development of projects focused on creating healthy communities. In the latter half of the 20th century, public health gained increased significance, leading to the establishment of a new phase in public health that was based on a holistic approach to health [1]. The beginning of the 21st century was marked by the adoption of Serbia’s Healthcare Bill and the Healthcare System Reform Strategy. These initiatives, grounded in the belief that population health is a public interest and a crucial resource for development, strongly advocated for health promotion, preventive activities, and health partnerships. Over the last two decades, numerous other multisectoral programs have been implemented to support public health priorities [31].

The Ministry of Health, as the primary decision-maker in the healthcare system of the Republic of

kog razvoja, a obavlja se kroz studijske programe, specijalistička i uža specijalistička usavršavanja i kontinuiranu edukaciju iz javnog zdravlja. Pored četiri osnovne specijalizacije u domenu javnog zdravlja, socijalne medicine, epidemiologije, higijene i humane ekologije i mikrobiologije i parazitologije, od 2022. godine, doktori medicine mogu se specijalizovati i u oblasti javnog zdravlja, dok se ovi lekari specijalisti (u zavisnosti od osnovne specijalizacije) mogu dalje uže specijalizovati u različitim oblastima, uključujući zdravstveno vaspitanje, epidemiologiju zaraznih bolesti, epidemiologiju hroničnih nezazarnih bolesti, medicinsku informatiku, medicinsku ekologiju, bakteriologiju, virusologiju, medicinsku parazitologiju i mikologiju, itd [36]. Aktuelne i buduće pretnje po javno zdravlje nametnule su potrebu za interdisciplinarnim pristupom u javnozdravstvenom obrazovanju i multiprofesionalizmom u javnom zdravlju. U cilju obezbeđivanja adekvatnog znanja za javnozdravstvene profesionalce sposobne da odgovore na ove pretnje i koji će imati ključnu ulogu u razvoju i reformama zdravstvenog sistema, u Srbiji je 2004. godine, osnovana Škola javnog zdravlja, koja sprovodi postdiplomsku i kontinuiranu edukaciju u oblasti javnog zdravlja, zdravstvene politike i upravljanja u sistemu zdravstvene zaštite [4,31].

Javnozdravstvenu radnu snagu u Republici Srbiji dominantno čine javnozdravstveni radnici i saradnici zaposleni u institutima i zavodima za javno zdravlje. Aktuelnim zakonskim propisima kojima se definišu uslovi u pogledu kadra koje moraju ispunjavati zdravstvene ustanove, zavod za javno zdravlje treba da ima 29 zaposlenih na 100.000 stanovnika na teritoriji za koju je osnovan (22 zaposlena na 100.000 stanovnika u gradu Beogradu), od čega sedam lekara odgovarajuće specijalnosti (po jedan u oblasti promocije zdravlja, analize, planiranja i organizacije zdravstvene zaštite, informatike sa biostatistikom i higijene i humane ekologije i po 2 u oblasti kontrole i prevencije bolesti i mikrobiologije). Institut za javno zdravlje na nacionalnom nivou treba da ima 32 zaposlena na 1.000.000 stanovnika [37]. Precizni kadrovski normativi za javnozdravstvene radnike i saradnike drugih profila nisu propisani. Prema poslednjim dostupnim podacima u institutima i zavodima za javno zdravlje, u 2022. godini, bilo je 2,662 radnika zaposlena na neodređeno vreme, od čega 393 lekara specijalista [38]. Prosečan broj lekara specijalista zaposlenih u institutima i zavodima za javno zdravlje koji je iznosio manje od 6 na 100.000 stanovnika u Republici Srbiji bio je ispod propisanog kadrovskog normativa. Od ukupnog broja zaposlenih u institutima i zavodima za javno zdravlje, nešto preko petine su administrativni i tehnički radnici [38]. Među zdravstvenim radnicima i saradnicima, pored lekara, dominiraju zdravstveni

Serbia, is responsible for the organization, regulation, and supervision in the field of public health. Public health is primarily regulated by the Law on Health Care [32], followed by several other legal statutes, including the Law on Public Health [33] and the Health Insurance Act [34].

The Network Plan regulation [35] defines 26 public health institutes and institutions in the Republic of Serbia, which are the primary agents of public health activities. These institutions are responsible for planning and implementing health promotion, disease prevention, and environmental protection activities, as well as coordinating the work of other participants in the public health system [34]. Health centers, social protection institutions, inspection services, educational institutions, non-governmental organizations, and other entities also play significant roles in the implementation of public health activities.

The education of personnel within the public health system is overseen by the Ministry of Education, Science, and Technological Development. This is accomplished through study programs, specialist and subspecialist training, and continuous public health education. In addition to the four primary specializations in public health—social medicine, epidemiology, hygiene and human ecology, and microbiology and parasitology—since 2022 doctors of medicine have also been able to specialize in public health. These specialist doctors can further specialize in various fields, depending on their primary specialization. These fields include health education, epidemiology of infectious diseases, epidemiology of chronic non-communicable diseases, medical informatics, medical ecology, bacteriology, virology, medical parasitology, and mycology, among others [36]. The current and future threats to public health show the need for an interdisciplinary approach in public health education and multiprofessionalism in the field. To equip public health professionals with the necessary skills to address these threats and take on key roles in health system development and reforms, the School of Public Health was founded in Serbia in 2004. This institution offers postgraduate and continuing education programs in public health, health policy, and healthcare system management [4,31].

The public health workforce in the Republic of Serbia is predominantly composed of public health professionals and associates employed within public health institutes and institutions. According to the current legal regulations defining personnel requirements for health institutions, a public health institute should have 29 employees per 100,000 inhabitants in its designated territory (22 employees per 100,000 inhabitants in the city of Belgrade). Among these, seven doctors

saradnici različitih profila (diplomirani hemičari, fizičko-hemičari, biolozi, magistri farmacije i biohemičari, inženjeri tehnologije, itd.), laboratorijski tehničari i medicinske sestre – tehničari.

Osnovne delatnosti zavoda i instituta za javno zdravlje su socijalno-medicinska, higijensko-ekološka, epidemiološka i mikrobiološka, dok aktivnosti zaposlenih javnozdravstvenih radnika uključuju: praćenje, procenu, analizu i izveštavanje o zdravstvenom stanju stanovništva, zdravstvenim problemima, faktorima rizika po zdravlje i higijensko-epidemiološkoj situaciji; promociju zdravih životnih stilova, prevenciju rizičnih oblika ponašanja i edukaciju stanovništva u oblasti ekoloških rizika po zdravlje; preduzimanje mera za prevenciju, rano otkrivanje i suzbijanje bolesti; sprovođenje sanitarno-higijenskog i epidemiološkog nadzora; praćenje i analizu korišćenja, efikasnosti, dostupnosti i kvaliteta zdravstvene zaštite i pružanje stručne pomoći zdravstvenim ustanovama za unapređenje u ovim domenima; učešće u razvoju politika, zakonskih i podzakonskih akata, planova i programa za očuvanje i unapređenje zdravlja stanovništva, njihovom praćenju i evaluaciji; učešće u razvoju i implementaciji zdravstvenog informacionog sistema; analizu organizacije sistema zdravstvene zaštite, planiranje kadrova i predlaganje mera za unapređenje organizacije rada i kadrovske obezbeđenosti u zdravstvenim ustanovama u javnoj svojini; upravljanje rizicima i koordinaciju aktivnosti javnog zdravlja tokom kriza i vanrednih situacija (npr. epidemije, zemljotresi, poplave); saradnju i partnerstva sa drugim učesnicima u sistemu javnog zdravlja u cilju identifikovanja i rešavanja prioritarnih zdravstvenih potreba stanovništva, uključujući lokalnu samoupravu, nevladine organizacije, civilna društva, zdravstvene i ustanove u drugim sektorima; sprovođenje epidemioloških, populacionih i drugih istraživanja u oblasti javnog zdravlja, diseminaciju rezultata i informisanje zdravstvenih autoriteta u cilju donošenja odluka zasnovanih na dokazima; sprovođenje mikrobiološke, parazitološke i serološke dijagnostike i kontroli zaraznih bolesti; sprovođenje fizičko-hemijskih, hemijskih i toksikoloških analiza i ispitivanja životnih namirnica, predmeta opšte upotrebe, vode, vazduha, zemljišta, otpada, itd. Dodatno, Institut za javno zdravlje Srbije „Dr Milan Jovanović-Batut“, kao krovna ustanova u sistemu javnog zdravlja, koordinira i prati stručni rad svih zavoda i instituta za javno zdravlje i drugih ustanova koje obavljaju delatnost u domenu javnog zdravlja; koordinira i stručno-metodološki rukovodi aktivnostima prikupljanja podataka i izveštavanja u sistemu zdravstvene zaštite; predlaže i sprovodi mere i koordinira rad drugih ustanova u kriznim i vanrednim situacijama; saraduje sa međunarodnim organizaci-

in relevant specialties are required: one each in health promotion, healthcare analysis, planning and organization, informatics with biostatistics, hygiene and human ecology, and two each in disease control and prevention, and microbiology. A national institute of public health should have 32 employees per 1,000,000 inhabitants [37]. There are no precise personnel norms when it comes to public health professionals and associates of other profiles. According to the latest data from public health institutes and institutions, as of 2022, there were 2,662 permanent employees, out of which 393 were medical specialists [38]. The average number of specialist doctors employed in public health institutes and institutions, which was less than 6 per 100,000 inhabitants in the Republic of Serbia, fell below the prescribed personnel standard. Approximately one-fifth of the total workforce in public health institutes and institutions comprises administrative and technical personnel [38]. Among healthcare professionals and associates, alongside doctors, health professionals from various backgrounds predominate, including graduate chemists, physico-chemists, biologists, pharmacy and biochemistry masters, technology engineers, laboratory technicians and nurse-technicians.

The fundamental activities of public health institutes and institutions encompass social-medical, hygienic-ecological, epidemiological, and microbiological aspects. Public health workers are engaged in a wide array of tasks, including: monitoring, assessing, analyzing, and reporting on the population's health status, health problems, risk factors, and epidemiological situation; promoting healthy lifestyles, preventing risky behaviors, and educating the population about environmental health risks; implementing measures for disease prevention, early detection, and control; conducting sanitary-hygienic and epidemiological surveillance; monitoring and analyzing healthcare use, efficiency, availability, and quality, and providing professional support for improvement; participating in policy development, legal frameworks, plans, and programs for health preservation and improvement, including monitoring and evaluation; contributing to the development and implementation of health information systems; analyzing healthcare system organization, personnel planning, and proposing measures for improvement; managing risks and coordinating public health activities during crises and emergencies, such as epidemics, earthquakes, and floods; collaborating and forming partnerships with other stakeholders in the public health system, including local governments, NGOs, civil societies, and institutions in other sectors; conducting epidemiological, population, and other research in public health, disseminating findings, and

jama i institucijama u oblasti javnog zdravlja. U okviru Instituta za javno zdravlje Srbije funkcioniše Organizaciona jedinica za skrining koja predlaže donošenje, izmene i dopune skrining programa, kao i standarda i stručno-metodoloških uputstava za njihovo sprovođenje, zatim organizuje, prati sprovođenje i procenjuje efikasnost skrining programa i vrši promociju u cilju podizanja svesti stanovništva o njihovom značaju [32].

Kao rezultat delovanja u oblasti javnog zdravlja i unapređenja dostupnosti zdravstvene zaštite i u Republici Srbiji smanjen je odnos maternalne smrtnosti (sa 17,6 na 11,2 žene umrle u trudnoći, na porođaju ili u puerperijumu zbog komplikacija povezanih sa ovim stanjima na 100,000 živorođene dece u periodu 2010-2022. godine) [38], smrtnost odojčadi (sa 10,1 na 4 umrla na 1.000 živorođene dece u periodu 2002-2022. godine) [38,39], i dece starosti do pet godina (sa 11,5 na 5,5 umrlih na 1.000 živorođene dece u periodu 2002-2021. godine) [39]. Tokom poslednje dve decenije, ostvaren je značajan napredak u suzbijanju tuberkuloze (smanjenje notifikacione stope tuberkuloze smanjena za više od 80%, na 7/100.000 stanovnika u 2022. godini) [38]. Unapređenje dostupnosti usluga koje se odnose na reproduktivnu zdravstvenu zaštitu i promotivne aktivnosti u ovoj oblasti, rezultirali su smanjenjem stope rađanja među adolescentkinjama, povećanjem udela žena koje koriste moderne metode kontracepcije za planiranje porodice i povećanim obuhvatom prenatalnom zaštitom [38,39]. Promotivne aktivnosti koje se sprovode u cilju podizanja nivoa svesti o značaju preventivnih pregleda, reproduktivnom zdravlju i vakcinaciji imali su veliki uticaj na unapređenje opšteg zdravstvenog stanja osetljivih društvenih grupa, kao što je romska populacija [39,40]. Primena integrisanog pristupa promociji zdravstveno odgovornog ponašanja, u poslednje dve decenije, doprinela je smanjenju prevalencije pušenja u populaciji [38].

Sa druge strane, pokazatelji vitalne statistike i zdravstvenog stanja stanovništva u Republici Srbiji (od kojih mnogi narušeni usled pandemije Kovida 19) impliciraju potrebu za daljim unapređenjem aktivnosti i intervencija u oblasti javnog zdravlja, kao i jačanje kapaciteta za njihovu realizaciju, uključujući razvoj i osnaživanje javnozdravstvenog kadra.

U Republici Srbiji prisutan je trend depopulacije i starenja stanovništva, nastao kao rezultat negativnih tendencija u kretanju vitalnih događaja [38,41]. Iako stopa živorođenih u 2022. godini pokazuje blag porast u odnosu na 2021. godinu i iznosi 9,4 na 1.000 stanovnika, ovaj pokazatelj ima opadajući trend, a u 2020. godini dostigao je najnižu vrednost u poslednjih 10 godina (8,9 na 1.000 stanovnika) [38]. Trend pada i manju vrednost u 2022. u odnosu na 2019. godinu ima i sto-

informing health authorities for evidence-based decision-making; performing microbiological, parasitological, serological diagnostics, and controlling infectious diseases; conducting physico-chemical, chemical, and toxicological analyses and tests of food, general-use items, water, air, soil, waste, etc. Furthermore, the Institute of Public Health of Serbia "Dr. Milan Jovanović-Batut," serving as a central institution in the public health system, plays a pivotal role by: coordinating and monitoring the professional activities of all public health institutes and institutions, as well as other entities engaged in public health activities; managing data collection and reporting activities within the healthcare system using expert methodologies; proposing and implementing measures while coordinating efforts with other institutions during crisis and emergency scenarios; and collaborating with international organizations and institutions in the realm of public health on a global scale. Within the Institute of Public Health of Serbia, there is an Organizational Unit for Screening that is responsible for the following: proposing the adoption, modification, and enhancement of screening programs, along with establishing standards and professional-methodological guidelines for their implementation; organizing and monitoring the execution of screening programs, while evaluating their effectiveness; and promoting these programs to raise public awareness about their importance [32].

As a result of public health initiatives and improved healthcare accessibility in the Republic of Serbia, there has been a significant reduction in maternal mortality ratio, which decreased from 17.6 to 11.2 per 100,000 live births between 2010 and 2022. Additionally, infant mortality fell from 10.1 to 4 per 1,000 live births between 2002 and 2022. The mortality rate for children under the age of five also dropped from 11.5 to 5.5 per 1,000 live births between 2002 and 2021 [39]. Over the past two decades, significant progress has been made in the fight against tuberculosis. The tuberculosis notification rate has decreased by more than 80%, reaching 7 per 100,000 population in 2022 [38]. Enhanced availability of reproductive healthcare services and promotional activities in this area have led to a reduction in the birth rate among adolescent girls, an increase in the proportion of women using modern contraceptive methods for family planning, and improved coverage of prenatal care [38,39]. Promotional activities aimed at raising awareness about the importance of preventive examinations, reproductive health, and vaccination have significantly improved the general health status of vulnerable social groups, such as the Roma population [39,40]. Over the past two decades, the implementation of an integrated approach

pa prirodnog priraštaja (-7 na 1.000 stanovnika u 2022. i -5,3 na 1.000 stanovnika u 2019. godini), a posledično i vitalni indeks (57,4 živorođenih na 100 umrlih u 2022. i 63,5 u 2019. godini) [38]. U periodu 2002–2022. godine, udeo stanovnika mlađih od 15 godina je smanjen sa 16,1% na 14,4%, a udeo starih 65 i više godina povećan sa 16,6% na 22%, dok je prosečna starost stanovništva povećana sa 40 na 43,8 godina [41]. Hronične nezarazne bolesti (kardiovaskularne bolesti, maligni tumori, šećerna bolest, poremećaji mentalnog zdravlja i druge) dominiraju u nacionalnoj patologiji. Za gotovo polovinu smrtnih ishoda odgovorne su bolesti sistema krvotoka (47,3% svih smrtnih ishoda u 2022. godini) i za gotovo petinu tumori (18,5%) [38]. Šećerna bolest je u svetu peti, a u Srbiji treći vodeći uzrok umiranja od svih uzroka smrti i peti uzrok opterećenja bolešću. U periodu 2013–2022. godine stopa mortaliteta od šećerne bolesti je porasla za 18,9%, a od bolesti srca i krvnih sudova za 4,6% [38]. Beleži se nizak obuhvat ciljane populacije skrining pregledima koji se sprovode u okviru nacionalnog programa ranog otkrivanja raka, i to raka debelog creva (11,2% ciljane populacije), raka dojke (11,6% ciljane populacije) i raka grlića materice (15,8%), delom zbog nedovoljne informisanosti i nivoa svesti stanovništva o značaju ranog otkrivanja bolesti i skrining pregleda [42]. Rezultati prvog nacionalnog istraživanja mentalnog zdravlja u Republici Srbiji pokazali su da 15,2% odraslog stanovništva ispunjava kriterijume za jedan ili više psihijatrijskih poremećaja [43], što imajući u vidu povećanje opterećenja mentalnim bolestima u drugim zemljama, ukazuje na potrebu usmeravanja javnozdravstvenih intervencija i na ovu oblast. Isto istraživanje pokazalo je da je najčešći problem sa kojim se suočava 7,2% odraslih stanovnika, prekomerna upotreba alkohola [43]. I pored napretka koji je postignut u pogledu smanjenja prevalencije pušenja, i dalje gotovo trećina stanovnika starih 15 i više godina ima naviku pušenja duvanskih proizvoda, što je znatno iznad proseka za Evropsku uniju (23%). U Srbiji je 2019. godine više od trećine odraslog stanovništva (36,3%) bilo predgojazno (36,3%) i više od petine gojazno (20,8%), što je više u odnosu na 2006. godinu kada je procenat gojaznih bio 17,3%. U istom periodu, registrovan je i porast procenta gojazne dece uzrasta od 7 do 14 godina, sa 2,6% na 10,5% [44]. Obuhvat vakcinom protiv malih boginja u Republici Srbiji u periodu 2013–2022. godine je smanjen sa 93% na 81% [45], dok je procenat starijeg stanovništva koje je 2019. godine primilo vakcinu protiv sezonskog gripa (13,4%) među najnižim u poređenju sa zemljama Evropske unije [44]. Navedeni podaci ukazuju i da kontrola zaraznih bolesti u Republici Srbiji, predstavlja značajan javnozdravstveni izazov, dodatno komplikovan delovanjem antivak-

to promoting health-responsible behavior has contributed to a reduction in the prevalence of smoking in the population [38].

On the other hand, vital statistics and health indicators in the Republic of Serbia, many of which have deteriorated due to the COVID-19 pandemic, indicate the necessity for further enhancement of public health activities and interventions. This includes strengthening capacities for implementation and the development and strengthening of the public health framework.

In the Republic of Serbia, there is a trend of depopulation and an aging population, driven by negative trends in vital statistics [38,41]. Although the live birth rate in 2022 shows a slight increase compared to 2021, amounting to 9.4 per 1,000 inhabitants, this indicator has been on a downward trend. In 2020, it reached its lowest value in the past decade, at 8.9 per 1,000 inhabitants [38]. The rate of natural increase has been on a downward trend, showing a lower value in 2022 compared to 2019 (-7 per 1,000 inhabitants in 2022 versus -5.3 per 1,000 inhabitants in 2019). Consequently, the vital index also declined, from 63.5 live births per 100 deaths in 2019 to 57.4 in 2022 [38]. From 2002 to 2022, the proportion of residents under the age of 15 decreased from 16.1% to 14.4%, while the share of those aged 65 and over increased from 16.6% to 22%. Additionally, the average age of the population rose from 40 years to 43.8 years over the same period [41]. Chronic non-communicable diseases such as cardiovascular diseases, malignant tumors, diabetes, and mental health disorders are predominant in the national health profile. Diseases of the circulatory system account for nearly half of all deaths (47.3% in 2022), while tumors are responsible for almost one-fifth (18.5%) of all mortality cases [38]. Diabetes is the fifth leading cause of death globally, ranking third in Serbia and fifth in terms of disease burden. Between 2013 and 2022, mortality rates from diabetes increased by 18.9%, while those from heart and blood vessel diseases rose by 4.6% [38]. Unfortunately, there is low coverage of the target population in screening examinations under the national cancer early detection program. Only 11.2% of the target population undergoes colon cancer screenings, 11.6% breast cancer screenings, and 15.8% cervical cancer screenings. This is partly due to inadequate information and awareness among the population regarding the importance of early disease detection and screening examinations [42]. The first national survey of mental health in the Republic of Serbia revealed that 15.2% of the adult population met the criteria for one or more psychiatric disorders [43]. Considering the escalating burden of mental illnesses globally, this emphasizes the need to steer pub-

cinalnog pokreta [31]. Pandemija Kovida 19 postavila je u centar pažnje javnosti javno zdravlje i društvenu odgovornost javnozdravstvenih profesionalaca, čije je brzo i odlučno delovanje bilo od presudne važnosti za odgovor na krizu. Pandemija Kovida 19, kao i u mnogim drugim državama širom sveta, otkrila je ranjivost sistema javnog zdravlja i u Republici Srbiji. U 2021. godini, na drugom mestu među najčešćim uzrocima smrti sa učešćem od 20,3%, bio je Kovid 19, a iste godine registrovan je višak smrtnosti od +34,1% u odnosu na prosek u periodu 2016–2019. godine [46]. Ističe se potreba za unapređenjem kadrovskih kapaciteta u sistemu javnog zdravlja u cilju postizanja univerzalne zdravstvene zaštite i zaštite zdravlja u vanrednim situacijama.

Okvir delovanja za rešavanje aktuelnih i identifikaciju daljih pravaca u cilju obezbeđivanja adekvatnog odgovora na buduće izazove u javnom zdravlju utvrđuje Strategija javnog zdravlja u Republici Srbiji 2018-2026. godine [47]. Zasnovana na promociji zdravlja i prevenciji bolesti i povreda i naglašavajući značaj sveobuhvatnog pristupa putem interdisciplinarnosti, multisektorske saradnje, partnerstava, upravljanja i komunikacije, Strategija definiše opšte ciljeve koji uključuju unapređenje zdravlja stanovništva, životne sredine i radne okoline, smanjivanje nejednakosti u zdravlju, primenu aktivnosti promocije zdravlja u zajednici, prevenciju bolesti, povreda i rizika po zdravlje, podršku unapređenju dostupnosti, kvaliteta i efikasnosti zdravstvene zaštite i razvoj sistema javnog zdravlja zasnovanog na dokazima. Specifični strateški ciljevi, između ostalog, uključuju i razvoj, osnaživanje i unapređenje kompetencija kadrova u sistemu javnog zdravlja Republike Srbije [47].

Izazovi u vezi sa javnozdravstvenom radnom snagom u Republici Srbiji se ne razlikuju u odnosu na razvijene zemlje Evrope i sveta. U skladu sa rezultatima studije Šantrić-Miličević i saradnika koja se odnosila na procenu potreba za javnozdravstvenim profesionalcima u Republici Srbiji, u 2014. godini broj lekara specijalista u institutima i zavodima za javno zdravlje bio je za 6% manji nego 2000. godine, dok je iste godine u svega jednoj trećini zavoda za javno zdravlje broj specijalista na 100.000 stanovnika okruga bio jednak ili za 10% veći od propisanog normativa, što ukazuje i na neravnomernu distribuciju osoblja po okruzima [48]. Prema dostupnim podacima Instituta za javno zdravlje Srbije „Dr Milan Jovanović-Batut“, opadajući trend broja lekara specijalista u institutima i zavodima za javno zdravlje je nastavljen i nakon 2014. godine [38]. Identifikovan je i nedovoljan broj analitičara i laboratorijskih tehničara u javnozdravstvenim laboratorijama, što dovodi u pitanje adekvatan odgovor sistema javnog zdravlja

lic health interventions towards this area. Moreover, the research showed that excessive alcohol use is the most prevalent issue faced by 7.2% of adult residents [43]. Despite the progress made in reducing smoking prevalence, nearly a third of individuals aged 15 and above in Serbia still smoke tobacco products, significantly exceeding the European Union average of 23%. Furthermore, in 2019, over a third of the adult population (36.3%) were preobese, and more than a fifth were obese (20.8%), which was an increase from 2006 when the obesity rate was 17.3%. Similarly, there has been an increase in obesity among children aged 7 to 14, rising from 2.6% to 10.5% during the same period [44]. Measles vaccine coverage in the Republic of Serbia declined from 93% to 81% between 2013 and 2022 [45]. Additionally, the percentage of the elderly population who received the seasonal flu vaccine in 2019 was at 13.4%, ranking among the lowest compared to other European Union countries [44]. The previously mentioned data indicate a substantial public health challenge in the Republic of Serbia regarding the control of infectious diseases, which is further complicated by the influence of the anti-vaccination movement [31]. The COVID-19 pandemic has highlighted the public health and social responsibilities of professionals in the field, whose prompt and resolute actions were crucial in addressing the crisis. Like in many countries globally, the COVID-19 pandemic exposed the fragility of the public health system in the Republic of Serbia. In 2021, COVID-19 ranked second among the most prevalent causes of death, accounting for 20.3% of deaths. Moreover, during the same year, there was an excess mortality rate of +34.1% compared to the average from 2016 to 2019 [46]. The need to improve personnel capacities in the public health system in order to attain universal healthcare and effectively respond to healthcare emergencies has been emphasized.

The strategic framework for addressing present issues and identifying future directions to ensure an effective response to forthcoming challenges in public health is outlined in Serbia's Public Health Strategy for 2018-2026 [47]. Based on the promotion of health and the prevention of diseases and injuries and emphasizing the importance of a comprehensive approach through interdisciplinarity, multisectoral cooperation, partnerships, management and communication, the Strategy defines general goals that include the improvement of population, environmental and occupational health, the reduction of inequalities in health, the implementation of community health promotion activities, disease and injury prevention, supporting the enhancement of healthcare availability, quality and efficiency, and development of an evidence-based

na krizne situacije [49]. Namera promene posla je sve prisutnija pojava među javnozdravstvenim radnicima u institutima i zavodima za javno zdravlje, budući da je prevalencija ove pojave u 2019. godini dostigla 27%, a identifikovan je i prognoziran njen rastući trend [50]. U periodu 2000-2014. godine udeo lekara specijalista mlađih od 35 godina u institutima i zavodima za javno zdravlje smanjen je sa 10% na svega 2%, dok se i broj specijalizanata značajno smanjio, što ukazuje na starenje javnozdravstvene radne snage u Republici Srbiji [48]. U tom smislu, dodatni izazov predstavlja činjenica da je profesija javnog zdravlja manje prepoznatljiva i priznata u poređenju sa kliničkim granama medicine, kako od strane društva tako i od strane države i kao takva manje atraktivna mladim lekarima [28].

U osnovi izazova obezbeđivanja adekvatnog broja javnozdravstvenih profesionalaca je nedovoljno ulaganje u sistem javnog zdravlja u Republici Srbiji. Prema poslednjim dostupnim podacima Instituta za javno zdravlje Srbije, udeo izdataka za preventivne i javnozdravstvene usluge, u periodu 2003-2018. godine, smanjen je sa 8,7% na 7,1% od ukupnih izdataka u zdravstvenom sistemu [51]. Sam mehanizam finansiranja instituta i zavoda za javno zdravlje razlikuje se u odnosu na druge zdravstvene ustanove u javnoj svojini. Naime, iz sredstava Republičkog fonda za zdravstveno osiguranje finansiraju se usluge u oblasti mikrobiologije, aktivnosti vezane za obaveznu imunizaciju i druge aktivnosti iz oblasti socijalne medicine i epidemiologije koje su definisane kao programi. Deo sredstava instituti i zavodi za javno zdravlje obezbeđuju na osnovu godišnjih ugovora sa Ministarstvom zdravlja za sprovođenje programa od opšteg interesa (usluge iz oblasti mikrobiologije javnog zdravlja, prevencije i kontrole zaraznih i nezaraznih bolesti, promocije zdravlja, zdravstvene informatike i biostatistike i organizacije zdravstvenih usluga). Međutim, u domenu sanitarne mikrobiologije, higijene i ekotoksikologije, zavodi za javno zdravlje moraju da se takmiče na tržištu sa drugim institucijama za pružanje ovih usluga [31].

Planiranje kadra u zdravstvenom sistemu Republike Srbije, uključujući i javnozdravstvene radnike, zasnovano je na prošlim trendovima umesto na budućim projekcijama i zdravstvenim potrebama stanovništva i ima za cilj da održi postojeći broj zaposlenih u zdravstvenim ustanovama [31,48,49]. Planiranje javnozdravstvenog kadra dodatno je otežano i dostupnošću i kvalitetom podataka o njihovom broju, strukturi, obrazovanju, kompetencijama i mobilnosti. U Republici Srbiji ne postoji strategija za planiranje i razvoj kadra u zdravstvenom sistemu, uključujući i sistem javnog zdravlja [31].

Program rada SZO za Evropu u periodu 2020–2025. godine „Udružena akcija za bolje zdravlje u Evropi“

public health system. Some of the specific strategic goals include developing, empowering, and enhancing the competencies of personnel within the public health system of the Republic of Serbia [47].

The challenges faced by the public health workforce in the Republic of Serbia are comparable to those encountered in developed countries across Europe and worldwide. According to the findings of a study conducted by Šantrić-Milićević et al., which assessed the needs for public health professionals in Serbia, there was a 6% decrease in the number of specialist doctors in public health institutes between 2000 and 2014. Additionally, in the same year, only one-third of these institutes had a number of specialists per 100,000 inhabitants in the district that met or exceeded the prescribed norm by 10%. These statistics highlight an unequal distribution of personnel across districts [48]. According to data from the Institute of Public Health of Serbia “Dr. Milan Jovanović-Batut,” the decline in the number of specialist doctors in public health institutes and institutions has persisted beyond 2014 [38]. Furthermore, there is a recognized shortage of analysts and laboratory technicians in public health laboratories, raising concerns about the public health system’s ability to effectively respond to crisis situations [49]. The turnover intention is becoming more prevalent among public health professionals in institutes and public health organizations, with the prevalence of this phenomenon reaching 27% in 2019. Moreover, there is a growing trend in this inclination, which has been identified and projected to continue [50]. Between 2000 and 2014, the proportion of specialist doctors under the age of 35 within public health institutes and organizations declined from 10% to a mere 2%, while there was also a notable decline in the overall number of specialists, indicating the aging trajectory of the public health workforce in Serbia [48]. In this sense, the public health profession faces an additional challenge in its lesser recognition and acknowledgment compared to clinical medical specialties, both within society and the state. Consequently, it becomes less appealing to young doctors [28].

The challenge of ensuring an adequate number of professionals in the public sector stems from inadequate investment in the Republic of Serbia’s public health system. According to the most recent data from the Institute of Public Health of Serbia, the percentage of expenditures allocated to preventive and public health services decreased from 8.7% to 7.1% of the total health system expenditures between 2003 and 2018 [51]. The funding mechanism for public health institutes and institutions differs from that of other public health institutions. Specifically, services in mi-

uključuje podršku formulisanju nacionalnih strategija za poboljšanje uslova rada, zadržavanje i motivisanje postojeće radne snage, kao i obezbeđivanja buduće radne snage u skladu sa zdravstvenim potrebama stanovništva, uključujući zahteve za oporavkom nakon pandemije Kovida 19. Program prepoznaje važnost boljeg razumevanja dinamike tržišta rada u zdravstvu, uključujući i praćenje mobilnosti zdravstvenih radnika za postizanje adekvatnog broja i pravedne raspodele zdravstvene radne snage [52].

## ZAKLJUČAK

U eri globalizacije i aktuelnih ekoloških, demografskih, ekonomskih i političkih promena, za rešavanje globalnih javnozdravstvenih izazova koji se dešavaju u različitim lokalnim kontekstima, sistemi javnog zdravlja oslanjaju se na infrastrukturu dobro obučanih, multidisciplinarnih javnozdravstvenih profesionalaca. Izgradnja kapaciteta kvalifikovane i kompetentne radne snage omogućava pružanje visokokvalitetnih javnozdravstvenih usluga, smanjenje zdravstvenih nejednakosti i adekvatan odgovor na nove izazove javnog zdravlja [4]. Zbog toga je važno obezbediti dobro razumevanje interesa i potreba javnozdravstvenih radnika, svrsishodno planiranje sukcesije, zapošljavanje i zadržavanje radnika i efikasnije raspolaganje resursima, i tako osigurati podršku kreiranju nacionalne strategije planiranja i razvoja javnozdravstvenog kadra. Sveobuhvatno sagledavanje upravljanja javnozdravstvenim kadrovima, kao i kreiranje strateških i operativnih kadrovskih politika u zdravstvenom sistemu Republike Srbije neophodni su da bi se odgovorilo na zahteve koje donose krizne situacije, kakva je pandemija nove zarazne bolesti.

## ZAHVALNICA

Zahvaljujem se naučnoistraživačkim projektima Laboratorije za jačanje kapaciteta i performansi zdravstvenog sistema i kadrova za zdravstvenu pravičnost, Instituta za socijalnu medicinu Medicinskog fakulteta Univerziteta u Beogradu pod ugovorom 451-03-47/2023-01/200110 i 451-03-66/2024-03/200110, u okviru kojih je rad nastao.

## NAPOMENA

Delovi ovog rada sadržani su u doktorskoj disertaciji odbranjenoj 2023. godine na Medicinskom fakultetu Univerziteta u Beogradu.

**Sukob interesa:** Nije prijavljen.

crobiology, activities regarding mandatory immunization, and other areas within social medicine and epidemiology, defined as programs, are funded through the resources of the Republic Health Insurance Fund. Public health institutes and institutions secure a portion of their funding through annual contracts with the Ministry of Health to execute programs of general interest. These include a range of services such as public health microbiology, disease prevention and control (both infectious and non-infectious diseases), health promotion, health informatics, biostatistics, and health services organization. However, in domains like sanitary microbiology, hygiene, and ecotoxicology, these institutes must compete in the market with other institutions to deliver these specialized services [31].

Personnel planning within the Republic of Serbia's health system, including public health professionals, often relies on historical data rather than forward-looking projections and the evolving health demands of the population, aiming to sustain the current workforce levels within health institutions [31,48,49]. The planning of public health personnel is additionally complicated by the availability and quality of data concerning their quantity, composition, educational backgrounds, skills, and mobility patterns. In the Republic of Serbia, there is currently no strategic framework for planning and developing personnel within the health system, including the public health sector [31].

The WHO work program for Europe spanning 2020 to 2025, "Joint Action for Better Health in Europe," includes initiatives aimed at assisting in the development of national strategies. These strategies are focused on enhancing working conditions, retaining and motivating the current workforce, and ensuring the future workforce aligns with the health needs of the population, particularly in response to the challenges posed by the COVID-19 pandemic and the requirements for recovery. The program recognizes the significance of gaining a deeper understanding of the healthcare labor market dynamics. This involves actively monitoring the mobility of healthcare professionals to ensure there is a sufficient number of professionals and that they are distributed fairly across the healthcare sector [52].

## CONCLUSION

In an era of globalization and ongoing environmental, demographic, economic, and political shifts, addressing global public health challenges demands an infrastructure of well-trained, multidisciplinary public health professionals across diverse local contexts. Building the capacity of a skilled and capable workforce enables delivering high-quality public health services, minimizing health inequalities, and effective-



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ly addressing emerging public health challenges [4]. Hence, it's crucial to grasp the interests and requirements of public health professionals, implement targeted succession planning, improve recruitment and retention strategies, optimize resource utilization, and thereby ensure the creation of a national strategy for public health personnel planning and development. A comprehensive examination of public health personnel management, together with the formulation of strategic and operational personnel policies within the healthcare system of the Republic of Serbia, is imperative to effectively address the challenges posed by crisis situations, such as the outbreak of a novel infectious disease.

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