Llop-Gironés *et al.*
Human Resources for Health (2024) 22:82
https://doi.org/10.1186/s12960-024-00964-3

Human Resources for Health

CASE STUDY

Open Access

Building health systems resilience in Central Asia through nursing and midwifery: evidence to inform policy action

Alba Llop-Gironés[1], Gulnaz Kachkynovna Azhymambetova[2], Aizat Kubanysbekovna Asanova[3], Yusufi Salomuddin[4], Malohat Hikmatulloevna Boynazarova[4], Firdavs Orifovich Raupov[4], Nazira Usenovna Zholzhanova[5], Naila Beksautovna Ruzdenova[6], Gulnora Sheraliyevna Tojiboyeva[7], Rikhsi Kamilovna Salikhodjayeva[7] and Margrieta Langins[1*]

Abstract

Background The recent announcement of the next WHO State of the World's Nursing and Midwifery Reports calls for a review of the state of nursing and midwifery worldwide. In the WHO European region, a broad set of health system reforms have been introduced in Central Asian countries (CACs), namely, the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan, Turkmenistan and the Republic of Uzbekistan. These reforms have become the focus of a series of sub-regional policy dialogs between CACs, led by government chief nursing and midwifery officers, to accelerate the implementation of a package of policies to strengthen the capacity of nurses and midwives and build health system resilience. This study reviews the current state of nursing and midwifery capacity and documents future actions that can be taken in CACs.

Case presentation A systematic approach was used to describe trends, capacity and gaps in CACs' education, practice, regulation, leadership, and working conditions of nurses and midwives. Currently, CACs face challenges in increasing the level, quality and evidence-base of nursing and midwifery education, require efforts to expand the role of nurses, with emphasis on PHC and particular attention is required to decent working conditions, including fair income and security in the workplace. The GCNMOs have demonstrated experience in the oversight of both workforces and require support for effective work in making policies. To build health systems resilience in CACs through nursing and midwifery, a strategic package of evidence-informed actions that addresses education, practice, regulation, leadership, and working conditions of nurses and midwives is suggested for the period up to 2030.

Conclusions Current educational reforms and curricular development, combined with innovations in clinical practice and working environment can be pursued to foster better access to quality of care, enhance workplace satisfaction and improve recruitment and retention of nurses and midwives. However, to fully achieve this, CACs will require increased institutional capacity; strengthened data for nursing and midwifery planning in the context of health workforce policy and health priorities, and financial and non-financial investment in the nursing and midwifery workforce.

*Correspondence:
Margrieta Langins
langinsm@who.int
Full list of author information is available at the end of the article

Keywords Nursing, Midwifery, Education, Working conditions, Care, Leadership, Health workforce governance, Health workforce planning, Health policy

Background

The current high burden of both communicable and non-communicable diseases, and concomitant crisis including the effects of climate change, COVID-19 pandemic and conflict and political instability in the WHO European Region, continues to expose the existing vulnerabilities in the health systems and widened gaps in health and well-being among Central Asian countries (CACs) population of the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan, Turkmenistan and the Republic of Uzbekistan [1].

In response to the complex and diverse health needs of the population nurses and midwives are receiving increased policy attention. This is often in the context of workforce shortages and gaps in service delivery, including the need to address emergency preparedness, response and resilience, which may ultimately have an impact on the retention and attractiveness of the nursing and midwifery workforce. The World Health Assembly resolution 74.15 on strengthening nursing and midwifery [2] and the recently adopted resolution EUR/RC73/R1 "Framework for action on the health and care workforce in the WHO European Region 2023–2030" [3] recognize their fundamental role in the health system, in line with the broad set of reforms introduced, which makes even more relevant taking action towards protecting, supporting and investing in nurses and midwives across Europe and Central Asia.

Nurses and midwives comprise the majority of health workers in CACs, accounting for 70% of practising health professionals [4]. This is above the average of 61.2% in the wider WHO European region where, the majority of nurses (89%) and midwives (98%) are women [4]. In the WHO European Region, the roles of nurses vary considerably according to educational qualifications, competencies and scope of practice [5]. They interact with populations from birth to death, accounting for 90% of the contacts between patients and health professionals [6], and are crucial in improving access to quality health care, especially in rural, hard-to-reach and underserved areas [7–9]. For example, in CACs a great proportion of essential reproductive, maternal, newborn and child health (RMNCH) care is led by nurses and midwives whose contribution has been crucial in the great efforts made in CACs to reduce maternal, newborn and child mortality. This is reflected in the coverage of eight RMNCH interventions and the continuum of care, including family planning, antenatal care, births attended by skilled health personnel and child immunization. Overall, all countries reported composite coverage index values, a weighted average of the eight RMNCH interventions, of 70% or more. Moreover, as shown in Fig. 1, all CACs have low levels of economic inequality where the difference in the value of the composite coverage index between the richest and poorest quintiles is 10 percentage points or less [10].

To build health systems resilience in CAC through nursing and midwifery, a strategic and systematic approach to nursing and midwifery workforces that addresses the education, practice, regulation, leadership, and working conditions of nurses and midwives in a cohesive manner is required; however, research on nursing and midwifery workforce planning in CAC is limited. These areas are addressed in the present study, which aims to review the current state of nursing and midwifery capacity and document future actions that can be implemented in CACs.

Case presentation

What is the current state of nursing and midwifery in the CAC?

The following case study describes trends, capacity and gaps in the nursing and midwifery workforces in CAC through a desk review of existing literature and the global available data sources of the national health workforce accounts [11] and the state of the world's nursing and midwifery reports [12, 13]. In addition, a series of subregional policy dialogs have occurred between the CACs. This was led by the Government Chief Nursing and Midwifery Officers (GCNMOs) and in consultation with other relevant national and international stakeholders.

Education

Of the 293 490 nursing graduates in 47 countries in the WHO European Region, CACs countries produced 24.6% ($n=72\,451$). Additionally, of the 17 841 midwifery graduates in 43 countries in the WHO European Region, 12.5% ($n=2\,229$) were midwifery graduates in the CACs.

Of the nursing programmes in CACs, Kyrgyzstan and Uzbekistan have a single-pathway entry level after grade 11 (16 to 17 years of age). Kazakhstan and Tajikistan have two-folded entry pathway after grade 9 (14 to 15 years of age) and after grade 11 (16–17 years of age). Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan have direct-entry midwifery education programmes after grade 11 (16–17 years of age). Tajikistan also offers a post-nursing

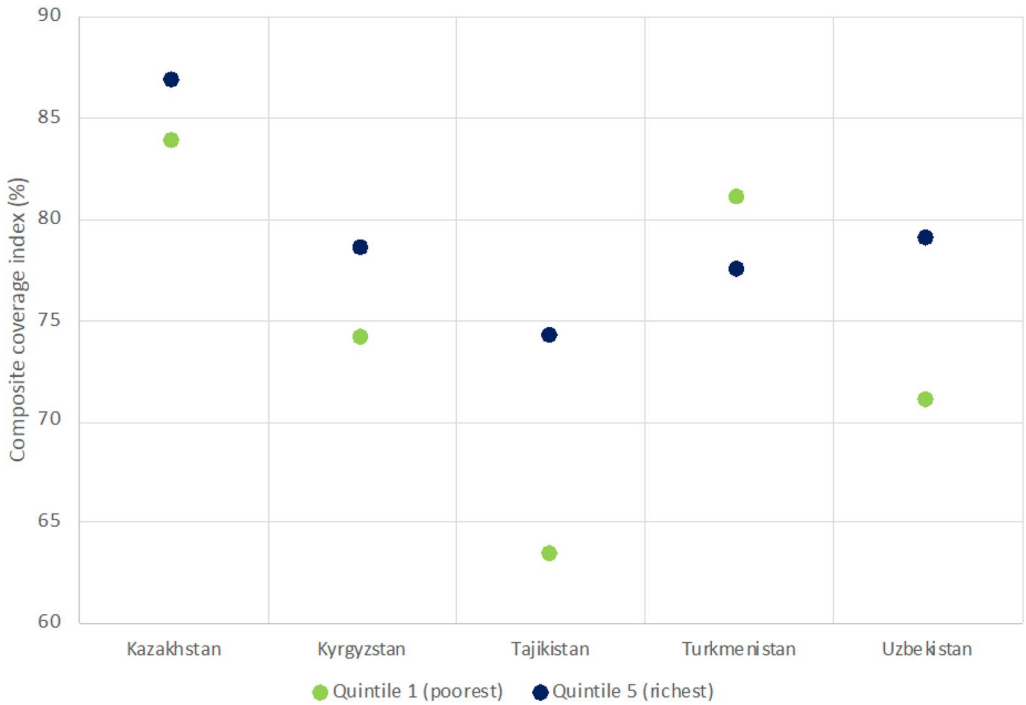

Fig. 1 Inequality in the composite coverage index on reproductive, maternal, newborn and child health (latest year available) (Source: Own elaboration from the Health inequality monitor [10])

education entry into midwifery. Turkmenistan offers an integrated nursing-midwifery programme [14].

A bachelor's degree in nursing is currently offered in Kazakhstan, Kyrgyzstan and Uzbekistan. A bachelor's degree in midwifery is offered in Kyrgyzstan and Uzbekistan. These countries have created professional and academic bachelor's programmes, an approach also followed by several other Eastern European countries in the WHO European Region [15]. Kazakhstan and Uzbekistan offer master's and PhD degrees in nursing. Kyrgyzstan is currently developing master's degree in nursing. Nursing and midwifery competency-based education programmes are offered in Kazakhstan and Uzbekistan.

Figure 2 shows the regulation and accreditation mechanisms for nursing and midwifery workforce education. Regulation and accreditation in CACs is approved by the Ministry of Education and Health. Countries reported accreditation mechanisms in place for educational institutions; however, only two of the five countries have a master list of accredited institutions. Standards for the duration and content of nursing and midwifery education exist in four of the five CACs. Standards for faculty qualifications are present in two countries. Finally, continuing professional development systems exist in four countries, contingent on the certification of nurses and midwives every 3 or 5 years, according to country standards. Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan provide nursing and midwifery leadership development and management training.

Challenges identified in CACs are: (a) content of the nursing and midwifery curriculum in some countries continue to include general subjects (i.e. humanities and science subjects); (b) limited proportion of clinical practice in relation to theoretical hours and opportunities to apply theoretical knowledge to clinical and real life situations is limited and where it is, it is not aligned strategically or designed to promote reflective practice and learning in priority health areas; (c) limited access to pedagogic materials and approaches that are based on nursing and midwifery fundamentals and science; (d) faculty in CACs is predominantly medical doctors, and few are nurses and midwives, partially attributed to the current level of nursing education to be eligible as faculty; (e) lack of nursing and midwifery research aligned to country health priorities; (f) accreditation of educational institutions, and internal and external quality assurance is to be strengthened; and (g) lack of mentorship training and systems for educators [14, 16–20].

Several countries in Central Asia have launched important educational reforms to improve both professional and vocational education and training [16, 21]. The common feature of the reforms is to bring the education system more in line with the population's needs, and to optimize the utilization of available resources. The

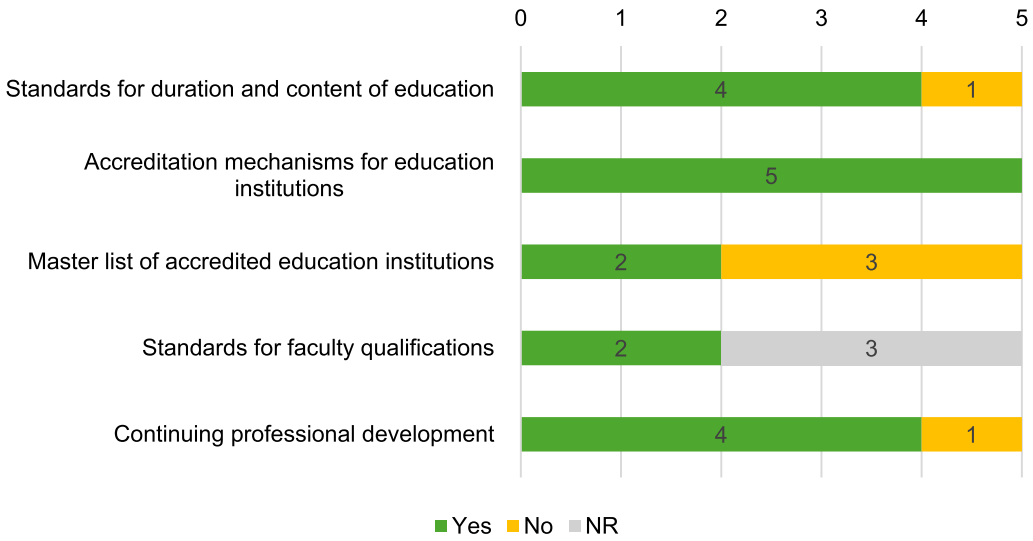

Fig. 2 Regulation and accreditation mechanisms for nursing and midwifery education in CACs (Source: Own elaboration from the State of the World's Nursing Report [12])

approach to education reform in Kazakhstan, Kyrgyzstan and Uzbekistan is to align educational programmes with the Bologna process established in the European Higher Education Area. Improvements in the educational environments of nurses in Tajikistan have also been documented [18].

Kazakhstan officially joined the Bologna Declaration in March 2010. The main characteristics are: (1) the minimum entry qualifications involve completing 10 years of general education (15–16 years old); (2) introducing a three-cycle higher education system consisting of bachelor's, master's and doctoral studies; and (3) implementation of a system of quality assurance, to strengthen the quality and relevance of learning and teaching [22]. In addition, the training of nurses responsible for general care shall comprise at least 3 years of study or 4 600 h of theoretical and clinical training, the duration of the theoretical training representing at least one-third and the duration of the clinical training at least one-half of the minimum duration of the training as specified in the pivotal general principles of the Directive 2005/36/EC [23]. The implementation of national educational standards should ensure the harmonization of standards and quality assurance to meet international standards and ultimately provide quality care to meet population needs [24, 25].

Jobs

Overall, in CACs the absolute number of practising nurses decreased from 493 644 in 2010 to 398 704 in 2020, or nearest year. A similar trend was observed for the absolute number of active midwives, which also decreased from 44 049 in 2010 to 26 702 in 2020, or nearest year. Three countries in CACs have increased the absolute number of active nurses: Kazakhstan (7 618 nurses), Tajikistan (19 578 nurses) and Turkmenistan (1 414 nurses). In addition, two countries increased the absolute number of active midwives: Tajikistan (1 945 midwives) and Turkmenistan (134 midwives) [11].

When the absolute number of active nurses and midwives is compared to the population, four out of five CACs have reduced the density of nurses and midwives between 2010 and 2020, Tajikistan has increased the nursing density from 33.7 nurses per 10 000 population (2010) to 47.5 nurses per 10 000 population (2020) and the midwifery density from 5.3 midwives per 10 000 population (2010) to 6.3 midwives per 10 000 population (2020) (Figs. 3 and 4) [11]. Currently, the density of nurses in CACs is below the European Region average of 80 nurses per 10 000 population (Fig. 3). In the case of midwifery, Kazakhstan, Tajikistan, and Uzbekistan are over the regional average of 4.1 midwives per 10 000 population (Fig. 4).

The shortage of health workers is acute in rural and underserved areas, particularly the shortage of medical doctors [26–29]. In this regard, a key finding of the health labour market conducted in Tajikistan is that nurses led 63.8% (1 709 out of 2 682) of the Primary Health Care (PHC) facilities; that is, they are the only provider of care available working in most of the health facilities of the country [20].

Central to primary care reforms as the first point of care are efforts to advance nurses' and midwives' roles, skills and scope of practice, which currently remains a

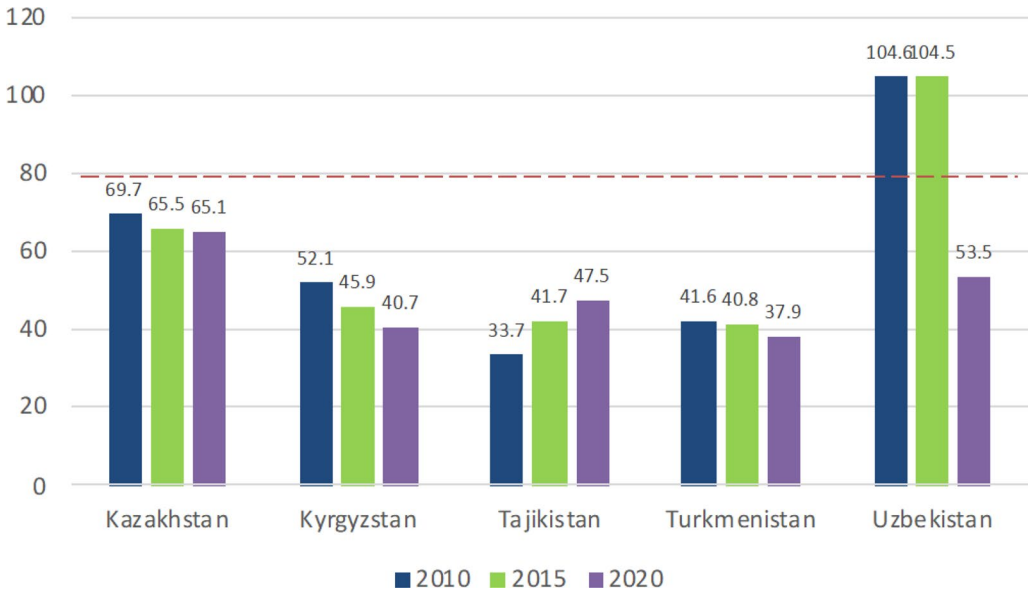

Fig. 3 Nursing density per 10 000 population (2010–2020, or nearest year). Red dotted line indicates the average density of nurses in the WHO European Region (80 nurses per 10 000 population) (Source: Own elaboration from the National Health Workforce Accounts [11])

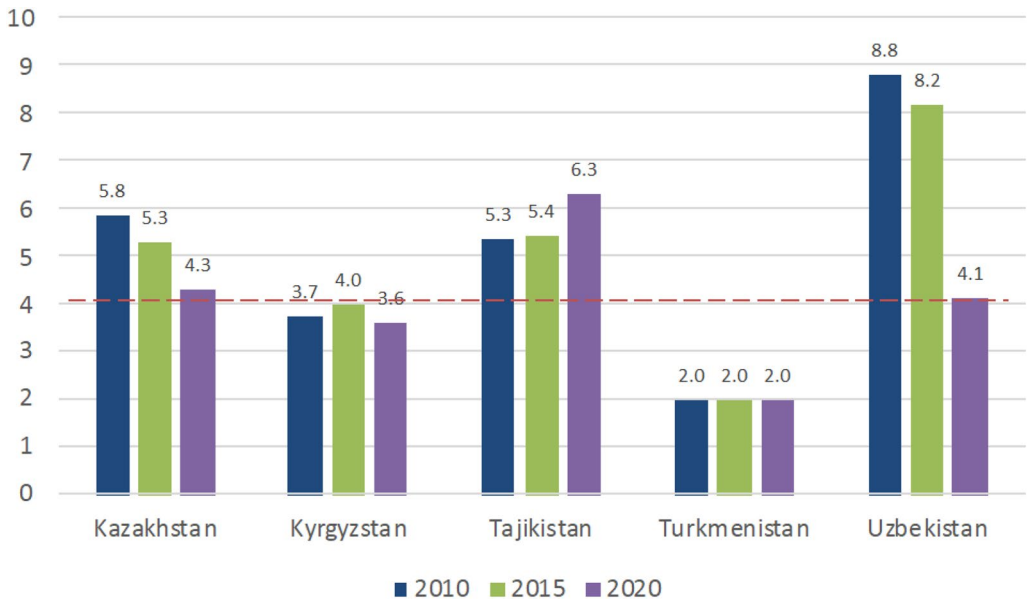

Fig. 4 Midwifery density per 10 000 population (2010–2020, or nearest year). Red dotted line indicates the average density of midwives in the WHO European Region (4.1 midwives per 10 000 population) (Source: Own elaboration from the National Health Workforce Accounts [11])

functional challenge to achieve universal health coverage in CACs [30]. This is the reason why in Kyrgyzstan, where nurses are providing an increased proportion of care in rural health facilities, 85% of nurses have been retrained to become family health nurses in line with the current national reform to expand nursing education and roles [31]. Previous evaluations of family health nurse practice have shown that there is ample room to expand the role of nurses at PHC with relatively positive acceptability of other members of multidisciplinary teams in Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan [31–34], and the impact on better coverage of preventive services, better tailored services, and greater problem-solving capacity [35]. Additionally, patients' knowledge and confidence

about nurses' and midwives' roles are crucial to build trust, symmetric expectations and acceptability that ultimately results in greater access to quality care [36].

According to the available data on nursing and midwifery age and gender distribution, nurses and midwives in CACs are predominantly female and aged below 44 years [11, 20]. The young profile of nurses and midwives in CACs underscores the urgent need to improve retention and investment for better working conditions, salaries, and efforts to protect the physical and mental health of nurses and midwives. This is required to reduce early departure from the nursing and midwifery workforce and attract youth in the profession, particularly in rural, remote and underserved areas. These efforts should consider that the majority of nurses and midwives are women, which emphasizes the need to reduce gender disparities in pay rates, career pathways and decision-making power which ultimately results in a reduction of inefficiencies in the distribution, motivation and retention of female health workers.

Migration is another factor that impacts the health labour market in CACs. In the general population of CACs, between 10 and 16% of the active population live outside of their country of birth, primarily in the Russian Federation and Kazakhstan [37]. In-country migration from rural to urban areas is increasing; for example, internal migrants in Kyrgyzstan comprise 18% of the population [37]. An understanding of professional mobility of nurses and midwives is important for effective workforce planning and management of the health labour market, which is currently lacking. This includes bilateral agreements, monitoring intention to leave or return, and engagement of the diaspora to optimize current nursing capacity [38].

Leadership

Creating leadership opportunities is associated with the strengthening of nursing and midwifery [12, 13]. All five countries in CACs have appointed a GCNMO or chief specialist in nursing care. The titles of nursing and midwifery senior leadership positions in CACs vary across the countries. A core role of GCNMO or chief specialists in CAC is to identify nursing and midwifery needs related to their education or clinical practice, promote systemic changes to nurses and midwives' scope of practice by expanding their functions at different levels, and implement regulated provisions to strengthen nursing and midwifery capacity [39].

The Ministry of Health of the Kyrgyz Republic has approved several documents regulating nursing and midwifery profession to implement the Program for the Development of Nursing Care and Education in the Kyrgyz Republic for 2019–2023 and the National Strategic Program "Healthy Person—Prosperous Country" [40]. To define nursing clinical responsibilities and improve the performance of nursing specialists to improve the access to quality health services, the following documents were developed in close collaboration of the government chief specialist in nursing care, the documents approved are the following: (1) functional duties of a nurse at the PHC level; (2) staffing norms for the nursing staff based on the corresponding Order of the Ministry of Health of the Kyrgyz Republic; (3) the catalogue of competencies and professional standards for the nursing specialists; and, (4) standards operating procedures for nursing specialists. Nursing and midwifery stakeholders, including national nursing and midwifery associations, council and academia are key actors in promoting an effective implementation. Experiences exist, for example, in Kazakhstan, creating new management structures, which include reorganization of care with new positions and the corresponding changes in nurses' job descriptions and educational requirements, were introduced into legislation [41].

In general, organizational components are essential to enable GCNMO's work, these include a mandate to carry out the full range of functions, i.e. workforce planning, health agenda and service design and intersectoral collaboration; access to informed decision-making and planning; and, support to exercise functions, that is having personnel, possessing adequate financing and being able to authorize expenditure of funds [39]. In addition, developing individual leadership competencies is crucial to developing a policy leadership role [39]. In CACs, there are different opportunities for leadership development.

Regulation and working conditions

Figure 5 shows that all CACs have regulations on working hours and conditions, social protection and minimum wage. However, none of the CACs reported measures in place to prevent attacks on health workers [12]. Average income of nurses and midwives have increased in recent years, yet it is low compared to the average wage of full-time employees in other public sectors in CAC and does not consider inflation [20, 38, 42]. In addition, findings of the gender pay gap in the health and care sector report found that globally women still face a 24% salary differential compared with men across the health and care sector [43]. Considering that most nurses and midwives are women, particular attention is required to avoid systemic biases resulting in pay penalties against women, nurses and midwives.

Enabling environments for midwives and nurses to provide care encompasses safe staffing, respect and collaboration with other health professionals, adequate resources, authority to perform tasks (e.g.,

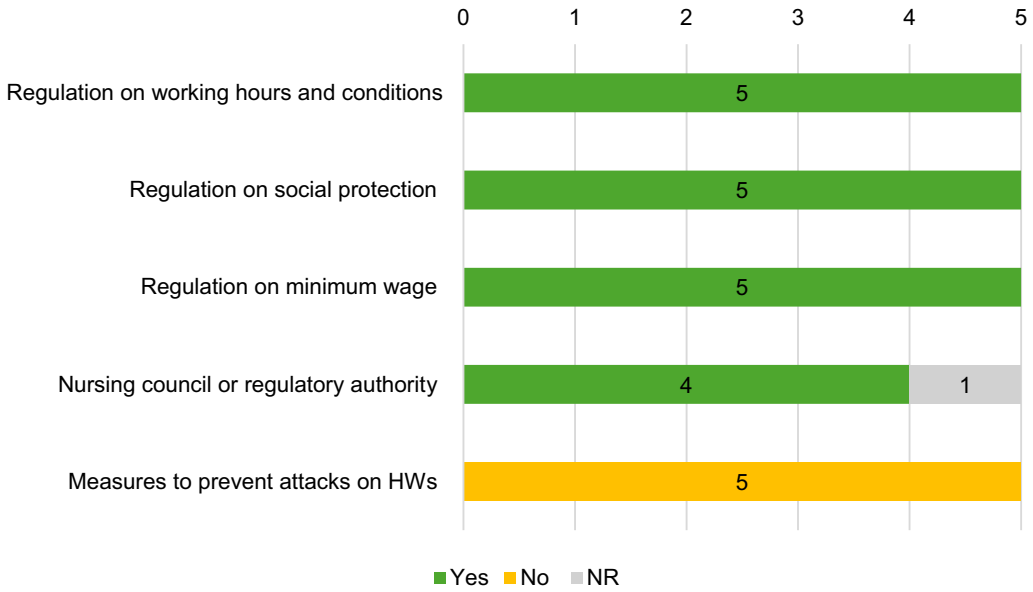

Fig. 5 Regulation of nursing and midwifery employment and working conditions in CACs (Source: Own elaboration from the State of the World's Nursing Report [12])

fundamental emergency obstetric and newborn care), effective referral systems, experienced leaders, and supportive facility management [12, 13].

In CACs, there has been a focus on certification of nurses and midwives. Certification is a procedure for determining qualifications, professional competence, level of knowledge, practical skills and abilities in the relevant specialty, and is linked to salary scale and professional clinical progression, less tailored to clinical nursing learning needs for continuing professional development. It is required every 3 or 5 years with variations between different categories and time from graduation [38]. In addition to this formal process, several international partners and non-governmental organizations provide training for continuing professional development in CACs.

A unified digital registry of nursing and midwifery workforce is not yet available in CACs. Uzbekistan has made significant progress in the digitalization of the health system. Pilots of digital health management information system (HMIS) are ongoing in Tashkent and Syrdarya Oblast to introduce eHealth applications into state primary care clinics [26].

Finally, four CACs have a regulatory body under their respective Ministries of Health [12], of which Kyrgyzstan, Tajikistan and Uzbekistan's regulatory bodies have distinct policies and processes for midwives (Fig. 5) [14].

What are the suggested actions to strengthen nursing and midwifery in CACs?

Based on the current evidence and recommendations by the GCNMOs in CAC, and in consultation with other relevant stakeholders, a suggestion of actions for the period 2024–2030 towards strengthening nursing and midwifery in CACs, where it is required, are shown in Box 1. The WHO and the CACs are taking these recommendations to develop the first Central Asia Nursing and Midwifery Action Plan (2024–2030).

Box 1 Suggested actions for the period 2024–2030 towards strengthening nursing and midwifery in CACs, where it is required

Education

Strategic direction: midwife and nurse graduates match or surpass health system demand and have the requisite knowledge, competencies and attitudes to meet national health priorities

- Align nursing and midwifery educational levels in CACs with the requirements of high-level and competency-based education programme able to respond to population needs and health systems demands
- Revision of educational standards with the focus on nursing science, reflective practice, and learning outcomes to meet population needs
- Faculty development, including revision of qualification requirements, training and elimination of barriers to increase the proportion of faculty who are nurses and midwives
- Development of pedagogic materials and training that are based on nursing and midwifery fundamentals and science

- Development of mentoring programmes and pedagogical support for educators
- Development of research in nursing and midwifery at all levels of education (bachelor, Masters and Ph.D.)
- Implement continuing professional development for nursing and midwifery tailored to nurse and midwife clinical profiles
- Strengthen accreditation of educational institutions and internal and external quality assurance

Jobs

Strategic direction: increase the availability of health workers by sustainably creating nursing and midwifery jobs, effectively recruiting and retaining midwives and nurses, and ethically managing international mobility and migration

- Strengthen capacity to collect and analyse data to support effective health care needs assessment, including nursing and midwifery workforce planning and forecasting through a health workforce labour market lens
- Optimization of the professional structure that encourages nurses and midwives to become key members of multidisciplinary and integrated teams including clear prospects for career growth and criteria for promotion
- Expansion of the roles of nurses and midwives, including family health nurses role on non-communicable disease management, mental health, RMNCH or care for older people
- Support for cultural change regarding the acceptability of introducing advanced nursing and midwifery functions and implementing a multidisciplinary approach in hospital and primary care personnel teams
- Improve the implementation of evidence-based nursing and midwifery guidelines
- Support and retention of health personnel in rural, remote and underserved areas, including financial and education incentives, career pathways and decision-making power for nurses and midwives working in primary care facilities

Leadership

Strategic direction: increase the proportion and authority of midwives and nurses in senior health and academic positions and continually develop the next generation of nursing and midwifery leaders

- Creation of a CAR Coordinating Council for nursing and midwifery consisting of Government Chief Nursing and Midwifery Officers
- Ensure the GCNMO role is resourced (human and financial), has a mandate with sufficient authority for decision-making on nursing and midwifery and contributions to health policy development
- Organization of training on leadership development and skills for nurses and midwives at all stages of their education and career, including nursing policy leadership

Service delivery

Strategic direction: midwives and nurses work to the full extent of their education and training in safe and supportive service delivery environments

- Strengthen the professional regulatory framework to ensure consistency between areas of education and optimized roles in the nursing and midwifery practice, protection of the public, in addition to harmonization of regulations across CACs
- Improve the working conditions of nurses and midwives, including reducing heavy workloads and excessive working hours, providing more flexibility in contract arrangements and ensuring fair remuneration
- Ensure reliable staffing norms and systems in place for nursing, midwifery and patient safety
- Use and improvement of digital solutions in nursing and midwifery practice to record and document nursing interventions and enable communication between nursing and midwifery professionals. This should be done in consultation with nurses and midwives
- Maintenance of local registers of nursing and midwifery functions (including nurses and midwives in positions of specialized functions)

Discussion and conclusion

During the last few decades, remarkable progress in CACs has been made in building reforms aimed at strengthening the health system to move towards universal health coverage which will be dependent on developing the full potential of nurses and midwives, who constitute the majority of practising health professionals.

The implementation of policies to contribute to building health system resilience in Central Asia through nursing and midwifery requires addressing the education, practice, regulation, leadership, and working conditions of nurses and midwives in a cohesive manner that ultimately contributes to providing better access to quality of care, enhancing workplace satisfaction and optimizing the recruitment and retention of nurses and midwives in the context of the health workforce policy. This approach can build on the interventions, and health outcomes where available, that have taken place in the WHO European Region [5], bringing evidence-informed interventions into a package of selected actions that are strategic, systemic, interconnected and tailored to the local health system context.

There needs to be a sustained commitment to policy dialogue, decision-making and investment that can ensure planned, sequenced and bundled policies. In CACs, GCNMOs are valuable stakeholders who have demonstrated experience in the oversight of nursing and midwifery regulation of education and work, contributed to health decision-making, for example their crucial role during the COVID-19 pandemic response, and finally, their work on bringing stakeholders from strategic sectors that can benefit from nursing input.

The implementation of all the suggested actions detailed in the areas of education, jobs, leadership and service delivery underline the need to support the health workforce national priority setting for CACs by building the necessary institutional capacity; strengthening data for nursing and midwifery planning in the context of the health workforce policy; and investing in building resilient health systems in CAC. In addition, the involvement of nursing and midwifery at all levels of policy implementation also ensures the acceptability, feasibility, and full ownership of the processes of implementing and sustaining effective policies.

The forthcoming action plan on nursing and midwifery in Central Asia offers an important opportunity to

strategize efforts across countries based on a strengths-based approach to accelerate gains in the different areas. Further, as the next State of the World Nursing and Midwifery reports are published, the global community and the investments sought in this region will be better positioned to support nurses, midwives and the population's health and well-being in the Central Asian Region.

Author contributions
All authors contributed to the conceptualization, writing and editing of the final draft of the manuscript. All authors have approved the manuscript for publication.

Funding
None.

Availability of data and materials
No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate
Not applicable.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

Disclaimer
The authors alone are responsible for the views expressed in this article and these do not necessarily represent the views, decisions or policies of the affiliated institutions.

Author details
[1]WHO European Region, Copenhagen, Denmark. [2]Department of Organization of Medical Care and Drug Policy, Ministry of Health of the Kyrgyz Republic, Bishkek, Kyrgyzstan. [3]Association of Nursing Specialists of the Kyrgyz Republic, Bishkek, Kyrgyzstan. [4]Ministry of Health of the Republic of Tajikistan, Dushanbe, Tajikistan. [5]Department of Science and Human Resources, Ministry of Healthcare of the Republic of Kazakhstan, Astana, Kazakhstan. [6]Union of Medical Colleges of Kazakhstan, Almaty, Kazakhstan. [7]Department of Nursing With Higher Education of the Center for Development of Professional Qualification of Medical Workers, Ministry of Health of the Republic of Uzbekistan, Tashkent, Uzbekistan.

Received: 9 April 2024 Accepted: 20 November 2024
Published online: 18 December 2024

References
1. WHO Regional Office for Europe. Roadmap for health and well-being in Central Asia (2022–2025). 2022.
2. World Health Organization. Resolution WHA 74.15 strengthening nursing and midwifery: investments in education, jobs, leadership and service delivery. 2021. https://apps.who.int/gb/ebwha/pdf_files/WHA74/A74_R15-en.pdf.
3. WHO Regional Office for Europe. Resolution EUR/RC73/R1: framework for action on the health and care workforce in the WHO European Region 2023–2030. Astana, Kazakhstan; 2023. https://iris.who.int/bitstream/handle/10665/373730/73rs01e-HealthWorkforce-230949.pdf?sequence=1&isAllowed=y.
4. WHO Regional Office for Europe. Health and care workforce in Europe: time to act. 2022. https://www.who.int/europe/publications/i/item/9789289058339.
5. WHO Regional Office for Europe. Technical brief on strengthening the nursing and midwifery workforce to improve health outcomes: what is known about advancing roles for nurses: evidence and lessons for implementation. Copenhagen; 2023. https://iris.who.int/handle/10665/373780.
6. Crisp N, Brownie S, Refsum C. Nursing and midwifery: the key to the rapid and cost-effective expansion of high-quality universal health coverage. Technical report. Doha: World Innovation Summit for Health; 2018. https://doi.org/10.13140/RG.2.2.16167.39841.
7. Nove A, Friberg IK, de Bernis L, McConville F, Moran AC, Najjemba M, et al. Potential impact of midwives in preventing and reducing maternal and neonatal mortality and stillbirths: a Lives Saved Tool modelling study. Lancet Glob Health. 2021;9(1):e24-32.
8. Aiken LH, Sloane DM, Bruyneel L, Van den Heede K, Griffiths P, Busse R, et al. Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study. Lancet. 2014;383(9931):1824–30.
9. Laurant M, van der Biezen M, Wijers N, Watananirun K, Kontopantelis E, van Vught AJ. Nurses as substitutes for doctors in primary care. Cochrane Database Syst Rev. 2018. https://doi.org/10.1002/14651858.CD001271.pub3.
10. WHO. Health inequality monitor: average composite coverage index (%) on reproductive, maternal, newborn and child health. 2023. https://www.who.int/data/gho/data/indicators/indicator-details/GHO/hem-composite-coverage-index.
11. WHO. National health workforce accounts. Geneva; 2023. https://www.who.int/hrh/statistics/nhwa/en/.
12. World Health Organization. State of the world's nursing 2020: investing in education, jobs and leadership. 2020. https://www.who.int/publications-detail/nursing-report-2020.
13. UNFPA, WHO, ICM. The state of the world's midwifery. 2021. https://www.unfpa.org/publications/sowmy-2021.
14. WHO Regional Office for Europe, UNFPA. The state of the midwifery workforce in Eastern Europe and Central Asia. 2022. https://eeca.unfpa.org/en/publications/state-midwifery-workforce-eastern-europe-and-central-asia.
15. Riklikienė O, Starkienė L, Macijauskienė J. Lithuania. In: Rafferty AM, Busse R, Zander-Jentsch B, Sermeus W, Bruyneel L, editors. Strengthening health systems through nursing: evidence from 14 European countries. Copenhagen (Denmark): European Observatory on Health Systems and Policies; 2019. (European Observatory Health Policy Series). http://www.ncbi.nlm.nih.gov/books/NBK545719/. Accessed 14 Mar 2024.
16. Schubiger M, Lechthaler F, Khamidova M, Parfitt BA, Prytherch H, van Twillert E, et al. Informing the medical education reform in Tajikistan: evidence on the learning environment at two nursing colleges. BMC Med Educ. 2019;19(1):85.
17. Kanzaki Izawa E, Yamano T, Safarov D, Billetoft J. Technical and vocational education and training in Tajikistan and other countries in Central Asia: key findings and policy options. Asian Development Bank; 2021.
18. Lechthaler F, Arigoni M, Khamidova M, Davlyatova D, Prytherch H, Wyss K. Assessing the effects of the nursing education reform on the educational environment in Tajikistan: a repeated cross-sectional analysis. BMC Nurs. 2020;19(1):11.
19. Järvinen S, Heikkilä J, Meyermanova I, Kuanysh Z, Molotov-Luchanskiy V. Improvements in the infrastructure for nursing research in universities in Kazakhstan. Int Nurs Rev. 2023;70(1):10–7.
20. WHO Regional Office for Europe. Health labour market analysis in Tajikistan. Copenhagen; 2024. https://iris.who.int/handle/10665/376097.
21. Orozalieva G, Loutan L, Azimova A, Baroffio A, Heller O, Lab B, et al. Reforms in medical education: lessons learnt from Kyrgyzstan. Glob Health Action. 2021;14(1):1944480.
22. European Higher Education Area. The Bologna process and the European higher education area. 2023. https://education.ec.europa.eu/education-levels/higher-education/inclusive-and-connected-higher-education/bologna-process.
23. European Parliament. Section 3: nurses responsible for general care. In: Directive 2005/36/EC of the European Parliament and of the Council of 7 September 2005 on the recognition of professional qualifications. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32005L0036.

24. European Association for Quality Assurance in Higher Education. Standards and guidelines for quality assurance in the European higher education area. 2009. https://www.enqa.eu/wp-content/uploads/2013/06/ESG_3edition-2.pdf.
25. Filby A, McConville F, Portela A. What prevents quality midwifery care? A systematic mapping of barriers in low and middle income countries from the provider perspective. PLoS ONE. 2016;11(5): e0153391.
26. WHO Regional Office for Europe, European Observatory on Health Systems and Policies. Health systems in action: Uzbekistan. 2022. https://eurohealthobservatory.who.int/publications/i/health-systems-in-action-uzbekistan-2022.
27. WHO Regional Office for Europe, European Observatory on Health Systems and Policies. Health systems in action: Tajikistan. 2022. https://eurohealthobservatory.who.int/publications/i/health-systems-in-action-tajikistan-2022.
28. WHO Regional Office for Europe, European Observatory on Health Systems and Policies. Health systems in action: Kyrgyzstan. 2022. https://eurohealthobservatory.who.int/publications/i/health-systems-in-action-kyrgyzstan-2022.
29. WHO Regional Office for Europe, European Observatory on Health Systems and Policies. Health systems in action: Kazakhstan. 2022. https://eurohealthobservatory.who.int/publications/i/health-systems-in-action-kazakhstan-2022.
30. Rechel B, Sydykova A, Moldoisaeva S, Sodiqova D, Spatayev Y, Ahmedov M, et al. Primary care reforms in Central Asia—on the path to universal health coverage? Health Policy Open. 2023;5: 100110.
31. Fonken P, Bolotskikh I, Pirnazarova GF, Sulaimanova G, Talapbek Kyzy S, Toktogulova A. Keys to expanding the rural healthcare workforce in Kyrgyzstan. Front Public Health. 2020;8:447.
32. Parfitt BA, Cornish F. Implementing family health nursing in Tajikistan: from policy to practice in primary health care reform. Soc Sci Med. 2007;65(8):1720–9.
33. Collins D, Laatikainen T, Farrington J. Implementing essential interventions for cardiovascular disease risk management in primary healthcare: lessons from Eastern Europe and Central Asia. BMJ Glob Health. 2020;5(2): e002111.
34. Khazhymurat A, Paiyzkhan M, Khriyenko S, Seilova S, Baisanova S, Kuntuganova A, et al. Health education competence: an investigation of the health education knowledge, skills and attitudes of nurses in Kazakhstan. Nurse Educ Pract. 2023;68: 103586.
35. WHO Regional Office for Europe. Kazakhstan: multidisciplinary teams for better alignment of primary health care services to meet the needs and expectations of people. 2022. https://www.who.int/europe/publications/m/item/kazakhstan-multidisciplinary-teams-for-better-alignment-of-primary-health-care-services-to-meet-the-needs-and-expectations-of-people-(2021).
36. Karimi-Shahanjarini A, Shakibazadeh E, Rashidian A, Hajimiri K, Glenton C, Noyes J, et al. Barriers and facilitators to the implementation of doctor-nurse substitution strategies in primary care: a qualitative evidence synthesis. Cochrane Database Syst Rev. 2019;4(4):CD010412.
37. IOM. Central Asia regional strategy: 2021–2025. 2022. https://www.iom.int/resources/central-asia-regional-strategy-2021-2025.
38. Molsaeva S, Kaliev M, Sydykova A, Muratalieva E, Ismailov M, Madureira Lima J, et al. Kyrgyzstan: health system review. The European observatory on health systems and policies. (Health systems in transition). 2022.
39. WHO Regional Office for Europe. Technical brief on strengthening the nursing and midwifery workforce to improve health outcomes: Government Chief Nursing and Midwifery Officers (GCNMOs) in the WHO European Region. 2022. https://apps.who.int/iris/handle/10665/362261.
40. Kyrgyz Republic. The Decree of the Government of the Kyrgyz Republic of December 20, 2018 No. 600 "On the program of the Government of the Kyrgyz Republic for the protection of public health and development of the health care system for 2019–2030 "healthy person—prosperous country".
41. Tiittanen H, Heikkilä J, Baigozhina Z. Development of management structures for future nursing services in the Republic of Kazakhstan requires change of organizational culture. J Nurs Manag. 2021;29(8):2565–72.
42. The World Bank. Public wages and employment in Uzbekistan. 2020. https://thedocs.worldbank.org/en/doc/526241582791989526-0080022020/3-UZ-PER-chapter-3-public-wages-and-employment.
43. WHO, ILO. The gender pay gap in the health and care sector: a global analysis in the time of COVID-19. 2022. https://apps.who.int/iris/handle/10665/358057.

Publisher's Note