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Informing policy with health labour market analysis to improve availability of family doctors in Tajikistan

Jamoliddin Abdullozoda[1], Salomudin Yusufi[1], Sulakshana Nandi[2*], Parvina Makhmudova[3*], Juana Paola Bustamante[4], Margrieta Langins[2], Alba Llop-Gironés[2], Ilker Dastan[3], Victor Olsavszky[3], Shukhrat Sultonov[1], Zebo Najmuddinova[1], Natasha Azzopardi-Muscat[2] and Tomas Zapata[2]

Abstract

Background Tajikistan has embarked on health reforms to orient the health system towards primary health care (PHC). The health labour market analysis (HLMA) was initiated by the Ministry of Health with the World Health Organization (WHO) on policy questions related to the PHC workforce team. This article presents the results with focus on family doctors as a critical part of the PHC team, providing lessons for strengthening family medicine and PHC in the European Region and central Asia.

Methods The HLMA framework was used to guide the analysis. The data for analysis were provided by the Ministry of Health and Social Protection of the Population of the Republic of Tajikistan. Descriptive means were used to analyse the data. A Technical Working Group guided the process.

Results There has been an increase in the number of health workers in the country over the last 7 years. However, there is a huge shortage of family doctors when compared with norms, with decreasing family doctor densities over the last 7 years. Family doctors have the highest vacancy rates among specialists and also constitute the highest proportion of specialists who migrate. There is inequitable distribution of doctors across the regions. Overall number of enrolments and graduates in family medicine are declining. Although salaries in PHC are higher than in hospitals, the overall health workforce salaries are lower than the national average. While there have been efforts to retain and attract doctors to PHC in rural and remote regions, challenges exist. The attraction of doctors to narrow specialties may be leading to undermining PHC and family medicine. While the optimal skill-mix and availability of nurses provide an opportunity to strengthen multi-disciplinary teams at the PHC level, shortages and unequal distribution of doctors are affecting health services coverage and health indicators.

Conclusions Application of the HLMA framework has helped identify the bottlenecks in the health labour market flows and the possible explanations for them. The policy considerations emerging out of the HLMA have contributed to improving evidence-based planning for retention and recruitment of the PHC workforce, improvements in medical

*Correspondence:
Sulakshana Nandi
nandis@who.int
Parvina Makhmudova
makhmudovap@who.int
Full list of author information is available at the end of the article

and nursing education, and higher investments in the PHC workforce and particularly in family doctors. Implementation of the Action Plan will require political commitment, financial resources, strong inter-sectoral collaboration, stakeholder management, and cross-country learning of best practices. Through this process, Tajikistan has shown the way forward in implementing the Central Roadmap for health and well-being in Central Asia and the Framework for Action on the Health and Care Workforce in the WHO European Region.

Keywords Health workforce, Family medicine, Primary health care, Rural retention, Central Asia, Health labour market analysis

Introduction

A well-distributed health workforce with appropriate competencies, skill-mix, remuneration and protection is key for improving access to primary health care (PHC). Evidence-based approaches are needed to identify and understand the dynamics affecting health workforce challenges to propose adequate policies [1]. Renewed momentum exists in the WHO European Region through approval of the Framework for Action on the Health and Care Workforce 2023–2030 to tackle health workforce challenges [2]. Family medicine is an integral part of PHC and strong systems of family medicine contribute to positive health systems outcomes [3, 4]. However, within multidisciplinary PHC teams, many countries in the European region are facing a myriad of challenges with regards to retaining family doctors/general practitioners [5]. Tajikistan, located in central Asia, has the lowest GDP per capita in the European region [6]. The country faces unique challenges due to its geographical and demographic characteristics, which underlies the significance of family medicine and predominantly public PHC system for the country [6]. Tajikistan has a young population with 72% of its population living in rural, mostly mountainous areas [6]. Tajikistan faces a double burden of disease and while the country has made significant progress in maternal and child health, certain challenges remain [7]. There are regional variations when it comes to mortality, service coverage and service utilization [8]. The out-of-pocket payments constitute a high proportion (65%) of the current health expenditure [9].

Since its independence in 1991, Tajikistan has embarked on health reforms to orient the health system towards family medicine and PHC [10–14]. There have been significant gains, for example, the share of primary care facilities offering family medicine increased from 56% in 2010 to 70.1% in 2017 [15]. A positive association between expansion of the family medicine model and health outcomes and service coverage has been documented [13]. However, similar to other countries of central Asia, Tajikistan faces challenges related to low prestige in family medicine, lack of attraction for medical students to enter the discipline, scope of practice and quality of medical education [12].

The "Strategy of public health protection of the Republic of Tajikistan for the period up to 2030" approved by the Government of Tajikistan in 2021 (Decree No 414) provides the latest policy direction towards PHC, with the health workforce being an important component of its framework of implementation under the family medicine principle. The Joint Annual Review (in 2022) in the first year of its implementation found that while there has been an expansion in the health workforce, challenges exist in terms of health workforce migration, geographical inequality, lack of doctors in some specialties, and recruitment of graduates of higher professional medical education institutions as per requirement [16].

To address the key gaps related to workforce in PHC, the Health labour market analysis (HLMA) was initiated by the Ministry of Health and Social Protection of the Population of the Republic of Tajikistan (MoHSPP) in collaboration with the World Health Organization (WHO). This article presents the findings of the HLMA in Tajikistan, with focus on family doctors as a critical part of the PHC team, and describes the process of the HLMA culminating into the development of the National Health Workforce Action Plan. It provides lessons for strengthening PHC teams in the European region and particularly in central Asia.

Methods

Policy questions of the HLMA and research methodology

Before initiating the HLMA, three policy questions were identified through a consultative process that involved meetings with the Minister of MoHSPP and his team, visits to facilities and discussions with health workers and other stakeholders. The policy questions identified are as follows: (1) Is the availability of health workers enough to address the shortages in PHC? How can the country attract health workers at PHC level? (2) What is the situation and quality of postgraduate medical speciality programme? (3) What is situation and quality of nursing education? [8]. The three questions were assessed separately, using different methodologies. This paper presents the results from the first policy question, in which quantitative data analysis and review of secondary literature (reports, meeting proceedings, government

policies, decrees and guidelines, journal articles, etc.) were undertaken.

Application of the health labour market framework

The HLMA framework was used to guide the analysis in Tajikistan (Fig. 1) [1]. Application of the framework helped to understand the issues and bottlenecks in the supply and demand of the health workforce. Data on production, stock, availability, skill-mix, distribution of the health workforce, and migration were assessed and labour market flows and mismatches identified. Policies and guidelines were reviewed to provide context for the above.

Process of the HLMA

A Technical Working Group on HLMA, consisting of specialists from various technical units and medical institutions related to the health workforce was formed by the Tajikistan Government to own and guide the process of the HLMA (Table 1). Members of the TWG were responsible for providing data related to their respective units. The results of the HLMA were presented and validated

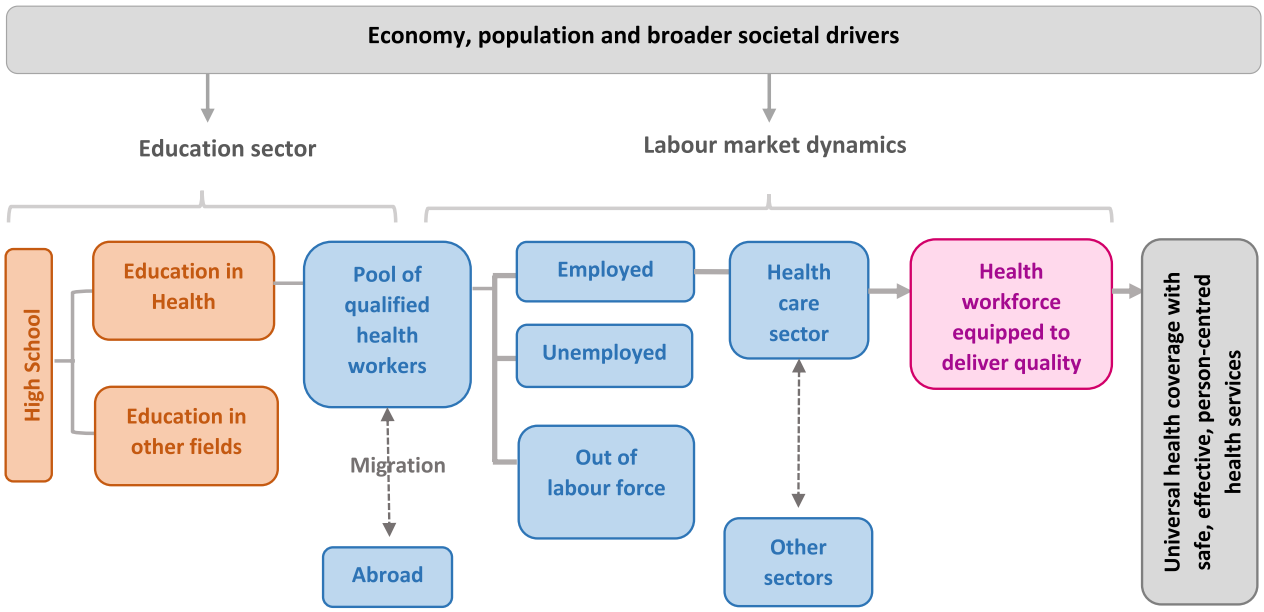


Fig. 1 Health Labor Market Framework for Universal Health Coverage [1]

Table 1 Timeline of the process of the HLMA in Tajikistan. [8] Source: Table constructed from

Date/Month/Year	Activity
October 2022	Technical Working Group on HLMA formed consisting of specialists from various technical units and medical institutions. The TWG is chaired by the Head of the Department of Medical and Pharmaceutical Education, Personnel Policy and Science of the Ministry of Health and Social Protection of the Population (MoHSPP). Other members represented the Division of medical and pharmaceutical education, personnel policy and science, Division of Economy and Budget Planning of Health and Social Protection, Republican educational and clinical center of family medicine, Republican Center of Statistics and Medical Information, Republican Educational and Clinical Center of Nursing, Tajikistan State Medical University named after Abuali ibn Sina, and the Republican Medical College
November 2022 to May 2023	Data collection, literature review, and data analysis
December 2023 to May 2023	Regular meetings of the TWG to contribute and validate the analysis
April 2023	High-level Policy Dialogue on "Human Resources for Health: Health Labour Market Analysis to inform policies." Participants included members of the HLMA Technical Working Group and representatives of the Ministry of Health, Ministry of Labour, Migration and Employment of the Population, Ministry of Education and Science, Ministry of Finance, Ministry of Economic Development and Trade, development partners, academic and post graduate institutions and WHO[17]
February 2024	Launch of the HLMA Report
February 2024	Workshop on developing the HRH Action Plan for the Republic of Tajikistan organized by MoHSSP. Representatives of the Ministry of Finance, Economic Development and Trade, and Education participated

during regular meetings of the TWG and finally during the High-level Policy Dialogue held in April 2023 [17]. The HLMA report was launched and published in February 2024 [8]. The HLMA report provided policy considerations to address the emerging gaps, challenges and opportunities, which were then developed into a National Health Workforce Action Plan [8].

Data collection and analysis

The quantitative data for analysis for policy question one were provided by the MoHSPP, with most of the data covering the period 2014 to 2021. Data templates were developed based on the themes of the HLMA and the policy questions, and included data on education, employment and wages, health labour market flows, migration, and number of health workers, their distribution and skill mix. All the data were disaggregated by province (oblast), and when available, by occupation, sex and age. The data were checked and verified in multiple rounds. Data retrieved the health workforce numbers from the public and private sectors. The data on doctors identify 74 sub-occupations (including family doctors, specialists and around 8% of nonmedical specialists). Nurses constitute 79% of the data on allied health staff. Densities for doctors, nurses, midwives and specialists are calculated per 10 000 population; densities for medical graduates are calculated per 100 000 population.

Descriptive means such as percentages and ratios were used for data analysis. Disaggregated analysis based on province, occupation, sex and age was undertaken whenever such data were available. The inequality in the geographical distribution of family doctors was measured by the Gini index and the Lorenz curve [18]. The literature review provided the historical and political economy context for the analysis and an overview of the existing health workforce policies and their implementation. Data quality was assessed during analysis by the researchers and data was validated through triangulation, which included feedback from the TWG on the results.

The results of the analysis have been organized as per the themes of the HLMA framework.

Ethical considerations

Permission was given by the MoHSPP to publish the data. Confidentiality has been maintained in handling the data. The contributors to the HLMA have been duly acknowledged and given co-authorship.

Results

Development of family medicine in Tajikistan

The regulatory and legal foundations for development of family medicine in Tajikistan were created soon after its independence, followed by guiding documents and strategic plans (Table 2) [13, 19]. The decrees set up the structure and roles of the health workforce under the "Family Medicine Model".

To ensure the availability of family doctors in the beginning, the Republican Training and Clinical Center of Family Medicine was set up (Fig. 2). It provides retraining (6-month course) to other narrow specialists to become family doctors, in addition to training family health nurses.

Family medicine specialization was introduced in medical universities in 2012. Initially only "Internatura" in family medicine, a one-year residency after graduating from medical school, was offered [13, 20]. The Post-Graduate Specialty Training (PUST) in Family Medicine, with duration of two years, was introduced in 2013 [13, 20]. The PUST is more aligned with international standards, and its evaluations show that its graduates have better clinical skills and theoretical knowledge than the one-year residency [13, 20, 21]. Additionally, reforms in undergraduate medical education have led to increases in hours of clinical practice [13]. As the country expands its medical specialisation programme, the purpose of the retraining course needs to be assessed.

Family doctors and the overall health workforce situation

The findings below describe the situation of family doctors within the larger context of the overall health workforce in the country, in terms of availability, geographical distribution, trends over the years, skill-mix, education, and retention and recruitment.

Proportion of family doctors within the total number of doctors in Tajikistan

Family doctors constitute 10.5% of the total doctors in 2021 in Tajikistan and are the largest category within the total number of doctors. However, this is a lower proportion than most countries in the European Region [22]. It is also variable across regions, with GBAO having the lowest proportion (5.3%) (Fig. 3).

Availability of the health workforce

Nationally, the average density of health workers (doctors, nurses, and midwives) in Tajikistan was 76 per 10 000 population in 2021[8]. This is 37% lower than the WHO European Regional average [8]. The national average density of nurses, which includes family nurses (49 per 10 000 population) was a little more than half the average in the WHO European Region [8].

The national average density of doctors in 2021 (21.0 per 10 000 population) is 43% lower than the WHO European Regional average for medical doctors (37 per 10 000 population) [8, 23]. The density of family doctors in 2021

Table 2 Timeline and description of relevant decrees, laws and guiding documents providing institutional, regulatory and legal foundations for development of family medicine in Tajikistan. Source: Table constructed by Authors from information from MoHSPP

Year	Decree/Law
1998	Order of the Ministry of Health of the Republic of Tajikistan No. 236 of June 23, 1998 "On phased transition to the organization of primary health care on the principle of general practitioner (family doctor) for the period 1998–2000" In this Decree, for the first time the nomenclature of "general practitioner (family doctor)" was included in the medical specialties, the Republican Center of Family Medicine was created, training of specialists on the basis of TSMU, IPDE RT and colleges began, the Regulations on the doctor and nurse of general practice were approved
1998	Order of the Ministry of Health of the Republic of Tajikistan No. 411 dated 17.11.1998 "On approval of the Republican Center of Family Medicine" on the basis of the Department of Family Medicine of the Institute of Postgraduate Education in Health Care of the Republic of Tajikistan, further by the decision of the Board of the Ministry of Health of the Republic of Tajikistan No. 9–4 dated March 12, 1999 "Republican Center of Family Medicine" was established, by the decision of the Board of the Ministry of Health of the Republic of Tajikistan No. 7–4 in 2004 it was renamed to "Republican Training and Clinical Center of Family Medicine" and in 2014. By the Resolution of the Government of the Republic of Tajikistan No. 148 dated March 3, it was included in the list of the network of institutions of the Ministry of Health and Social Protection of the Population of the Republic of Tajikistan
2002	Resolution of the Government of the Republic of Tajikistan No. 525 of December 31, 2002 "On approval of organizational structure of primary health care institutions" and Order of the Ministry of Health of the Republic of Tajikistan from 12.02.2003 № 54 "On announcement and implementation of the Resolution of the Government of the Republic of Tajikistan №525 from 31.12.2002. "On approval of the organizational structure of primary health care institutions" The 2002 Resolution changed the organizational structure of primary health care institutions. The new structure is as follows: -City health centers; -District health centers; -Rural health centers; -Family medicine centers; -Family medicine outpatient clinics in the structure of city and district health centers; -Emergency medical aid stations; -Health houses in the structure of rural health centers; -Health points in the structure of city and district health centers
2003	Order of the Ministry of Health of the Republic of Tajikistan № 370 from 29.08.2003. "On Approval of Standard Regulations on the City Health Center, District Health Center, Rural Health Center and Health House"
2003	Guidelines for the management of PHC facilities, Dushanbe, 2003
2005	Order of the Ministry of Health of the Republic of Tajikistan № 584 from 31.10.2005. "On approval of normative-legal documents of family medicine" This Order described the qualification characteristics of a general practitioner, general practitioner nurse, Regulations on a doctor and a general practitioner nurse, Temporary staffing standards for family medicine specialists in primary health care institutions, and approximate report card on equipment of primary health care institutions
2006	Order of the Ministry of Health of the Republic of Tajikistan No. 13 of 12.01.2006 "On development of general medical (family) practice" A "Family Medicine Model" was approved, and for the first time a department for the study of family medicine problems was established on the basis of the Republican Training and Clinical Center for Family Medicine
2006	Order of the Ministry of Health of the Republic of Tajikistan No. 98 of 27.03.2006. "On indicators, forms of primary medical documentation and statistical reporting of health care institutions of the Republic of Tajikistan"
2007	Order of the Ministry of Health of the Republic of Tajikistan No. 595 dated 06.12.2007. "On the nomenclature of specialties and positions in health care institutions of the Republic of Tajikistan"
2010	Law of the Republic of Tajikistan "On Family Medicine" (Resolution of the Government of the Republic of Tajikistan dated December 29, 2010, No. 676)
2011	Program for the development of family medicine in Tajikistan for 2011–2015. Resolution of the Government of the Republic of Tajikistan of July 1, 2011, No. 330
2014	Expanding the introduction of business planning at the level of primary health care institutions in all districts of the country, Order of the Ministry of Health and Social Protection of Population of the Republic of Tajikistan dated April 28, 2014, № 243
2015	Order of the Ministry of Health and Social protection of population of the Republic of Tajikistan No. 840 of 3.10. 2015 "On Approval of Primary Documentation Forms of Medical Institutions of the Republic of Tajikistan"
2015	Model Regulations on the management of the network of primary health care facilities in the district (city), approved by Order of the Ministry of Health and Social Protection of Population of the Republic of Tajikistan No. 319 dated April 14, 2015
2016	Order of the Ministry of Health and Social Protection of Population of the Republic of Tajikistan from February 3, 2016 №57 "On the creation of the register of specialists of family medicine"
2016	Strategic Plan for the development of primary health care based on the principle of family medicine for 2016–2020 in the Republic of Tajikistan, Government Resolution of the Republic of Tajikistan № 317 of July 31, 2016
2017	Health Code of the Republic of Tajikistan, Resolution of the Government of the Republic of Tajikistan No. 374 of May 18, 2017
2021	Order of the Ministry of Health and Social Protection of Population of the Republic of Tajikistan No. 1213 dated 28.12.2021 "On approval of the Regulation and qualification characteristics of a family nurse"
2021	Order of the Ministry of Health and Social Protection of Population of the Republic of Tajikistan No. 706 dated 12.08.2021 "On approval of the sample equipment table for "City Health Center", "District Health Center" and "Rural Health Center"

Table 2 (continued)

Year	Decree/Law
2022	Order of the Ministry of Health and Social Protection of the Population of the Republic of Tajikistan No. 232 of 31.03.2022 "On approval of the Regulation and qualification characteristics of a family doctor"

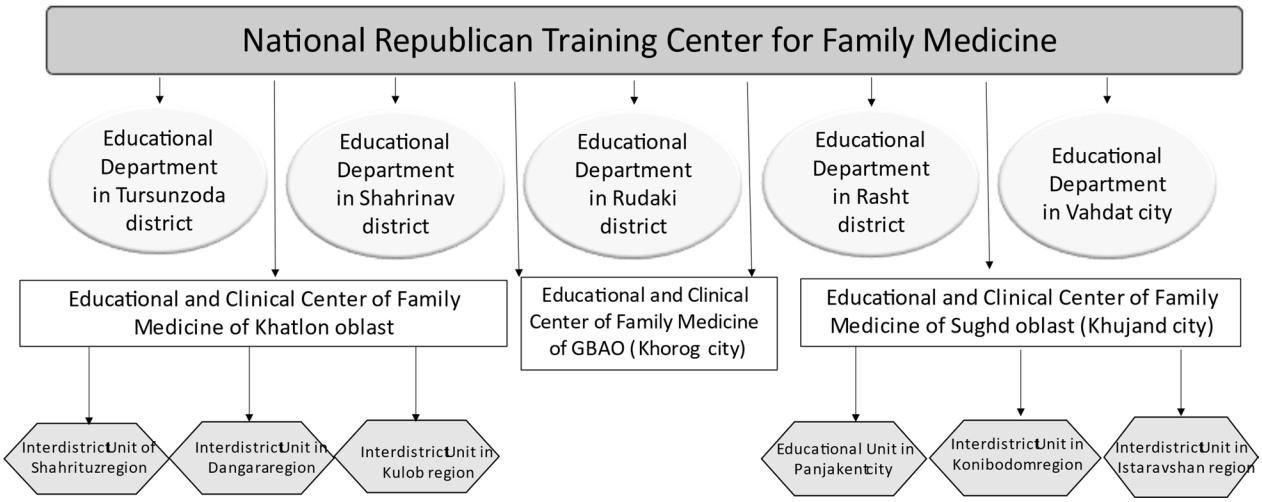


Fig. 2 Structure of the Republican Training and Clinical Center of Family Medicine. Source: [19]

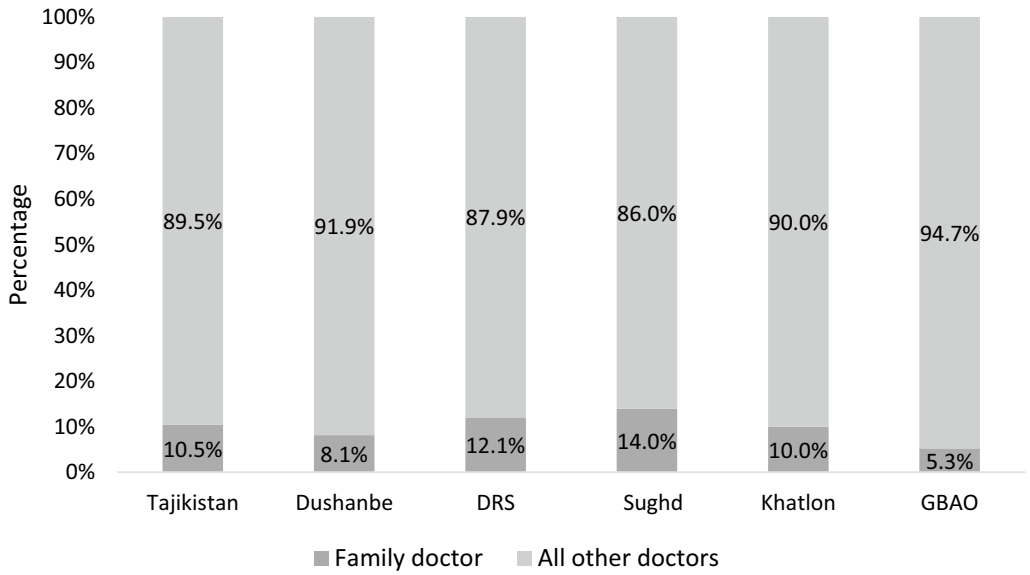


Fig. 3 Proportion of family doctors within the total number of doctors across regions and nationally (2021) *DRS* Districts of Republican Subordination, *GBAO* Gorno-Badakhshan Autonomous Oblast. Source: [8]

was 2.2 per 10 000 population (Fig. 4). This is much lower than most countries in the European region [22].

The MoHSPP has set the norm of one family doctor per 1200–1500 population (Order #584). However, in 2021 the national average was one family doctor per 4537 population. This means that there is one family doctor for more than three times the population than should be expected (Fig. 5).

Geographical distribution of the health workforce

There is uneven distribution of health-care professionals, particularly of doctors, across the regions (Table 3).

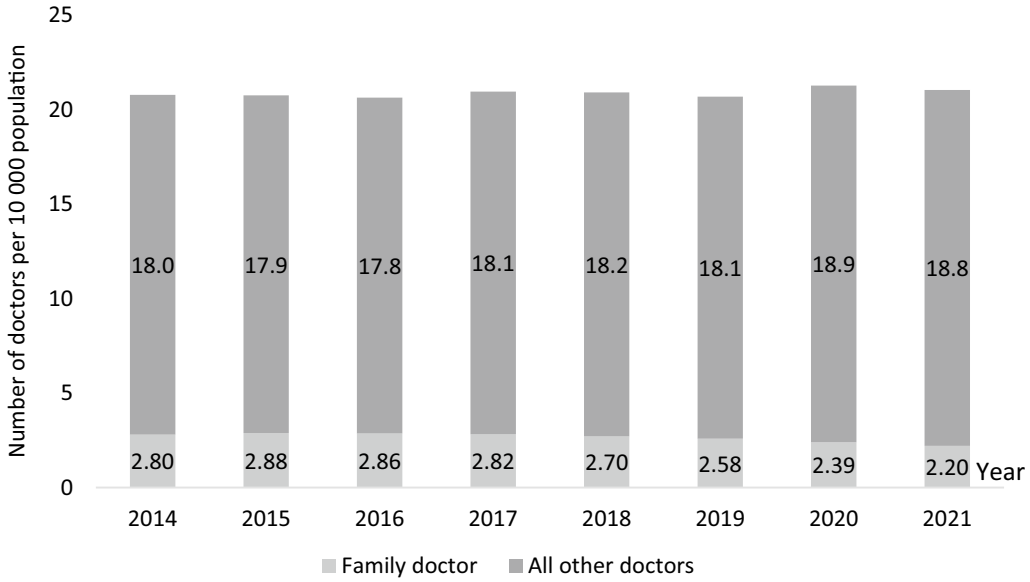


Fig. 4 Density of family doctors and all other doctors per 10 000 population (2014–2021). Source: [8]

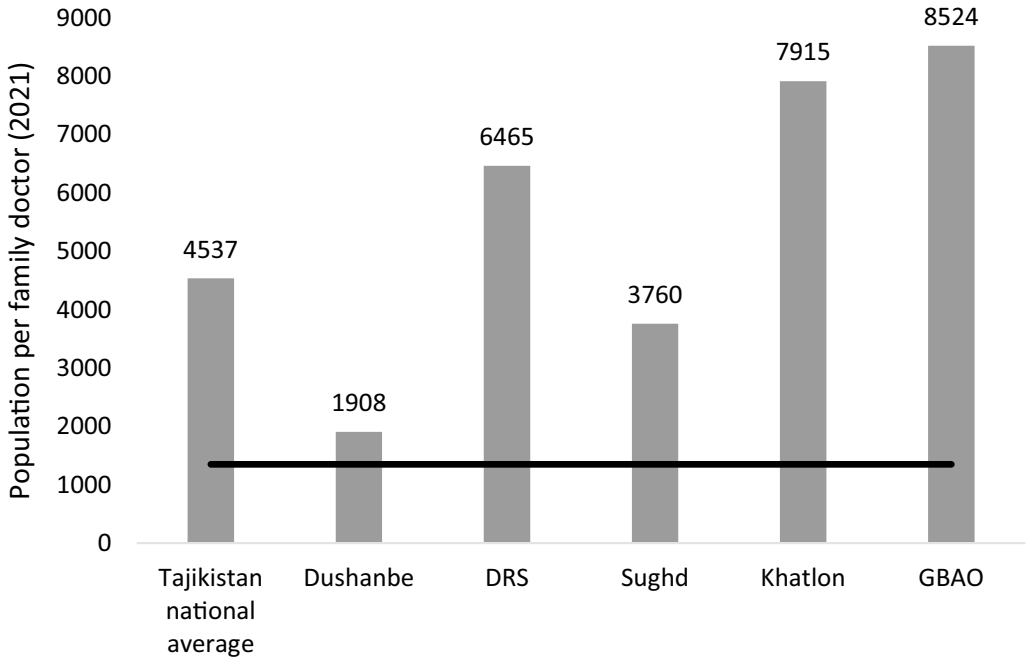


Fig. 5 Population per family doctor compared with expected value (2021) *DRS* Districts of Republican Subordination, *GBAO* Gorno-Badakhshan Autonomous Oblast. Source: [8]

The lowest densities of doctors are in DRS and Khatlon, followed by Sughd and GBAO. Nurse densities are less skewed [8].

The regional distribution of family doctors shows while Dushanbe continues to have the highest density of family doctors (5.2 per 10 000 population) the distribution in other regions varies from the above (Table 3). GBAO has the lowest density of family doctors, followed by Khatlon and DRS (Table 3). This uneven distribution is also reflected when comparing in relation to the norms. Population coverage by family doctor varies from one per 1908 people in Dushanbe to one family doctor per 8524

Table 3 Density of total doctors and family doctors per 10 000 population across regions (2021). Source: [8]

Region	Total doctors (per 10,000 population)	Family doctors (per 10,000 population)
Tajikistan	21.0	2.2
Dushanbe	64.4	5.2
DRS	12.8	1.5
Sughd	19.0	2.7
Khatlon	12.7	1.3
GBAO	22.3	1.2

DRS Districts of Republican Subordination, *GBAO* Gorno-Badakhshan Autonomous Oblast

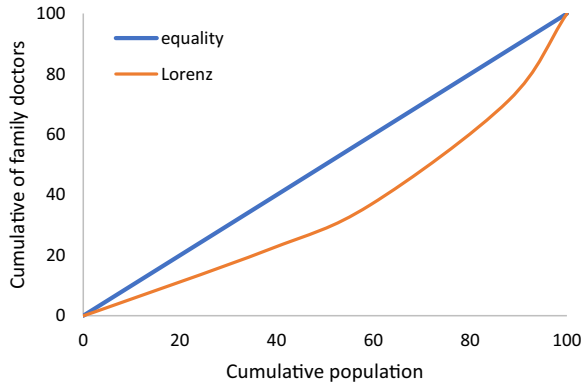


Fig. 6 Lorenz curve of family doctors (2021). Source: Calculated by authors from [8]

people in GBAO, per 7915 in Khatlon and per 6465 in DRS (Fig. 5).

The Gini coefficient of 0.28 indicates subnational inequalities in family doctors' distribution (Fig. 6). This shows, for example, that the population of Dushanbe (12% of country's population) has access to 29% of family doctors in the country.

Health workforce growth and trends

The number of health-care workers has increased over the years. However, the density of doctors nationally has more or less remained stagnant over the last 7 years, which is concerning [8]. There was a sharp decline in Dushanbe in 2021 due to reorganization of territories (Fig. 7). The findings on the rate of growth of nurse density are more optimistic [8].

Over the last 7 years, the density of family doctors has declined by 21% [8]. The decrease has been more severe in DRS (34%) and GBAO (32%). Sughd saw a 21% decrease while only Khatlon had an increase (of 4%) [8]. This trend reverses gains prior to 2014, when the density of family doctors increased by 157% (2.5 times) between 2010 and 2014 [13].

Age and gender profile of the health workforce

The data on age and gender of family doctors could not be accessed, however, the overall figures give some insights. In 2021, 21.9% of doctors were over 55 years old, which is lower than the WHO European Region's average of 30% [23]. However, subnational distribution shows that in GBAO (34.8%) and Sughd (30.5%), the proportion of doctors aged 55 years and over is higher than the rest.

The proportion of women among doctors in Tajikistan is 39%. It is lower than the average in the WHO European Region of 48% (as of 2020) [23] and it has remained stagnant over the last 8 years. There are stark regional variations in the density of female doctors [8].

Skill mix

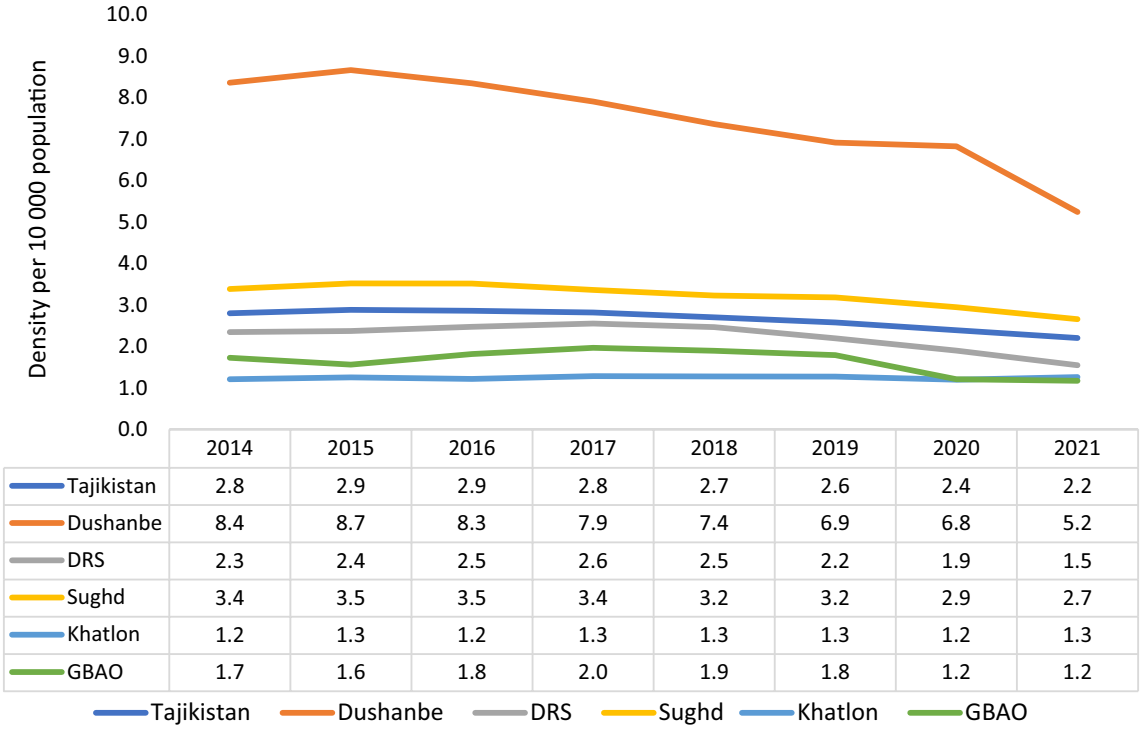
The national average ratio in 2021 of doctors to nurses was 1:2.3, and for doctors to nurses and midwives was 1:2.6, which is similar to the average in the WHO European Region [8, 23]. Subnational analysis shows variations in the skill mix reflecting a shortage of doctors in most regions [8]. At the PHC level, nurses lead 63.8% of the facilities [8]. The expected ratio for family nurses is one per 750 population, while the national average is one per 1108 population [8]. This means that there is one family nurse for more than one and a half times the expected population. The gap is similar for midwives [8].

Medical education and training of family doctors

The number of medical and paediatrics graduates per 100 000 population for Tajikistan in 2022 was 16.7, which is higher than the average in the WHO European Region [8, 23]. In 2022, Dushanbe and Khatlon had the highest densities of medical graduates, while DRS had the lowest (WHO 2024). The number of medical and paediatrics graduates has steadily increased over the last 8 years and has doubled (a 105% increase) from 2014 to 2022 [8]. This is higher than the central Asia (62%) and European (37%) regional averages [23].

The situation with regards to family medicine training is markedly different. There has been a decrease in the overall number of enrolments and graduates in family medicine per 100 000 population from 2014 to 2022, with annual fluctuations [8]. There are variations within the courses that are offered (internship, residency and re-training).

There has been a 54% decrease in the overall number of enrolled students in family medicine from 2014 to 2022 and a 58% decrease in numbers that have graduated during this period (Figs. 8, 9). However, when comparing the three courses, the number of enrolments in the Residency



	2014	2015	2016	2017	2018	2019	2020	2021
Tajikistan	2.8	2.9	2.9	2.8	2.7	2.6	2.4	2.2
Dushanbe	8.4	8.7	8.3	7.9	7.4	6.9	6.8	5.2
DRS	2.3	2.4	2.5	2.6	2.5	2.2	1.9	1.5
Sughd	3.4	3.5	3.5	3.4	3.2	3.2	2.9	2.7
Khatlon	1.2	1.3	1.2	1.3	1.3	1.3	1.2	1.3
GBAO	1.7	1.6	1.8	2.0	1.9	1.8	1.2	1.2

Fig. 7 Density of family doctors per 10 000 population annually across regions (2014–2021) *DRS* Districts of Republican Subordination, *GBAO* Gorno-Badakhshan Autonomous Oblast. Source: [8]

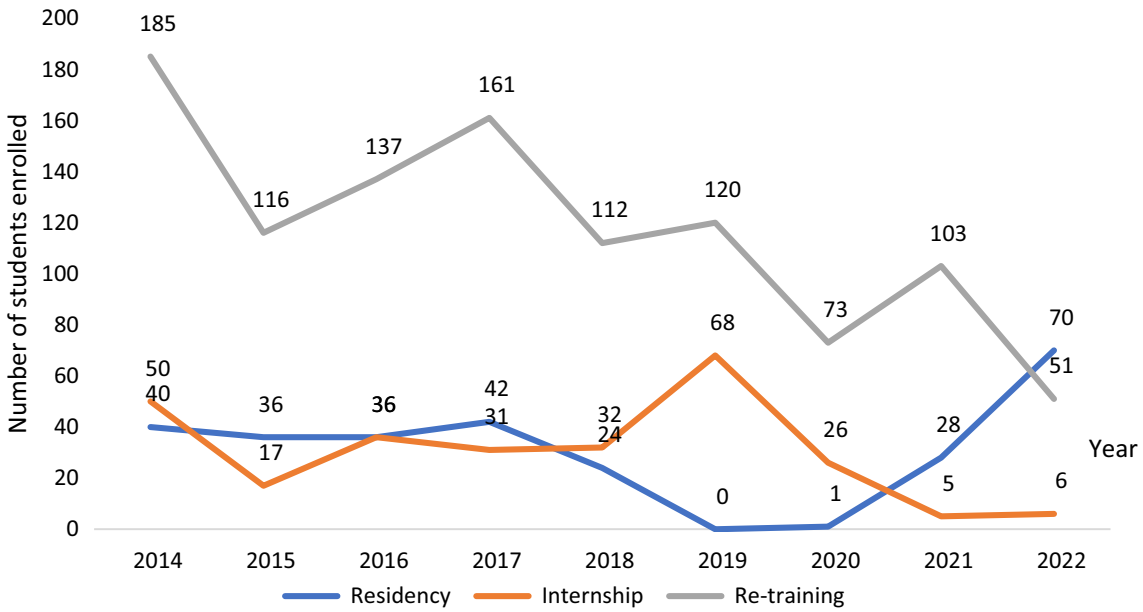


Fig. 8 Number of students enrolled into the three family medicine courses (2014–2022). Source: [8]

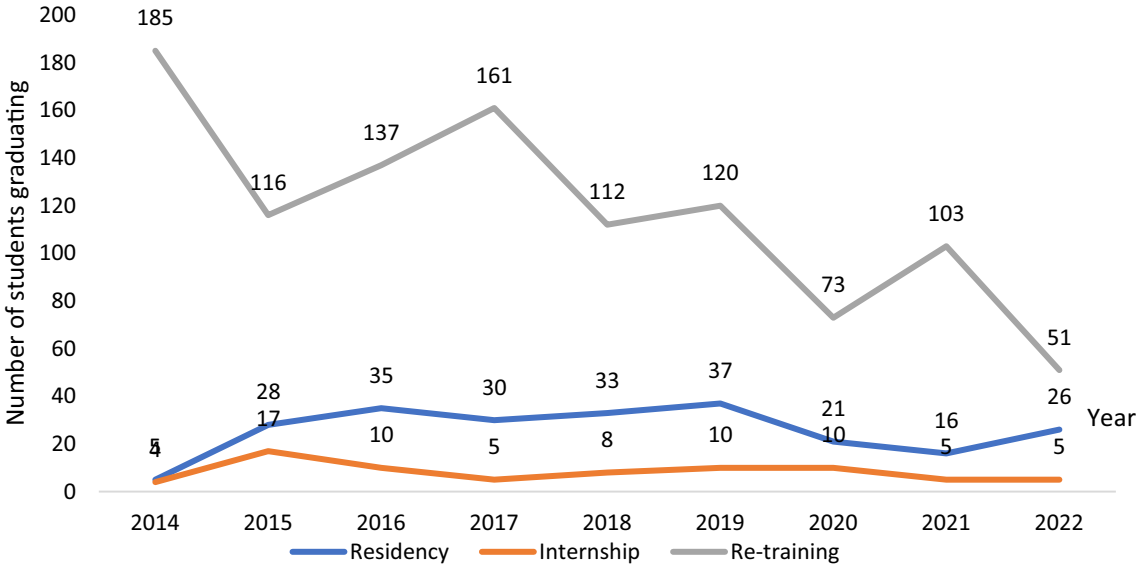


Fig. 9 Number of students graduated from the three family medicine courses (2014–2022). Source: [8]

programme (PUST) shows a 75% increase in enrolments and 420% increase in graduates over the last 8 years, and the re-training programme shows a sharp decrease (72% decrease in enrolment and graduates) (Figs. 8, 9). The data on internships show an 88% decrease in enrolments and 25% increase in graduates from 2014 to 2022 (Figs. 8, 9).

Financing of medical education emerged as a possible determinant of enrolments. Tajikistan has broadly two kinds of education financing scheme: (i) a free education scheme in which the costs of education are paid by the State or Presidential budgets and (ii) a contract scheme for which students have to pay for out of pocket. There has been an increase in the number of medical students under these schemes in the last 7 years. However, the proportion of medical graduates under the free education scheme has reduced between 2014 and 2022 [8]. Such reductions would also have implications on the availability of medical graduates for recruitment in the country's health system, as discussed in the next section.

Retention and recruitment

Recruitment

The data on recruitment of new medical graduates show that over the years a higher proportion of medical graduates who studied under the free scheme were recruited than those under the contract scheme [8]. However, as the proportion of students under the free education scheme decreases, so does the possibility of recruiting more graduates [8].

Vacancies

The level of doctor vacancies (17%) is significant in the country (Fig. 10). The vacancy of family doctors is even higher, with 31% vacancy at national level. Khatlon (56%) has the highest vacancy of family doctors, followed by DRS (31%) and Sughd (27%).

Migration

Between 2020 and 2022, a total of 1308 doctors migrated. There is greater migration of doctors from Dushanbe, Sughd, Khatlon and DRS. Of the doctors who migrated in the last 3 years, the highest proportion (14%) was of family doctors (Fig. 11). A total of 186 family doctors migrated over the three years.

There is also some return migration. In 2022, several doctors and nurses returned to the country and were provided with employment. In comparison to outward migration in 2022, inward migration was 15% [8].

Remuneration and working conditions

The average monthly salary in health care (US$ 95) in Tajikistan is 34% lower than the average monthly salary in the country (US$ 143) (Fig. 12). While the basic salaries for the health workforce in PHC are 23% higher than for those working in hospitals, the overall salaries of health-care workers are mostly lower than the national average. Average hourly wages for doctors and ambulatory medical staff (including nurses) were also much lower than other countries in the region (as recorded in 2011) [24]. In addition to low salaries, other

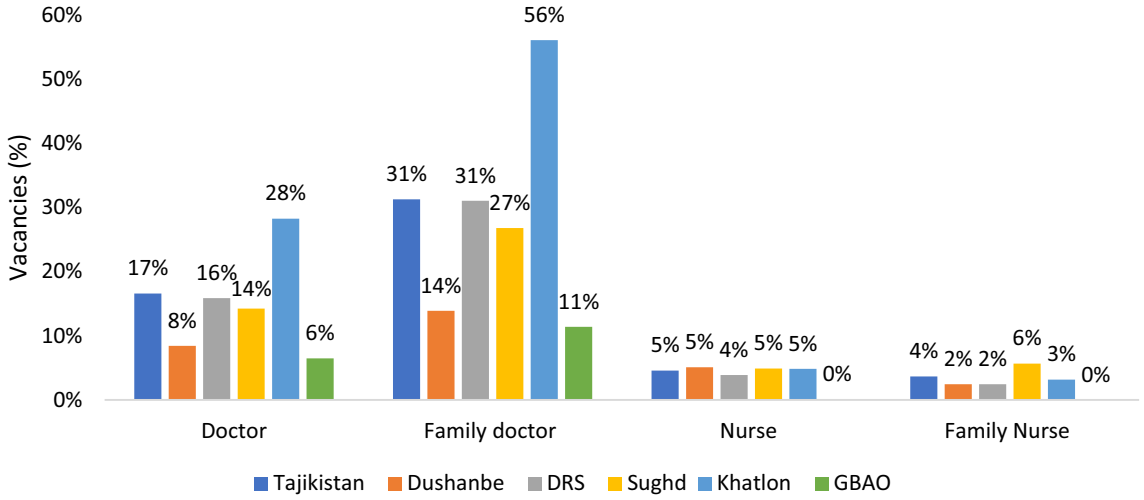


Fig. 10 Vacancies across occupations (2021) *DRS* Districts of Republican Subordination, *GBAO* Gorno-Badakhshan Autonomous Oblast. Source: [8]

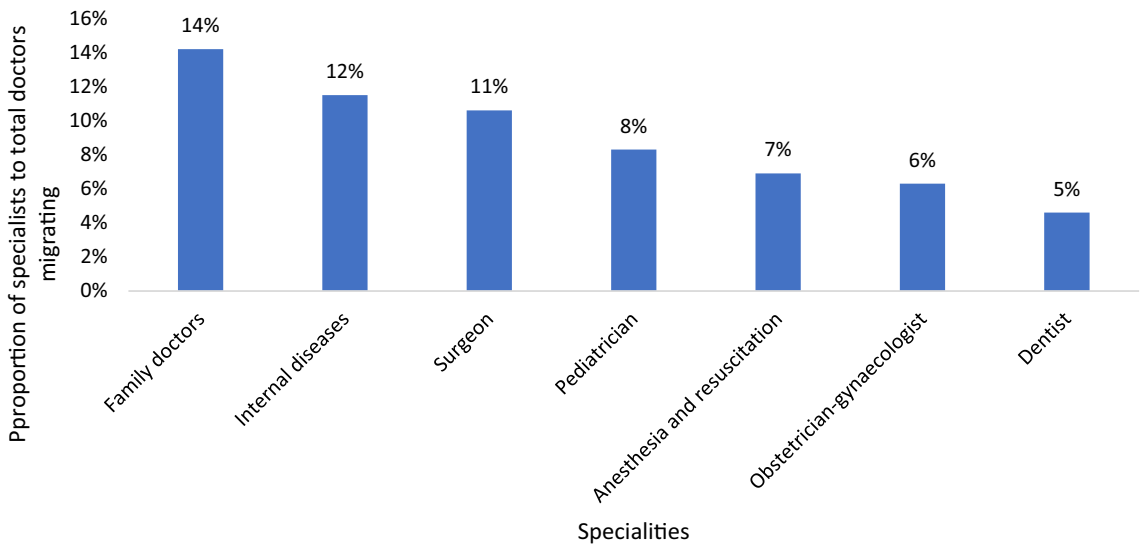


Fig. 11 Top 7 specialities migrating (2020–2022). Source: [8]

challenges for family doctors at PHC level relate to high workloads, burden of reporting forms, and the referral system [17].

Policies and incentives for health workforce retention and recruitment

Over the years Tajikistan has introduced various incentives for medical education and attracting and retaining health workforce, particularly family doctors to rural and remote regions and to PHC [25]. A few of the experiences are summarized in Table 4 [8, 17].

Discussion

The findings of the HLMA provide critical insights on the availability, distribution, production, and retention of family doctors within the larger context of the health workforce issues in Tajikistan. Application of the HLMA framework has helped to identify the bottlenecks in the health labour market flows and the possible explanations for them.

Efforts to rationalize the health care facilities network had led to an increase in the number of PHC facilities and 30% reduction of secondary level hospitals [26] and there has been an increase in the number of health workers availability and medical graduates in the country over

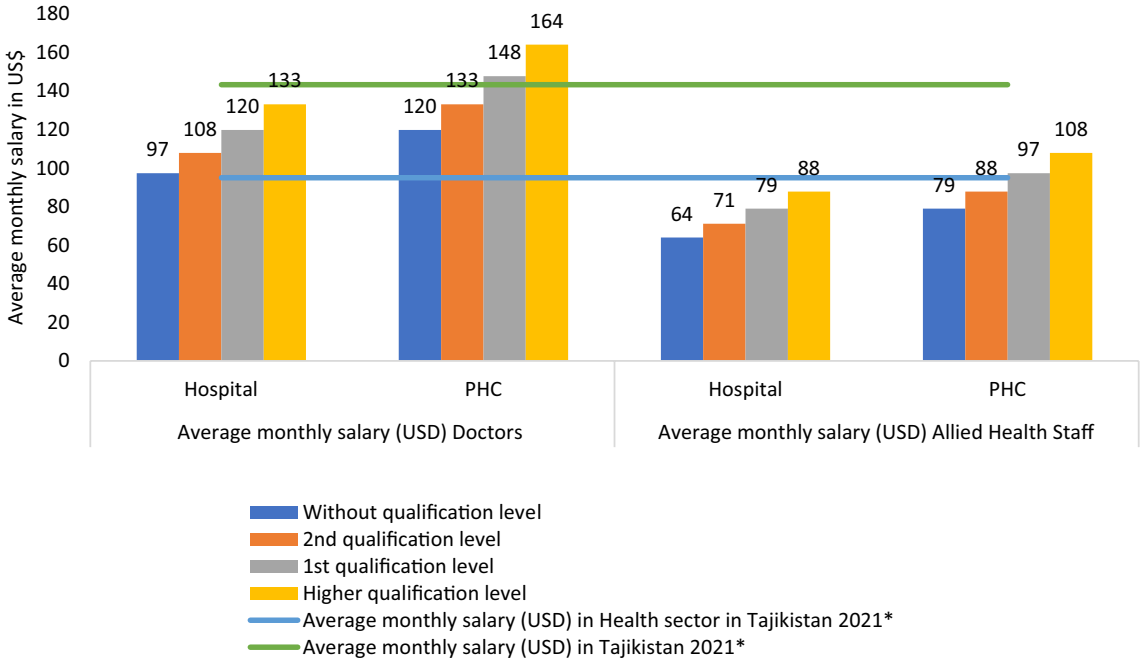


Fig. 12 Average monthly salary of health workers at hospitals and PHC facilities in 2022 (in USD). Source: [8]

Table 4 Policies and incentives for health workforce recruitment and retention. Source: Constructed by authors from [8]

Policies	Experience
Salaries at PHC level 23% higher than Hospitals	A higher raise was passed for PHC workers in addition to a basic salary raise. Moreover, in 2006–2007, two asymmetric increases in wages for family medicine were applied to attract and retain family doctors. While this incentive succeeded in attracting medical professionals into PHC level in rural areas, this may have also attracted narrow specialists to PHC, which may not be an optimum situation with regards to level of services being provided [17]
Assigning of land parcels	A recent initiative provided parcels of land to doctors to finance building their houses in regions where there was a shortage of doctors. While the general feedback was that such incentives do work, the shared challenge is the availability of number of land parcels that can be made available in any particular area [17]. It was also discussed that it was difficult for subsidized districts to provide such incentives due to lack of resources and, therefore, they need to be introduced as national programmes or schemes
Introduction of Presidential quotas for education	Since 1997, presidential quotas were introduced for students coming from rural areas. This scheme was particularly useful to attract female students who would then return to their district for service. These quotas were also able to provide opportunities to students from rural areas who may otherwise have experienced knowledge gaps compared with students graduating from the city
Ensuring budgetary seats	The free education scheme from the State and Presidential budgets also ensured that medical graduates return to their region to work. For example, in Murgab there are 10 doctors who are working in their family district. At the High-level Policy Dialogue, it was suggested that budgetary seats could be more effective in addressing health workforce shortages if they targeted districts that had a particular need for health-care workers [17]

the last 7 years. However, this is not reflected in the rate of growth in the density of doctors over the last 7 years. There is inequitable distribution of the health workforce, particularly of doctors across the regions.

The situation is more severe for family doctors working in PHC. There is a huge shortage of family doctors when compared with norms, they have the highest vacancy rate of all specialities and there has been a decrease in the density of family doctors in the last 7 years. Family doctors also constitute the highest proportion of specialists who migrate outside of Tajikistan. The decline in density of family doctors/General Practitioners [22] and migration of qualified health personnel is an issue in many countries of the WHO European region particularly those in central Asia and adequate motivational measures need to be implemented to

prevent this [12, 27]. Additionally, the prestige and professional identity of family medicine needs to be improved to attract doctors to the family medicine specialisation [12].

Meeting expected norms in Tajikistan requires tripling the current number of family doctors at the national level but education data shows that the overall enrolments and graduates in family medicine are decreasing. The increases in enrolment for PUST in Family Medicine are a positive sign and need to be promoted, as it aligns with international standards and has the possibility to provide high quality training and better competencies in family medicine [13, 20]. Increasing the number of students, particularly for family medicine, under the free education scheme would lead to higher recruitment and contribute to equitable distribution of the health workforce [28].

Although salaries in PHC are higher than in hospitals, the overall health workforce salaries are lower than the national average salary, which may be leading to demotivation, attrition, and migration of the health workforce. The Government of Tajikistan has announced a 40% increase in the basic salaries for all civil servants (Decree No. 671) from July 1 2024 which will lead to some improvements [29].

Within this context, nurses are playing a significant role in ensuring coverage of services and providing PHC. They lead 63.8% of PHC facilities which are mostly in rural areas. They are assuming the responsibilities of public health practitioners, midwives and managers, in addition to their clinical care work. While this represents a major opportunity for increasing access to PHC, more investments are needed to improve their professional and education standards, remuneration, skills and scope of practice [12]. In addition, training of family health nurses provides an opportunity to strengthen multi-disciplinary care and learning at the PHC level [3, 30]. The age profile of health workers in Tajikistan is young which underscores the urgent need to invest and improve retention efforts, taking into account that women constitute a significant proportion of the health workforce.

The data on service utilization and forgone care suggest that the shortages and uneven distribution of doctors across regions affect availability of health services coverage and health indicators, i.e., the regions with health workforce shortages are also the ones showing lower service utilization, which illustrates global evidence on the same [31]. To overcome the challenges of retention and recruitment of doctors, particularly of family doctors, so that quality healthcare is provided to the population in these areas, the HLMA proposed policy considerations (Table 5). These policy considerations have contributed to developing a National Health Workforce Action Plan by the MoHSPP. Implementation of the Action Plan will require political commitment, financial resources, strong inter-sectoral collaboration, stakeholder management, monitoring and evaluation plan, and cross-country learning of best practices. One of the limitations of the analysis was that data disaggregated by age and sex were not available for all occupations.

Table 5 Policy considerations emerging out of the HLMA. *Source:* [8]

S.No	Issue to be addressed	Policy considerations	Detailed actions
1	Improving retention and recruitment and equitable distribution of the health workforce	Develop a comprehensive package of financial and non-financial interventions to improve recruitment and retention of doctors, particularly family doctors in rural areas, focusing on districts with low density of health workers	The issue of lack of health workforce in rural and remote areas is a universal challenge, there is evidence on successful strategies to address such shortages [28, 32]. Various policies for attracting health workforce, including medical doctors and specialists, to rural and remote regions have been tried out successfully in many countries, covering interventions in education, regulation, incentives, and personal and professional support. The specific strategies in Tajikistan need to be assessed in terms of their efficacy, so that gaps can be identified, and policy changes made in view of the existing evidence [25, 28], such as: • Financial incentives or significant raise in salaries; • Providing better living conditions, such as residential, transport and other facilities; • Providing outreach support, career development programmes and public recognition; and • Incentivizing rural services for further education/Continuous Professional Development
2	Strengthening and expanding the health workforce at the PHC level; enhancing the prestige and professional identity of family medicine	Optimize health services in secondary and primary care, reduce the number of narrow specialists and increase the number of family doctors	• Rationalizing the number of specialists and doctors in hospitals and PHC facilities • Reducing workload on health workforces at PHC level through improved systems of reporting, filling staffing gaps, responsibility sharing, strengthening referral systems and system-wide interventions for a well-functioning PHC, such as comprehensive coverage of free essential medicines [33], etc • Targeting budget scheme quotas towards districts that have shortages of health workforce, with an emphasis on women. Reducing or eliminating quotas for areas where there are less shortages • Increasing the number of family medicine doctors among the number of graduates • Reorientation of narrow specialists towards family medicine to strengthen PHC in the country
3	Improving the quality of post-graduate education, particularly in family medicine and increasing the intake of students from rural and remote regions	Undertake changes in post graduate medical education	• Increase in the number of family doctors among the students studying on budgetary basis • Gradual transition to the residency training model for postgraduate medical training to reduce fragmentation of PUST and harmonizing it with international standards [21] • Updating of PUST curriculum as to a competency-based model [21]

Table 5 (continued)

S.No	Issue to be addressed	Policy considerations	Detailed actions
4	Improving the professional and education standards, remuneration, skills and scope of practice of Nurses	Expand the scope of practice of nurses and midwifery	• Expanding and recognizing the role of nursing and midwifery in PHC; • Aligning the regulatory and education systems to the above; • Developing avenues for professional development and leadership positions for nurses and midwives; and • Improving the quality of nursing and midwifery education in both public and private institutions

Conclusion

The HLMA has identified both the positive features and the challenges with regards to the PHC workforce in Tajikistan. The policy considerations have contributed to improving evidence-based planning for retention and recruitment of the workforce in PHC, improvements in medical and nursing education, and higher investments in PHC and particularly in family doctors. Areas of future research include assessments to guide the specific plans for improvement, such as assessment of curriculum of family medicine and nursing, and research to aid policy development on issues arising from the analysis, such as migration, retention, requirements of young and female health workforce and so on. Investing in education, recruitment and retention of the workforce development will undoubtedly generate contributions to the economy, decent employment, gender rights, societal health and well-being in addition to health security [34]. Through this process, Tajikistan has shown the way forward in implementing the Central Roadmap for health and well-being in Central Asia and the Framework for Action on the Health and Care Workforce in the WHO European Region.

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Author contributions

JA, YSJ, SN, PM, JPBI, ALG, ML, ID, NAM and TZ contributed to the conception and design of the work; YSJ, SS and ZN retrieved and verified the data; SN, PM, JPB, ALB and TZ undertook data analysis; the manuscript was drafted by YSJ, SN, PM, JPB, ALB, ID and TZ, and revised by JA, ML, VO. SS, ZN and NAM. All authors read and approved the final manuscript.

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Declarations

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Not applicable.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Author details

[1]Ministry of Health and Social Protection of the Population of the Republic of Tajikistan, Dushanbe, Tajikistan. [2]WHO Regional Office for Europe, Copenhagen, Denmark. [3]WHO Country Office, Dushanbe, Tajikistan. [4]WHO HQ, Geneva, Switzerland.

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References

1. World Health Organisation. Health labour market analysis guidebook. 2021 https://iris.who.int/bitstream/handle/10665/348069/9789240035546-eng.pdf?sequence=1. Accessed on 20 Mar 2024.
2. Regional Committee for Europe 73rd session. Seventy-third Regional Committee for Europe: Astana, 24–26 October 2023: framework for action on the health and care workforce in the WHO European Region 2023–2030. [Internet]. World Health Organisation Regional Office for Europe; 2023. https://apps.who.int/iris/handle/10665/362379. Accessed 21 Mar 2024.
3. Kringos DS, Boerma WGW, Hutchinson A, Saltman RD, Saltman RB. Building primary care in a changing Europe Edited Building primary care in a changing Europe Observatory Studies Series 38. Denmark; 2015.
4. Sandvik H, Hetlevik Ø, Blinkenberg J, Hunskaar S. Continuity in general practice as predictor of mortality, acute hospitalisation, and use of out-of-hours care: a registry-based observational study in Norway. Br J Gen Pract. 2022;72(715):e84-90.
5. Russo G, Perelman J, Zapata T, Šantrić-Milićević M. The layered crisis of the primary care medical workforce in the European region: what evidence do we need to identify causes and solutions? Hum Resour Health. 2023;21(1):1–4. https://doi.org/10.1186/s12960-023-00842-4.
6. Dorghabekova et. al. Tajikistan: Health system review. Health Systems in Transition, 2024. 2024.
7. WHO Regional Office for Europe. Roadmap for health and well-being in Central Asia (2022–2025). Copenhagen; 2022 https://www.who.int/europe/publications/i/item/WHO-EURO-2022-5905-45670-65601. Accessed on 20 Mar 2024.
8. WHO Regional Office for Europe. Health labour market analysis in Tajikistan [Internet]. Copenhagen; 2024. https://iris.who.int/bitstream/handle/10665/376097/WHO-EURO-2024-9299-49071-73163-eng.pdf?sequence=1&isAllowed=y. Accessed on 20 Mar 2024.
9. Wilkens Jens, Alona Goroshka. Budgetary space for health in the Republic of Tajikistan: options for more public resources. Copenhagen; 2023.
10. Khodjamurodov G, Sodiqova D, Akkazieva B, Rechel B. Health Systems in Transition: Tajikistan. Tajikistan Health system review 18(1) 2016.
11. Kühlbrandt C, Boerma W. Primary care reforms in countries of the former Soviet Union: success and challenges, Eurohealth observer Eurohealth Incorporating Euro Observer. 2015.
12. 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;15:5.
13. WHO Regional Office for Europe. Review of the National Programme on the Development of Family Medicine 2011–2015 in Tajikistan. 2016 https://iris.who.int/bitstream/handle/10665/372586/WHO-EURO-2016-6527-46293-66963-eng.pdf. Accessed on 21 Mar 2024.
14. Salimov NF, Isupov SJ, Sodyqova DN, Jobirova SB, Rahmonov SR, Mirzoev AS. Health sector development in 20 years of independence. Dushanbe; 2011.
15. WHO Regional Office for Europe. Health-related SDG targets in Tajikistan: implementation of policies and measures to achieve the SDG health-related targets. 2020.

16. WHO Regional Office for Europe. Report on the Policy Dialogue as part of the Joint Annual Review of the first year of implementation of the National Health Strategy of the Republic of Tajikistan for 2021–2030. 2022 https://www.who.int/publications/i/item/9789240035546. Accessed on 21 Mar 2024.
17. WHO Regional Office for Europe. Report of the High-level Policy Dialogue on Human Resources for Health: Health labour market analysis to inform policies in Tajikistan. Dushanbe; 2023
18. Cowell FA. Measuring inequality. Oxford: Oxford University Press; 2011.
19. Dzhonova B. Presentation on development of Family Medicine in the Republic of Tajikistan. 2024.
20. Bohle LF, Valencia E, Ross G, Dzhabarovna DD, Yarbaeva SN, Kasymova ZA, et al. Medical education reform in Tajikistan: comparison of the conventional one-year family medicine residency program and the new two-year residency program for postgraduate medical education. BMC Med Educ. 2021. https://doi.org/10.1186/s12909-021-02749-x.
21. Kempers J, Bohle LF, Topa A, Ross G, Kasymova Z, Yarbaeva S, et al. Investment case for two-year post university speciality training in family medicine in Tajikistan: how much is needed for continuing and scaling up the improved education of family doctors? BMC Health Serv Res. 2020. https://doi.org/10.1186/s12913-020-05953-5.
22. World Health Organisation. National Health Workforce Accounts Data Portal.
23. WHO Regional Office for Europe. Health and care workforce in Europe: time to act. Geneva: World Health Organization; 2022. p. 1–205.
24. Tijdens K, de Vries DH, Steinmetz S. Health workforce remuneration: comparing wage levels, ranking, and dispersion of 16 occupational groups in 20 countries. Hum Resour Health. 2013;11(1):1–15. https://doi.org/10.1186/1478-4491-11-11.
25. Busygina E. Panorama People: Interview with Professor Salomudin Yusufi. Public Health Panorama [Internet]. 2017 https://who-sandbox.squiz.cloud/en/publications/public-health-panorama/journal-issues/volume-3,-issue-3,-september-2017/panorama-people6. Accessed on 21 Mar 2024.
26. Ministry of Health and Social Protection of the Population of the Republic of Tajikistan. Strategic Plan for the Rationalization of the Health Care Facilities Network of the Republic of Tajikistan for 2011–2020. 2011;
27. World Health Organization. WHO report on global health worker mobility. Geneva: World Health Organization; 2023.
28. World Health Organisation. WHO guideline on health workforce development, attraction, recruitment and retention in rural and remote areas. World Health Organisation: Geneve; 2021.
29. President's Office of the Republic of Tajikistan. Decree of the President of the Republic of Tajikistan dated January 9, 2024, No. 671 "On measures to strengthen the level of social protection of the population, increase the official salaries of civil servants, employees of budget organizations, the amount of pensions and stipends." 671 Tajikistan; Jan 9, 2024.
30. Langins M, Borgermans L. Strengthening a competent health workforce for the provision of coordinated/ integrated health services. Int J Integr Care. 2016;16(6):1–8.
31. Chen L, Hanvoravongchai P, Peruana Cayetano Heredia U, Hanvoravongchai P, Chen L, Evans T, et al. Human resources for health: overcoming the crisis. Lancet. 2004;364:1984–90.
32. WHO Regional Office for South-East Asia. Improving retention of health workers in rural and remote areas: Case studies from WHO South-East Asia Region [Internet]. 2020 https://iris.who.int/handle/10665/334227. Accessed on 21 Mar 2024
33. WHO Regional Office for Europe. Availability and prices of essential medicines in Tajikistan in 2021 [Internet]. Copenhagen; 2023 May. https://www.who.int/europe/publications/i/item/9789289058971. Accessed on 21 Mar 2024.
34. Mcpake B, Dayal P, Zimmermann J, Williams GA. What steps can improve and promote investment in the health and care workforce? Enhancing efficiency of spending and rethinking domestic and international financing POLICY BRIEF 54 HEALTH SYSTEMS AND POLICY ANALYSIS. 2023 www.euro.who.int. Accessed on 20 Mar 2024

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