

# Social support of young medical personnel in the conditions of sustainable development of rural areas of Kazakhstan

*Dinura Malbekova*<sup>1\*</sup>, *Olga Demushkan*<sup>1</sup>, *Anara Kassymova*<sup>1</sup>, *Timur Umralin*<sup>1</sup>, *Zeinegul Yessymkhanova*<sup>2</sup>, and *Saltanat Valiyeva*<sup>2</sup>

<sup>1</sup>Salidat Kairbekova National Research Center for health development, 020000 Astana, Republic of Kazakhstan

<sup>2</sup>Esil University, 020000 Astana, Republic of Kazakhstan

**Abstract.** Rural areas in Kazakhstan face serious health challenges, as health workers often leave for cities in search of better working and living conditions. In order to retain health workers in rural areas, conditions need to be created that make them feel confident and motivated to stay in place. In recent years, Kazakhstan has been actively developing programs for the sustainable development of rural areas, including in the field of healthcare. The article considers the issues aimed at creating favorable conditions for the effective work of medical workers, improving access to health care for the population and the development of rural health infrastructure. The main emphasis is on retaining medical staff in rural areas through various social support measures. The international experience of social support for young professionals is studied. A conclusion is made and priority areas for sustainable development of rural health care are formulated.

## 1 Introduction

Medical personnel play an essential role in the process of implementation of the Sustainable Development Goals of the United Nations (UN) [1]. Although there are various health problems in different countries of the world, medical staff can contribute to the solution of the following UN Sustainable Development Goals:

Ensuring the availability and quality of medical care. Medical personnel are a key link in the healthcare system, and their qualifications and experience directly affect the availability and quality of medical care for the population.

The fight against infectious diseases. Medical staff is important participants in the fight against infectious diseases such as HIV, tuberculosis and malaria, which are priorities for the world community within the framework of the UN Sustainable Development Goals.

Promoting the development of a healthy lifestyle. Medical personnel can contribute to the promotion of a healthy lifestyle, including proper nutrition, physical work and abstinence from bad habits, which reduces morbidity and improves the quality of life of the population.

---

\* Corresponding author: [shyndinura@mail.ru](mailto:shyndinura@mail.ru)

Support for the development of national health systems. Medical personnel can participate in the development and improvement of national health systems, which contributes to their efficiency and accessibility to the population.

Development of scientific research in the field of healthcare. Medical staff can participate in scientific research in the healthcare area, which cooperates with the development of new methods of diagnosis, treatment and prevention of diseases.

Thus, medical personnel are an integral part of the UN Sustainable Development Goals in the field of health. Their qualifications and experience play a key role in achieving the goals of ensuring the availability and quality of medical care, combating infectious diseases, promoting healthy lifestyles, supporting national health systems and developing scientific research in the field of healthcare. Therefore, it is necessary to pay attention to the training, education and support of medical personnel, especially in developing countries, so that they can effectively perform their professional duties and contribute to the achievement of the UN Sustainable Development Goals.

The green economy and medical personnel can be linked in the context of healthcare and environmental health risks.

Many environmental issues affect people's health, such as air and water pollution, waste disposal and climate change. The development of a green economy that reduces resource consumption and emissions of pollutants may serve as a solution to the given problems [2-7].

Medical personnel can play an important role in this process. For instance, they can work together with environmental experts to study the impact of environmental factors on health, educate the public about measures to protect the environment and health and develop new technologies and treatments that take into account environmental risks.

In addition, medical personnel can also work in the green economy, for example, by participating in the development and implementation of programs for the efficient use of resources, waste reduction and the use of renewable energy sources in the medical sector.

In this way, the green economy and medical personnel can interact to improve the health and well-being of people and the environment.

Sustainable Development Goal 8 (SDG8): Promoting sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.

Sustained and inclusive economic growth can promote progress, create decent jobs for all and improve living standards. In April 2020, the United Nations issued a Framework for Immediate Socio-economic Response to the COVID-19 crisis as a roadmap to support countries on their path to socioeconomic recovery. The program calls for an unprecedented expansion of international support and political commitment to ensure access to basic services and social protection for people around the world. The Framework program for the adoption of socio-economic response measures consists of five areas of work:

- ensuring the availability of basic health services and protecting health systems;
- helping people overcome challenges through social protection and basic services;
- protecting jobs, supporting small and medium-sized enterprises and informal sector workers through economic response and recovery programs;
- guiding the necessary fiscal and financial stimulus recovery to ensure that macroeconomic policies work for the most vulnerable segments of the population, strengthening multilateral and regional responses; and
- promoting social cohesion and investing in community-based resilience and response systems.

These five areas are linked by strong environmental sustainability and the need to ensure gender equality for more effective recovery. The UN Secretary-General stressed that the way out of the crisis caused by the COVID-19 infection should result in the formation of a different economy [8]

Medical personnel are not part of this goal, but they are important for achieving its main goals.

Goal 8 is aimed at ensuring equal opportunities and conditions for all people in the field of work and economy, including the creation of new jobs, increasing productivity and income, reducing inequality and poverty, as well as eliminating forms of forced labour and child labour.

Medical personnel are an important component in ensuring the health and well-being of people, which in turn affects economic growth and labour productivity. Therefore, achieving Goal 8 also requires efforts to ensure quality healthcare and accessibility of medical services for all people.

In rural areas, the issue of social development is particularly acute, which makes it possible to improve the living conditions and activities of medical personnel in rural areas. Rural areas in Kazakhstan face serious problems in the field of health care; it is in rural areas that high movements of young and able-bodied persons of the population are registered with departure to cities and far abroad in search of better working and living conditions. In order to retain medical personnel in rural areas, it is necessary to create conditions that will allow them to feel confident and interested in maintaining their workplace.

Thus, the creation of a comprehensive program covering social, economic and infrastructural measures can help in retaining medical personnel. Here are some examples of such measures:

- Improvement of working conditions and salaries. Medical workers often face a high workload at work, long working days and low wages. Providing higher salaries, more flexible work schedules, and improved working conditions can improve the satisfaction of healthcare workers and help keep them in the profession.
- Providing training and support. Providing additional training opportunities, professional support programs, and resources to enhance the knowledge and skills of healthcare professionals can help them stay relevant and effective in their profession.
- Improvement of health infrastructure. One of the main factors affecting the work of medical workers is the quality and accessibility of healthcare infrastructure. Improving equipment, services and living conditions in nearby areas can improve the quality of life of health workers and increase their propensity to stay in their region of work.
- Creating a favourable social environment. Healthcare workers, like all other workers, want to live in a place where there are good schools, access to shopping and entertainment, and a safe environment. Creating a favourable social environment can help keep medical workers in the area of work and increase their loyalty to the employer.

In general, the creation of a comprehensive program that covers these measures can help keep medical professionals in the profession and increase the quality of healthcare in the region.

The main problem in the field of healthcare personnel remains the uneven distribution of medical workers both by region and in the context of cities and rural areas.

In this regard, the key mechanism for the development of human resources and the implementation of the policy in the field of human resources of healthcare are measures of social support for medical workers, including young specialists in rural areas. In order to consolidate young specialists in the region after their distribution by the republican commission, it is necessary to take into account the effectiveness of the above-mentioned incentive measures.

The shortage of medical personnel became especially acute in 2020 due to the COVID-19 pandemic. Hospitals and medical institutions did not have enough medical workers to provide quality medical care to patients who were infected with the virus. Since 2012, to cover the need for doctors, mandatory three-year training of graduates in medical

specialities has been introduced in medical organizations; annually candidates for training are placed and increased at the expense of the republican and local budgets [9].

The main purpose of social support is to provide the necessary assistance to a worker in a medical organization, especially a graduate.

Now it is very important to improve the image of the medical profession and return the recognition of the profession of medical work among the population. The patient trusts only the doctor with whom he feels comfortable, and safe, in whose professional and human authority he is confident.

Regulatory and legal regulation. At the legislative level, the issue of providing incentives and social support measures to healthcare workers, including young professionals, is enshrined in the Code of the Republic of Kazakhstan "On the Health of the People and the healthcare system" [10].

According to the Decree of the Government of the Republic of Kazakhstan dated February 18, 2009 No. 183 "On the approval of the size and Rules for the provision of social support measures to healthcare professionals, education, social security, culture, sports and agro-industrial complex who arrived to work and live in rural settlements", healthcare professionals who arrived to work and live in rural settlements, the following social support measures are provided:

1) *issuance of lifting allowance in the amount equal to 100 times the MCI (in 2023, 345,000 tenge);*

2) *issuance of a budget loan for the purchase or construction of housing in the amount not exceeding 1,500 times the size of the MCI (no more than 5,175,000 tenge). [11]*

The Rules for providing social support measures to specialists who arrived to work and live in rural settlements were approved by the Order of the Minister of National Economy of the Republic of Kazakhstan No. 72 dated November 6, 2014 "On Approval of the Rules for Providing social support measures to specialists in the field of health, education, social security, culture, sports and agro-industrial complex, Civil servants of village akims, settlements, rural districts, who arrived to work and live in rural settlements" [12].

The source of funding for the provision of social support measures, in addition to the republican budget, is the funds of local executive bodies and medical organizations.

In addition, as part of the execution of the instruction of the Head of State to the people of Kazakhstan dated September 1, 2020 "Kazakhstan in a new reality: time for action", it was decided to gradually increase the salaries of doctors and secondary medical workers [13]. This event can become an additional incentive for young professionals to work in rural areas and single-industry towns, where wages may be lower than in cities.

In general, the distribution of young specialists in medical organizations located in rural areas and single-industry towns with the provision of social support, and an increase in the salaries of doctors and secondary medical workers are important measures to strengthen healthcare in the regions and improve the quality of life of the population.

*International experience of social support of young specialists in rural healthcare.* The development of the labour market is carried out only together with the expansion and deepening of social protection and support of human resources. The ongoing socio-economic transformations in Kazakhstan aimed at establishing a market economy, with the introduction of compulsory social health insurance, make the problem of ensuring effective social support for citizens in general and employees of organizations, in particular, extremely urgent. On the one hand, these transformations strengthen the social protection of citizens, but on the other, it is necessary to make much more effort for social protection and support in some important aspects of life [14].

The uneven distribution of health personnel resources and geographical imbalance are explained by the high number of medical personnel in cities and their shortage in rural

settlements. The problem of uneven distribution of human resources in healthcare is primarily related to the imperfection of human resources management [15].

Measures of social support for doctors vary depending on the country where they work. For example, in some countries, doctors are entitled to free medical care for themselves and their families, free insurance against occupational risks, additional leave, overtime pay, the possibility of additional training programs and other types of social support.

In the countries of the European Union (EU), special attention is paid to the motivation and stimulation of personnel [16, 17]. Complex mechanisms are provided for the remuneration of medical workers, including categories, coefficients, percentages, incentives, benefits and other additions as incentives. Economic methods of labour motivation management are applied:

- 1) employee's salary determined by budget financing;
- 2) the practice of rewarding employees for the volume and quality of work performed;
- 3) allowances, surcharges for work experience (in accordance with current regulations), the use of scientific achievements and advanced labour methods, and the service of particularly dangerous categories of patients.

However, non-material incentives are not excluded. Based on numerous studies, it has been revealed that working conditions play an important role. Young professionals also leave small towns and villages in search of the best working conditions. Despite the available financial incentives, specialists migrate to big cities in order to work in the most favourable conditions (new technologies, modern equipment, the possibility of training and advanced training in step with modern technologies).

In *Germany*, there are several programs and measures aimed at attracting and retaining young doctors in rural areas [18-22]. Some of them include:

- The program "ZiMS" (ZukunftsinitiativeländlicheMedizinSachsen-Anhalt) in the state of Saxony-Anhalt. This program offers young doctors financial support so that they can start their practice in rural areas. They can also get support from local medical centres and hospitals.

- "Landärzte" quota for doctors who agree to work in rural areas for several years after graduation from the Faculty of Medicine. It is introduced in the states of Bavaria, Hesse and Schleswig-Holstein.

- The "Landarzt Stipendium" program - scholarships for young doctors who are ready to work in rural areas. The program is provided in the states of Baden-Württemberg, Brandenburg and Saxony.

- Many hospitals and medical centres in rural areas offer more favourable working conditions, for example, higher wages, housing benefits and a personal car.

- In addition, events such as job fairs and open days are held to show young doctors the possibilities of working in rural areas and help them find suitable jobs.

In general, these programs and activities help to attract and retain young doctors in rural areas in Germany.

In France, there are several measures aimed at attracting and retaining young doctors in rural areas [23-27]. Some of them include:

- The "Territoires De Soins" program is a program in which medical centres in rural areas can receive financial support from the state in order to attract and retain doctors. Doctors working in these centres receive higher salaries, as well as housing and car benefits.

- The "MédecinTraitantTerritorial" program is a program that provides timely access to medical care in rural areas. Under this program, young doctors can receive financial support from the state to start their practice in rural areas.

- The "Assistant Médical Territorial" program is a program in which medical centres in rural areas can hire young assistant doctors to help them manage a large flow of patients and ensure the best quality of medical care.

- The "Maisons de Santé Pluriprofessionnelles" program is a program that brings together various medical professionals in one place to provide more effective medical care. It can also help attract and retain young doctors in rural areas.

In addition, the authorities of local towns and villages can provide young doctors with housing benefits, a personal car and other bonuses to attract and keep them in their area.

In general, these programs and activities help to attract and retain young doctors in rural areas in France.

In Italy, as in many other countries, there is a problem with a shortage of doctors in rural areas. To attract and retain young doctors, there are a number of measures that are taken at different levels [28-31].

At the state level in Italy, there is a program "Contratto Di Servizio" ("Service contract"), which provides additional financial incentives for doctors working in rural areas. This program also provides young doctors with the opportunity to receive financial assistance for training and preparation for work in rural areas.

Also, local authorities and organizations can provide additional support measures for young doctors, including compensation for relocation, housing and other benefits.

One of the key factors that help to retain young doctors in rural areas is the creation of a favourable and friendly working environment. This may include the support of mentors and colleagues, training and preparation for work, as well as opportunities for professional and personal growth.

Another important factor is access to modern medical equipment and technologies. Doctors working in rural areas may face limited access to modern equipment and technologies, so it is important to provide them with the necessary equipment and technical support.

Finally, it is important to provide young doctors with a work-life balance. There may be fewer opportunities for entertainment and social life in rural areas, so it is important to ensure access to cultural and social events so that young doctors feel comfortable and satisfied with life in rural areas.

In addition, internship and exchange programs, mentoring programs, as well as opportunities to receive grants and financial support for research and projects in the field of medicine may also be available to young doctors.

From the above, it can be concluded that in the EU countries, not only the state is responsible for social support, but also non-governmental organizations, charitable foundations and various communities.

It should also be noted that the EU countries have well-developed management mechanisms at regional levels, which have an important role in the process of managing and stimulating human resources of healthcare (HRH).

## **2 Materials and methods**

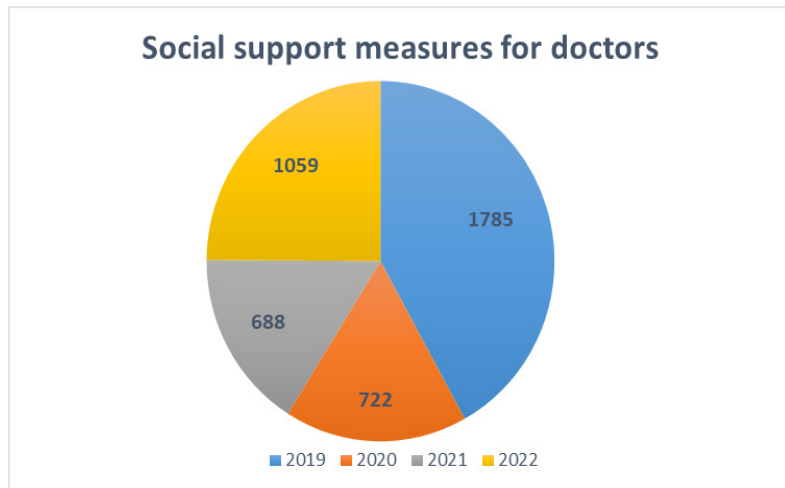
The research material was the data of the reports of regional health departments concerning the issues of social support for young specialists in the field of healthcare. A retrospective study using analytical methods of biomedical statistics was used as the main method.



### 3 Results

The data presented in Figure 1 reflects the number of social support measures provided to graduates of educational and scientific organizations working in various regions of Kazakhstan for the period 2019-2022. The total number of social support measures decreases over the years: from 1,785 in 2019 to 1,059 in 2022.

More visual information on the total number of social support measures for young professionals in rural healthcare can be viewed in Figure 1.



**Fig. 1.** Number of social support measures for young professionals in the Republic of Kazakhstan 2019-2022

From the data provided, several conclusions can be drawn about the measures of social support for doctors in the period from 2019 to 2022:

- In 2019, the largest number of social support measures was provided to doctors - 1,785. This may be because this year the financing of healthcare was strengthened, as well as various programs were carried out to improve the working conditions of doctors.
- In 2020, the number of social support measures for doctors decreased significantly compared to the previous year. In 2020, only 722 measures of social support were provided to doctors. This is probably due to the fact that this year many resources were redirected to the fight against the COVID-19 pandemic, and funds were redistributed.
- In 2021, the number of social support measures for doctors decreased again to 688. This may be since during this period there was a relatively stable state in healthcare, and there was no need for enhanced support of medical workers.
- In 2022, the number of social support measures for doctors increased again to 1,059. Perhaps this is due to the fact that during this period there were some healthcare difficulties, or reform was carried out in the medical care system, which required additional resources.

In general, we can say that the number of measures of social support for doctors in Kazakhstan in recent years tends to change. Different amounts of support have been indicated in different years, which indicate that changes and reforms are taking place in healthcare.

From the data in Figure 2, it is possible to draw several conclusions about the lifting allowance in the Republic of Kazakhstan in the period from 2019 to 2022:

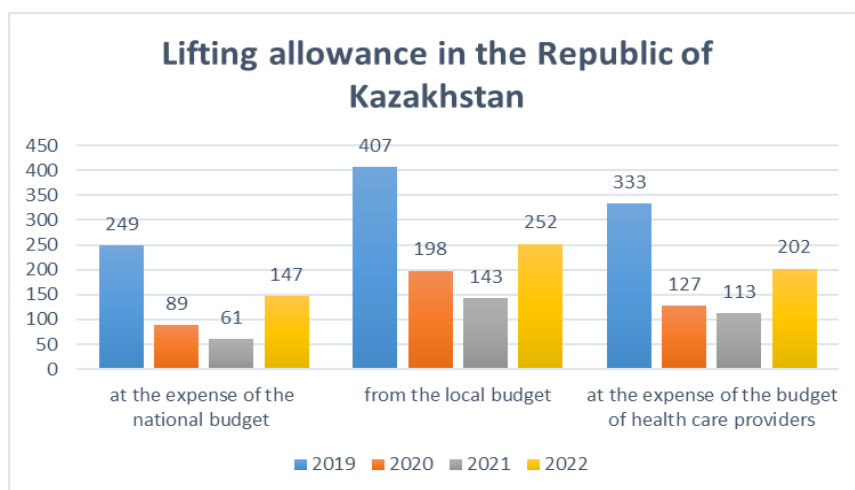
- The total number of allocated lifting allowances in the Republic of Kazakhstan is decreasing over the years. If in 2019 the lifting allowance was allocated to 989 young

specialists, then in 2022 it is already 754 graduates. Perhaps this is due to the fact that the economic situation in the country has deteriorated somewhat, and budget resources are limited.

- The share of the lifting allowance paid at the expense of the republican budget is decreasing over the years. In 2019, the republican budget accounted for 25% of the total number of lifting allowances issued, and in 2022 only 19%. At the same time, the share of the lifting allowance paid at the expense of the local budget and the budget of medical organizations is increasing.

- The number of young professionals who have received a lifting allowance paid at the expense of the local budget has increased over the years. If in 2019 local budgets accounted for 41% of the total number of graduates who were allocated a lifting allowance, then in 2022 it is already 34%. This is probably due to the fact that local executive bodies (M&E) have become more actively involved in providing social support to young doctors.

- The number of young specialists who have been paid lifting allowances at the expense of the budget of medical organizations has been decreasing over the years. If in 2019 medical organizations accounted for 33% of the amount of lifting allowance, then in 2022 they did only 27%. This is probably due to the fact that medical organizations cannot withstand such a level of financial costs for the social support of their employees.



**Fig. 2.** Lifting allowance allocated to young professionals in the Republic of Kazakhstan 2019-2022.

In general, we can say that the lifting allowance in the Republic of Kazakhstan is decreasing over the years, while the share of its financing from local budgets and budgets of medical organizations is increasing, and the share of financing from the republican budget is decreasing. Perhaps this is due to the fact that the economic situation in the country has deteriorated somewhat, and budget resources are limited, so the state redirects funds to higher-priority goals.

However, despite the reduction in the amount of the lifting allowance as a whole, there is a tendency to increase its financing at the expense of local budgets, which may indicate a more active participation of local authorities in providing social support to the population. It is also worth noting that, in general, there is an increase in the number of recipients of the lifting allowance, which may indicate an increase in attention to the issues of social protection of the population in the Republic of Kazakhstan.

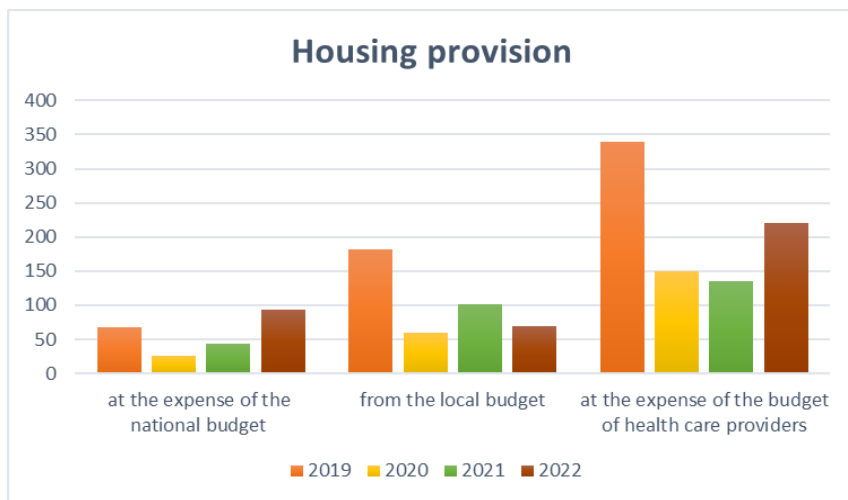
From the presented *Figure 3*, it can be seen that the provision of housing for medical workers is financed by various budgets: republican, local and the budget of medical



organizations. In addition, it can be seen that the amount of housing provided at the expense of each of these budgets varies from year to year.

In 2019, most of the housing was provided at the expense of the budget of medical organizations, whereas in 2020 the largest number of housing was provided at the expense of the local budget. In 2021, most of the housing was still provided from the budget of medical organizations, but less than in 2019. And in 2022, the budget of medical organizations again became the largest in terms of the number of secured housing.

In addition, it is comparatively clear that the number of housing provided at the expense of the local budget tends to decrease, while the number of housing provided at the expense of the budget of medical organizations and the republican budget is growing.

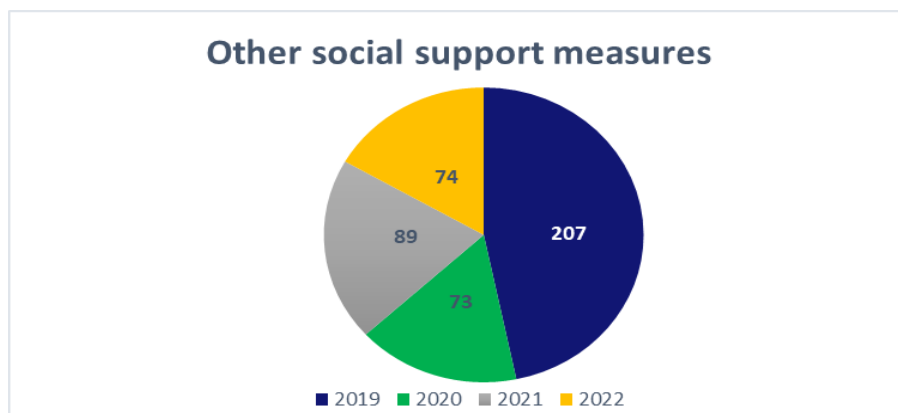


**Fig. 3.** Provision of housing for young professionals in the Republic of Kazakhstan for 2019-2022

Thus, it can be concluded that the provision of housing for medical workers is financed by various sources and that different budgets provide different amounts of housing in different years. The trend towards an increase in the number of housing provided at the expense of the Republicans and the budget of medical organizations may indicate that these sources of funding are considered more effective in achieving the goals of providing housing for medical workers.

Other measures of social support include reimbursement of utilities, payment for residency training, reimbursement of mobile communication costs and other social benefits provided to young professionals. These data are presented in Figure 4 in the form of the number of other measures of social support for doctors over the past four years.

According to these data, 207 measures of social support were provided to doctors in 2019, which is the highest value in four years. However, in 2020, the number of measures decreased significantly and amounted to 73, which is 65% less than in 2019. In 2021, the number of measures increased to 89 but is still lower than in 2019. Data for 2022 show a decrease in the number of measures to 74.



**Fig. 4.** Other social support measures for young healthcare professionals for 2019-2022

Thus, based on the presented data, it can be concluded that, in general, the number of measures of social support for doctors has decreased in the last two years compared to 2019. However, the data for 2021 shows some improvement compared to 2020.

## 4 Discussion

The data presented in the conducted study indicates the number of people who received social support, as well as the number of measures issued to young professionals, lifting allowances from the budget, housing from the budget and other measures such as reimbursement of utility costs, payment of cellular communications, etc. The number of social support measures is not proportional to the number of people who have received social support, since each measure can cover a different number of people.

A number of factors underlie the inefficiency of social support measures provided to young professionals and graduates of medical education and science organizations in Kazakhstan. They include:

- The imperfection of the regulatory legal framework for the provision of various social support measures to young professionals, graduates of medical education and science organizations of the Republic of Kazakhstan and, accordingly, the low level of employment of young professionals at their place of distribution.
- Lack of transparency and insufficient effectiveness of the mechanism of distribution and social support measures provided to young professionals, and graduates of medical education and science organizations at the national and regional levels.
- The unattractiveness of the available vacancies offered by medical organizations, as a result, low motivation and satisfaction of medical workers, including young professionals arriving to work in rural settlements of the Republic of Kazakhstan.

To solve the problem, you can choose a variety of measures. In order to facilitate the discussion of potentially viable policy options, we have selected the following recommendations:

1. Improvement of the regulatory legal framework defining effective measures for social support of young professionals, graduates of medical education and science organizations;
2. Informatization and digitalization of the mechanism of distribution of young professionals, graduates of educational and scientific organizations, as well as social support measures provided to them for openness and transparency of the process on the platform [www.enbek.kz](http://www.enbek.kz);

3. Development and implementation of a separate section on employment and social support measures in the Concept of Rural Medicine development, taking into account existing domestic and international experience.

As part of the implementation of the National Project "High-quality and affordable healthcare for every citizen "Healthy Nation", one of the main directions is "Strengthening human resources"[33]. Along with this, to improve the quality of medical care in rural areas, on behalf of the head of State, the national project "Modernization of rural healthcare" was developed and approved, where the key task is the issue of social support and retraining of medical personnel [34]. The implementation of this project for medical workers: will create an improvement in working conditions, the possibility of introducing new technologies, wage increases, training and advanced training, and the social well-being of the rural population.

## 5 Conclusion

From the conducted study of the types of social support measures for young specialists in the field of healthcare of the Republic of Kazakhstan, the following conclusions can be drawn:

- At the republican level, young professionals are provided with lifting allowances and social support for the purchase or construction of housing.
- At the local level, young professionals can be provided with lifting allowances, housing or reimbursement of utilities at the expense of the akimat.
- Medical organizations can also provide their young specialists with lifting allowances, provision or rental of office housing, covering transportation costs and providing a place in kindergarten.

In general, measures of social support for doctors in the Republic of Kazakhstan have been declining in recent years, especially in 2020. However, in 2021 there was a noticeable increase in the number of other social support measures, which may indicate the restoration of this direction.

In addition, it is worth noting that the number of payments and types of social support measures may vary depending on the region and the medical organization, which may create inequality in access to social support between different groups of young professionals in the field of healthcare.

## 6 Gratitude

The authors are grateful to the Ministry of Health of the Republic of Kazakhstan for the data provided for the current study.

## References

1. Official United Nations website <https://www.un.org/sustainabledevelopment/ru/>
2. S.P. Anzorova et al. *Digital Transformation of Government Procurement on the Level of State Governance*. In: Popkova E.G., Ostrovskaya V.N., Bogoviz A.V. (eds) Socio-economic Systems: Paradigms for the Future. Studies in Systems, Decision and Control, **314**, (2021) Springer, Cham. [https://doi.org/10.1007/978-3-030-56433-9\\_69](https://doi.org/10.1007/978-3-030-56433-9_69)
3. A. Mottaeva, O. Fokina, S. Botagoz, Lecture Notes in Networks and Systemsthis link is disabled LNNS **575**, 181–188 (2023)

4. Sh. Niyazbekova, et. al., E3S Web of Conferences **371**, 04039 (2023)  
<https://doi.org/10.1051/e3sconf/202337104039>
5. Sustainable development goal 8.  
<https://www.un.org/sustainabledevelopment/ru/economic-growth/>
6. The Law of the Republic of Kazakhstan dated 27 July, 2007 No. 319-III “On Education” [https://adilet.zan.kz/eng/docs/Z070000319\\_\(2007\)](https://adilet.zan.kz/eng/docs/Z070000319_(2007))
7. Code of the Republic of Kazakhstan dated July 7, 2020 No. 360-VI 3PK “ON PUBLIC HEALTH AND HEALTHCARE SYSTEM”  
[https://adilet.zan.kz/eng/docs/K2000000360\\_\(2020\)](https://adilet.zan.kz/eng/docs/K2000000360_(2020))
8. Government Resolution No. 183 of 18 February 2009 “Determining the extent of social support for specialists in health care, education, social welfare, culture, sport and the agro-industrial complex, and civil servants of the akims' offices in villages, settlements and rural districts who come to work and live in rural settlements”
9. Order No. 72 of the Minister of National Economy of the Republic of Kazakhstan dated 6 November 2014 “On approval of the rules for the provision of social support for specialists in health care, education, social welfare, culture, sport and the agro-industrial complex, civil servants of the akims' offices in villages, settlements and rural districts who come to work and live in rural settlements” (2014)
10. Message from the Head of State Kassym-Jomart Tokayev to the people of Kazakhstan. 1 September 2020. "Kazakhstan in the New Reality: Time for Action"  
[https://www.akorda.kz/ru/addresses/addresses\\_of\\_president/poslanie-glavy-gosudarstva-kasym-zhomarta-tokaeva-narodu-kazahstana-1-sentyabrya-2020-g.](https://www.akorda.kz/ru/addresses/addresses_of_president/poslanie-glavy-gosudarstva-kasym-zhomarta-tokaeva-narodu-kazahstana-1-sentyabrya-2020-g.) (2020)
11. V.V. Koykov, M.M. Kabdullina, G.A. Musina, A.N. Smailova, Methodological recommendations for improving the system of incentives and social support for health workers to ensure regions with sufficient medical personnel (Methodological recommendations, 2017)
12. Models and tools for health workforce planning and forecasting. World Health Organization. Health workforce status review. 3,18 (2010) ISBN: 9789244599013.  
<https://apps.who.int/iris/handle/10665/112542.> (2020)
13. S.E. Barykin, et al., Journal of Environmental Assessment Policy and Management **25(1)**, 2350001 (2023) link is disabled
14. D. Blumentahl, Journal of Rural Health **10(2)**, 109-118 (2014)
15. Official website of the German Federal Ministry of Health:  
<https://www.bundesgesundheitsministerium.de/service/begriffe-von-a-z/l/landaerzte.html>
16. Article on Deutsche Welle website: <https://www.dw.com/en/how-germany-is-tackling-a-shortage-of-rural-doctors/a-56206850>
17. Article on The Local Germany website: <https://www.thelocal.de/20181210/what-germany-is-doing-to-attract-doctors-to-the-countryside>
18. B. Orazbayev, et. al. Journal of Physics: Conference Series **1399(45)**, 156053 (2019)  
<https://doi.org/10.1088/1742-6596/1399/4/044024>
19. S. Bakreen, et al., Transportation Research Procedia **63**, 1431–1443 (2022) link is disabled
20. Article on the Deutsche Apotheker Zeitung website: <https://www.deutsche-apotheker-zeitung.de/news/artikel/2019/05/03/landaerztmangel-in-deutschland-loesungsansaeetze-und-ueberlegungen/ansicht/lesen>
21. Official website of the French government: <https://www.gouvernement.fr/sante-rurale>

22. Article on Medical Economics website:  
<https://www.medicaleconomics.com/view/how-france-is-attracting-young-doctors-to-rural-areas>
23. Article on The Local France website: <https://www.thelocal.fr/20171023/how-france-is-winning-the-battle-to-attract-young-doctors-to-the-countryside>
24. Information portal on health care in France:  
<https://www.ameli.fr/assure/sante/themes/sante-rurale/medecins>
25. Official website of the French association of young doctors: <https://www.ajism.fr/>
26. Italian Ministry of Health (Ministero della Salute):  
<https://www.salute.gov.it/portale/home.html>
27. Italian Medical Association (Federazione Nazionale degli Ordini dei Medici Chirurghi e degli Odontoiatri): <https://www.fnomceo.it/>
28. Società Italiana Giovani Medici (Italian Society of Young Physicians):  
<https://www.sigiam.org/>
29. National Institute of Health (Istituto Superiore di Sanità): <https://www.iss.it>
30. E.M. Shcherbakova, DemoscopeWeekly 861-862 (2020)  
<http://demoscope.ru/weekly/2020/0861/barom01.php>. (2020)
31. Resolution No. 725 of the Government of the Republic of Kazakhstan of 12 October 2021 "On Approval of the National Project "Quality and Accessible Health Care for Every Citizen "Healthy Nation" (2021)
32. Government Resolution No. 962 of 30 November 2022 "On Approval of the Pilot National Project "Modernisation of Rural Health Care". (2022)