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REVIEW OF DEVELOPMENTS IN THE TRAINING OF DOCTORS AND PHARMACISTS IN MOROCCO

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Резюме. У роботі оглянуто питання отримання медичної та фармацевтичної освіти у Марокко, яку на сьогодні можливо одержати у 9 університетах країни, більшість з яких є державні – 66 %. Вартість медичної та фармацевтичної освіти у країні висока – від 9 000 до 12 000 USD на рік. Середня зарплата в Марокко у 2022 р. становила 121 946 дирхамів, що складає 12 000 USD. Вартість освіти поступово збільшується. Ціна навчання в університеті "Université Mohammed VI Polytechnique" складає 14 000 доларів США. Починаючи з 2020 р. в Марокко зафіксовано критичний рівень обслуговування медичного, фармацевтичного та стоматологічного персоналу – 1,65 на 1000 осіб, що на 2,8 нижче у порівнянні з пороговим рівнем, який складає 4,45 на 1000 населення. У 2023 р., у зв'язку з гострою відсутністю обслуговуючого персоналу в Марокко, уряд країни прийняв рішення щодо скорочення тривалості медичної та фармацевтичної освіти з семи до шести років. Це дасть змогу надати робочі місця молодим фахівцям та поступово підвищить рівень медичної та фармацевтичної опіки марокканського населення.

Ключові слова: *медична та фармацевтична освіта, медична та фармацевтична опіка в Марокко*

Introduction. The education system in Morocco includes pre-school, primary, secondary and tertiary levels. School education is overseen by the Ministry of National Education with significant devolution of authority to the regional level. Higher education is administered by the Ministry of Higher Education and Leadership Training. In Morocco, higher education institutions are private and public. In public universities, the branches of medicine, technology and business are

predominantly developing. A bachelor's degree is required for admission. If a Moroccan wants to enter a technical university, he will be given the opportunity to pass special tests. The higher education system of Morocco has 174 universities and 1,866 study programs. Of these, 164 universities have 922 Bachelor programs, 148 universities have 786 Master programs and 46 universities have 158 PhD programs. Of these, 164 universities and 922 Bachelor programs. The country is ranked № 117 in the world educational ranking. Morocco ranks 96th in the world economy ranking.

Aim. Carry out a study on the training of doctors and pharmacists in Morocco.

Methods and materials. Overview of developments in the training of doctors and pharmacists in Morocco. The object of analysis is the system of medical and pharmaceutical education in Morocco. Subject of study: literary sources, sites on the analyzed topic in the country. Analysis methods: retrospective, system analysis, comparison.

Research results. Today, for a medical school to be internationally recognized, it must be listed in the World Directory of Medical Schools (<http://www.wdoms.org/>), which is an updated version of what was formerly called Avicenna's Directory. This is a list compiled by two major international organizations: the World Federation for Medical Education (WFME) and the Foundation for the Development of International Medical Education and Research (FAIMER), which brings together all the medical faculties of the world [1]. Today, the World Directory of Medical Schools lists more than 3,700 medical schools in operation around the world [2]. In Morocco, according to the World Directory, 9 universities are registered (which is 0.24% of the total), where you can get medical and pharmaceutical education. Students study at institutes for 7 years, the language of instruction is French (tabl.) [2]. The largest number of universities is concentrated in Casablanca and Rabat (22% each). It should be noted that one of them – «Université Mohammed V de Rabat Faculté de Médecine et de Pharmacie», located

in Rabat, was opened back in 1964. Today, this university has the alternative name "Université Mohammed V Souissi Faculté de Médecine et de Pharmacie de Rabat". (tabl.) [2].

Table

Universities in Morocco, where you can get medical and pharmaceutical education

No	City Name	Medical School Name	Year Instruction Began	School Type	Annual tuition USD
1.	Tanger	Université Abdelmalek Essadi Faculté de Médecine et de Pharmacie de Tanger	2016	Public	-
2.	Marrakech	Université Cadi Ayyad Faculté de Médecine et de Pharmacie de Marrakech	1999	Public/Private	-/12 000
3.	Casablanca	Université Hassan II de Casablanca Faculté de Médecine et de Pharmacie	1975	Public	-
4.	Agadir	Université Ibn Zohr Faculté de Médecine et de Pharmacie d'Agadir	2016	Public	-
5.	Rabat	Université Internationale Abulcasis des Sciences de la Santé Faculté de Médecine	2014	Private	9 000
6.	Oujda	Université Mohammed I Faculté de Médecine et de Pharmacie Oujda	2008	Public	-
7.	Rabat	Université Mohammed V de Rabat Faculté de Médecine et de Pharmacie Alternate Names:Rabat University * Université Mohammed V Souissi Faculté de Médecine et de Pharmacie de Rabat	1962	Public	-
8.	Casablanca	Université Mohammed VI des Sciences de la Santé Faculté de Médecine	2014	Private	14 000
9.	Fes	Université Sidi Mohammed Ben Abdellah Faculté de Médecine et de Pharmacie de Fès	1999	Public	-

From 2022 in Morocco, in the city of Ben Guerir (near Marrakech), a new university «Université Mohammed VI Polytechnique» was opened where you can get medical and pharmaceutical education.

The cost of medical and pharmaceutical education in Morocco is very expensive - from 9,000 USD to 12,000 USD per year (tabl.). Dentist training is cheaper – from 9,000 USD. The university «Université Mohammed VI Polytechnique» tuition fee is 14 000 USD. For Moroccans, this is very expensive. The average salary in Morocco in 2022 was 121,946 dirham which is 12,000 USD [5]. In general, in 2022, the Moroccan city of Casablanca was ranked the world's third cheapest city for international education, with an average tuition fee of 4,067 USD or 41,245 dirham per year, according to the International Schools Database. The Moroccan education system provides for two forms of university ownership - public and private. In Morocco, where you can get medical and pharmaceutical education, 66% of universities are public, 22% are private and public/private 22% (Fig.).

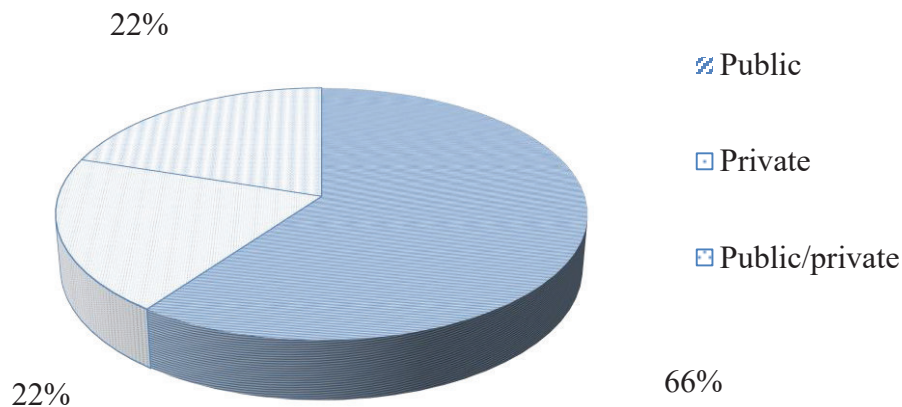


Fig. Types of ownership of universities where you can get medical, pharmaceutical and dental education in Morocco, %

The report The Truth about Health in Morocco: There is no health without workforce development shows that the number of medical and paramedical

personnel providing direct care to patients in Morocco is barely more than 1.65 per 1000 people. This is well below the critical threshold of 4.45 medical personnel per 1,000 people required under the proposed rates as of April 2020. Morocco is short of 32,387 health workers and 97,161 nurses. “This deficit will worsen over the next 10 years with the retirement of 24% of the current medical staff: more than 8,500 people.

Minister of Health of Morocco in a report on medical training shows that, as of January 2022, there is a "severe shortage" in Moroccan hospitals, with only 32,000 doctors and 65,000 nurses working in the sector, serving nearly 37 million citizens and residents. Since 2023, due to an acute shortage of medical and pharmaceutical personnel in the country, the Moroccan Ministry of Higher Education has decided to reduce the training of doctors in nine public and private institutions from seven to six years.

The Minister of Higher Education of Morocco in an instruction to the rectors of public universities in the country, which was published in World News in 2022, brought to the attention of the government the decision to reduce the period of study of students in medicine, pharmacy and dentistry by one year, due to the growing shortage of medical workers. In this regard, the Ministry of Higher Education of Morocco announced an increase in the number of students in the specialty of medicine, pharmacy and dentistry at the expense of public education. Also, all the necessary financial resources will be mobilized within the framework of a contractual program between the state and specialized universities. Only 1,200 young doctors graduate in Morocco every year. To address this problem, the government is planning to raise the salaries of public sector health workers in an attempt to attract Moroccan doctors from its vast diaspora. In addition, healthcare workers serving understaffed regions known as "medical deserts" must receive government assistance or tax breaks.

Higher education in Morocco is very expensive. In 2022, a study by the International Schools Database found that the Moroccan city of Casablanca is the

third cheapest city in the world for international education, with an average tuition fee of 4,067 USD, which is dirham 41,245 per year.

Medical students in Morocco spend five years in medical school, then from the sixth year they enter university hospitals as trainee doctors, and in the seventh year they work in regional hospitals. To meet current staffing needs, the Moroccan government has shortened the study period by one year for students studying medicine, pharmacy and dentistry.

Conclusions

1. In Morocco, you can get medical and pharmaceutical education at 9 universities. Students have been studying in them for 7 years in French. The largest number of universities is located in two cities of the country – Casablanca and Rabat. “The University of Muhammad against Rabat Faculty of de -Medsin and Farmas”, located in Rabat, was opened back in 1964. In the country, 66% of universities are public, 22% are private and public/private 22%.
2. The cost of medical and pharmaceutical education in Morocco has been found to be very high, ranging from 9,000 USD to 12,000 USD per year. The tuition fee at the University "Université Mohammed VI Polytechnique", city of Ben Guerir is 14,000 USD. For Moroccans, this is very expensive. The average salary in Morocco in 2022 was 121,946 dirham, which is 12,000 USD.
3. Morocco has problems with medical and pharmaceutical staff. According to data in 2020, the number of medical and nurses in the country barely exceeded 1.65 per 1000 people, which indicates a critical level of service of medical personnel - a threshold level of 4.45 per 1000 population. This is 2.8 times lower than the threshold level. Since 2023, from the acute absence of medical and pharmaceutical personnel in Morocco, the government decided to reduce the duration of medical, pharmaceutical education from seven to six years.

Literature

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Summary. Morocco is currently undergoing a reform to achieve the goals of the new health development model and the establishment of the normative health standards adopted by the World Health Organization for 2025. In this regard, by the beginning of 2035, Morocco plans to complete a new model for the development of education. Therefore, the study of a new development model that provides for the provision of medical and pharmaceutical services throughout the country by increasing the number of highly qualified medical workers is an urgent issue. The Moroccan High Council of Education released data showing that in 2018, about 432,000 students dropped out of public school programs without completing a diploma. It should be noted that 78% of them studied under the programs of primary and higher education.

Key words: *medical and pharmaceutical education, medical and pharmaceutical care in Morocco*