

CRISIS OF MEDICAL STAFF EMPLOYMENT WITH HIGHER EDUCATION, MOBILITY IN THE EU AND IMPACT ON REMITTANCES

Valentina VASILE¹
Elena BUNDUCHI²
Călin-Adrian COMES³
Ștefan DANIEL⁴

Abstract: *Migration of doctors is an important phenomenon, affecting especially less developed EU economies, such as Romania. Data from the past decades highlights constant flows of skilled and highly qualified staff with medical training, migrating to work abroad. Some of them are young graduates, others are already employed on the labour market, which increases the employment deficit in the national medical sector. Starting from the contingents of medical graduates and from the evidence of the College of Doctors in Romania regarding work permits abroad, we will analyze the causes of mobility and, on the other hand, effects, including remittances. The results highlight the need to change the paradigm of health care management, to develop an integrated policy of attracting medical graduates and especially those with higher education to the national labour market.*

Keywords: medical staff mobility; remittances; health policies

JEL classification: I11, J61, F24

Introduction

Since the beginning of the century, Romania has experienced a consistent reduction in potential human capital, in several ways:

- migration to work in Europe and worldwide, motivated by higher incomes and better working conditions, but not always jobs correspond to the profile and level of migrant qualification - asymmetric employment with over-qualification;
- increasing the inactivity rate of the working-age population;
- over-qualification in the national economy, present and future demand for the national market, according to CEDEFOP estimates, is mainly directed towards medium or low qualifications and only to a limited extent to higher education (while efforts are being made to increase the share of graduates with higher education - Europe 2020).

Migration of the working-age population is a problem that Romania faces, especially with EU membership. If temporary, short-term migration is viewed both negatively and positively by the authorities, the migration of medical staff is a serious problem. In addition to the fact that doctors usually migrate for long periods of time or permanently settle in the destination country, with no reasons for remittance, there is a shortage of qualified staff in the Romanian medical system.

The causes of medical staff' migration can be analyzed through push-pull factors (Buchan et al, 2006). The motivation for migration appears when there is a large gap between the economic and social push factors in the origin country and pull factors in the destination country. A study by Suci (et al, 2017) among medical graduates, concludes that 84% of those interviewed intend to leave the

¹ Professor dr., Institute of National Economy, Romanian Academy

² Teaching Assistant drd., University of Medicine, Pharmacy, Sciences and Technology of Tîrgu Mureș, Romania

³ Associate Professor dr. University of Medicine, Pharmacy, Sciences and Technology of Tîrgu Mureș, Romania

⁴ Associate Professor dr. University of Medicine, Pharmacy, Sciences and Technology of Tîrgu Mureș, Romania

country immediately after graduation, and 26.5% of them have already begun negotiations with potential foreign employers. Their arguments for choosing external mobility are higher wages, better working conditions and career advancement, showing disappointment to the Romanian medical system.

In this research we emphasize the particularities of Romania's economic development, which motivates migration and present the characteristics of the health labour market, by highlighting the gaps between labour supply and demand.

Economic development and the level of employment in the Romanian labour market

Romania is a part of the EU's less developed countries and has a GDP/capita in PPS (2018, Eurostat), which exceeds only Bulgaria's. At the level of the regions of Romania, the differences in development are important, especially in terms of progress in reducing the development gaps. There is a strong asymmetry between the Bucharest-Ilfov region, which is above the EU average and the other regions, of which North-East has the lowest performance.

Table 1.

GDP/capita in PPS, NUTS 2 regions in Romania in 2005-2016, euro

geo/time	Ranking by GDP/cap	2010	2011	2012	2013	2014	2015	2016	2016/2005
Noth-West	4	11800	11700	12600	12600	13400	14300	14900	1.935
Center	3	12600	12800	13800	13700	14100	15200	15800	1.975
Noth-East	8	8100	7900	9000	9100	9300	9900	10400	1.962
South-East	5	10600	11400	12400	13100	13600	13900	14500	2.042
South Muntenia	6	10700	11700	11000	11500	12800	12900	13400	1.971
Bucharest – Ilfov	1	30700	33600	33500	34200	35500	39200	40400	2.104
South-West Oltenia	7	10000	9900	10900	10800	10800	11800	12400	1.968
West	2	14800	15100	15400	15200	15300	16900	17600	1.956

Source: Author's calculation based on Eurostat-Regional gross domestic product (PPS per inhabitant) by NUTS 2 regions. Available at:

<http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tgs00005>

The development disparities registered between Romanian regions and its positioning in the European rankings determines the working age population to migrate in order to obtain a higher wage differential.

Table 2

Estimates of the productive potential of Romania towards the EU 27, at the horizon of 2070

	2016	2020	2030	2040	2050	2060	2070
The population of Romania aged 25-54, % of the total population	42.7	42.7	37.6	33.8	32.5	32.9	33.3
EU 27, aged 25-54, % of the total population	41.3	40.0	36.6	34.8	34.0	34.0	33.9
The population of Romania aged 15-64, % of the total population	67.1	65.4	63.2	58.6	55.2	54.1	55.3
EU 27, aged 15-64, % of the total population	65.3	64.1	60.9	57,9	56.1	55,7	55,9
GDP growth rate – Romania	3.5	3.4	2.1	1.3	1.3	1.3	1.3
GDP growth rate – EU 27	1.3	1.4	1,2	1,2	1,4	1,5	1,4
Employment growth rate (aged 15-74)	0.1	-0.2	-1.4	-1.1	-0.8	-0.4	-0.3

Growth rate in hourly labour productivity	3.6	3.8	3.5	2.4	2.1	1.8	1.5
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Source: European Commission, 2017, „The 2018 Ageing Report”, INSTITUTIONAL PAPER 065. Available at: https://ec.europa.eu/info/sites/info/files/economy-finance/ip065_en.pdf

According to UN (2017) estimates, the population of Romania will decrease (from 19.7 million in 2016 to about 15 million in 2070) and will age. Even with a rising fertility rate from about 1.54 in 2016 to over 1.7 in 2020 and a further 0.1 percentage point increase after 2030 (which is still below the population's simple reproductive rate), the working-age population will decrease through the low birth rate of the remaining and the net loss of potential birth rates of migrants.

Inside the working age population 15-64, the age group between 25 and 54 will drop sharply, from over 63% in 2016 to below 60% in 2030, with no possibility of recovery by the year 2070, given the fact that the over 65s almost will double as a share in the total population. Under these circumstances, the importance of new entrants on the labour market will increase, being the ones that could take up newly created jobs as a result of robotization and digitization of economic processes.

Reducing labour supply with the potential to support the modernization / robotization and / or digitization processes of the economy will be important, not necessarily through the inability of the university education system to keep up with the demand for skills and specializations, but especially by losing graduates to the national labour market. The restrictive employment conditions (such as asking "work experience" on hiring), the poor performance of skills acquired through school and the unsustainability of knowledge (many are unnecessary in the business environment or are already outdated) for a professional career guide the graduates to the international markets / market segments of globalized work, more attractive and / or better performing.

The latest estimates show an increased labour migration of higher education graduates in Romania, on average about 40%, but with significant differences in specialization areas, where the share of those who consider the migration option exceeds $\frac{3}{4}$ - medicine, services industrial, ICT. Therefore, it is expected that the number of those employed abroad will increase, from over 4 million as at present to around $\frac{1}{4}$ of the total population of Romania. Currently, over half of the employed population of Romania is already working abroad (8448777 people in 2016 - INS).

Table 3.

Labour participation estimates of 25-54-year-old population

Labour participation rate	2016	2020	2030	2040	2050	2060	2070
-Total RO (aged 15-64)	65.6	66.7	65.5	64.2	64.7	65.4	65.0
EU 27 – Total aged 15-64	72.3	73.1	73.9	74.1	74.3	74.4	74.4
Total RO - aged 15-24	28.2	29.1	30.0	29.0	29.2	29.1	29.1
Total RO - aged 25-54	81.9	81.5	81.0	81.1	81.5	81.4	81.3
UE 27 – Total aged 25-54	85.4	85.8	85.9	86.0	86.2	86.2	86.3
Total RO - aged 55-64	44.0	47.5	51.5	49.9	49.7	51.4	50.7

Source: European Commission, 2017, „The 2018 Ageing Report”, INSTITUTIONAL PAPER 065. Available at: https://ec.europa.eu/info/sites/info/files/economy-finance/ip065_en.pdf

Population aging will increase the average retirement age and potential, increase labour productivity, but employment will continue to decline and hourly labour productivity will grow at modest rates of about 3.5%, while the gap with the EU average is extremely high (more than 5 times).

At the same time, it is estimated that the employment rate of those aged 25-54 is slightly reduced, now it is about 82%, again below the EU average.

Estimated performances will generate significant changes in the size and structure of the educational offer, especially for the segment of university education which, in order to meet the

demand of the labour market, needs to be substantially reformed; we can even say radically: from simply redefining the structure of the trainees by field of specialization, to the level of learning and academic performance. Universities, in order to adapt to demand, will need to reform not only their training areas, but also the level and content of the courses, including learning methods. The flexibility and adaptability of learning content and modern learning methods constitute the stringent priorities of institutional development policies for universities, for adequacy and increased labour market integration.

Table 4.

The number of Romanian university graduates in 2014-2017, persons

	2014/2015	2015/2016	2016/2017	Share in total graduates, %
Education sciences	4730	5060	6016	4,97
Arts and Humanities	12250	11898	10973	9,05
Social Sciences, Journalism and Information	12140	11085	10474	8,63
Business, Administration and Law	39625	34572	33550	27,68
Natural sciences, Mathematics and Statistics	7768	6950	6464	5,33
Information and communications technologies	7142	5992	6750	5,57
Engineering, Processing and Construction	22929	22098	22106	18,23
Agriculture, Forestry, Fisheries and Veterinary Science	5471	4895	5340	4,41
<i>Health and social work</i>	<i>14717</i>	<i>12543</i>	<i>14067</i>	<i>11,61</i>
Services	6706	6695	5510	4,55
Total	1334478	121788	121250	100

Source: Author's calculations based on NIS Tempo Online SCL109H. Available at: <http://statistici.insse.ro/shop/index.jsp?page=tempo3&lang=ro&ind=SCL109H>

This graduation distribution by field should be highly correlated with the structure of employment in the national economy, adjusted with the regional asymmetry index - respectively the surplus or deficit and by categories of occupations (employees, employers, self-employed and unpaid family workers). Healthcare training ranks 3rd in the hierarchy of graduates' share, which should ensure coverage of the employment deficit, but the higher net benefits that could be obtained from external mobility for work redirects graduate flows to the external labour market and not to the national one. From the perspective of the employment rate of graduates, Romania recorded modest performances (Chart 1).

The gap between Romania and EU27 on graduate employment rate is oscillating and increasing, in divergence from the EU2020 target. The question arises whether it is simply the training asymmetry in relation to the labour market demand or there is more, respectively, the lack of adequate demand for the offer, associated with the decision of the graduates to seek more advantageous jobs on the international labour market, the motivation being double- higher wages and then professional career.

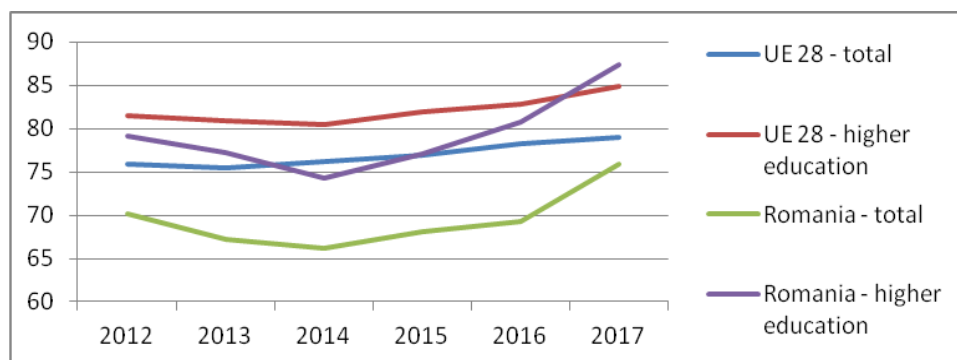


Chart 1. **The employment rate of higher education graduates in Romania, compared to the EU average**

Sursa: Author's calculation Eurostat Statistics Explained, https://ec.europa.eu/eurostat/statistics-explained/index.php/Employment_rates_of_recent_graduates#Employment_rates_of_recent_graduates

If we compare with countries like Spain (from the same group of countries with a 60-70% employment rate), then we can appreciate the relatively more advantageous position of Romania by placing 8.4 pp above the level registered in 2016; but if we take into account the evolution of the last years, then Romania is disadvantaged because the performance is not only reduced on the interval (only +1.6 pp, compared to Spain, which advanced by 3.9 pp in 2016 as compared to 2012) but also oscillating (in 2014 the fall was at 74.2%). It cannot be motivated by the difficulty of a certain level of performance, because Germany, for example, has progressed on the national total by 1.3 percentage points (from 88.9% to 90.2%) and for the higher education the 93% threshold, higher than that achieved by Romania by more than 12 pp (Table 5). It is therefore necessary to highlight and analyze in detail the policies of the universities and the support at national level in order to ensure a higher degree of occupation and as soon as possible after graduation.

Table 5.

Employment rate of 20-34 aged in the first 3 years after graduation (% in total)

2020 EU 28 target= 82%	2012	2013	2014	2015	2016	2016/2012, (pp)
EU 28-total	75,9	75,5	76,2	76,9	78,2	+2,3 pp
EU 28 - higher education	81,5	80,8	80,5	81,9	82,8	+1,3 pp
Romania - total	69,8	67,2	65,9	68,0	69,1	- 0,9 pp
Romania - higher education	79,1	77,2	74,2	77,1	80,7	+1,6 pp
Spain (same group with Romania, 60-70% national average)	60,4	55,9	61,1	62,2	65,6	+4,4 pp
Spain - higher education	68,4	66,8	68,6	68,7	72,3	+3,9 pp
Germany	87,1	88,2	88,4	88,9	88,7	+1,3 pp
Germany - higher education	93,8	94,1	93,1	93,3	93,1	-0,7 pp
Greece	42,6	39,6	44,0	45,0	49,3	+6,2 pp
Greece - higher education	47,7	45,4	47,4	49,9	55,0	+7,7 pp

Source: Author's calculations based on Eurostat data. Available at:

https://ec.europa.eu/eurostat/statistics-explained/index.php/Employment_rates_of_recent_graduates#Employment_rates_of_recent_graduates

Although the employment rate of graduates with higher education in the first 3 years of graduation is rising, the vacancy rate is steadily increasing. In the health sector, the vacancy rate exceeds 2.5% starting in 2016.

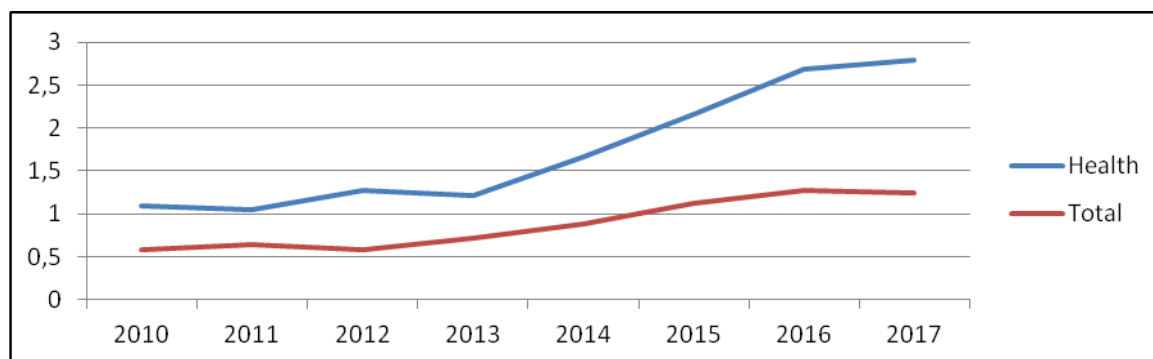


Chart 2. **The rate of vacancies in health and social care in 2010-2017**

Source: NIS Tempo Online LMV101B. Available at:

<http://statistici.insse.ro/shop/index.jsp?page=tempo3&lang=ro&ind=LMV101B>

It appears that the increase in the number of graduates in the health care sector (bachelor + master + doctorate) has no effect on the jobs vacancy rate. Young people who form themselves in big university centers, but come to practice in small towns hospitals, realize that they can not develop professionally because hospital equipment is missing.

The explanation of this phenomenon may be due to the external migration of young graduates or already employed, being motivated by the wage differential, working conditions, career advancement opportunities. Thus, at the level of 2017, Romania has a deficit of over 50000 doctors and 130000 nurses.

Table 6.

Number of Romanian medical staff in mobility during 2011-2016, persons

	2011	2012	2013	2014	2015	2016
Physicians	44547	42516	41877	39559	48056	50136
Nurses	118065	120267	123377	126985	130908	134452

Source: Author's calculations base on Eurostat data – Health workforce migration. Available at:

https://ec.europa.eu/eurostat/data/database?node_code=hlth_rs_wkmg

Among the preferred destinations by Romanian physicians, we see: France (4324 doctors in 2016), where the share of Romanian doctors exceeds 17% of total foreign-trained physicians, Germany (3661 doctors in 2016), holding a share of almost 10% and UK (1 087 doctors in 2017). The most impressive share is held by nurses working in Italy (11,204 nurses in 2017), more than half of all foreign-trained nurses.

Table 7.

Romanian physicians and nurses in mobility by destination country in 2010-2017, persons

Destination countries	2010	2011	2012	2013	2014	2015	2016	2017	Mean wage diff 2016
Austria									5.07
Physicians (stock)	16	22	23	31	51	53	51	55	
Share in foreign-trained physicians	1,2	1,6	1,5	1,9	2,7	2,7	2,5	2,5	

Belgium									5.40
Physicians (stock)	566	744	866	975	1064	1172	1247	1300	
Share in foreign-trained physicians	12,9	14,8	15,2	15,7	15,8	17,0	16,9	16,7	
Nurse (stock)	298	421	690	888	1 068	1 224	1 329	1 431	
Share in foreign-trained nurse	12,32	14,81	18,52	19,18	19,74	19,97	19,68	19,83	
France									4.36
Physicians (stock)		2726	3118	3431	3734	4040	4324		
Share in foreign-trained physicians		15,3	16,4	16,9	17,1	17,4	17,7		
Nurse (stock)	68	115	147	164	179	193	203		
Share in foreign-trained nurse	0,5	0,8	0,9	0,9	1,0	1,0	1,0		
Germany									5.43
Physicians (stock)	1269	1840	2559	3042	3363	3503	3661		
Share in foreign-trained physicians	6,3	8,1	9,8	10,5	10,6	10,1	9,6		
Ireland									7.19
Physicians (stock)		226	286	341	487	625	723	733	
Share in foreign-trained physicians		3,4	4,8	5,5	7,1	7,8	7,9	7,6	
Israel									
Physicians (stock)	1 206	1 245	1 252	1 263	1 308	1 389	1 444	1 539	
Share in foreign-trained physicians	7,8	7,9	7,9	7,9	8,2	8,6	8,8	9,3	
Italy									4.98
Nurse (stock)	10 570	11 215	11 531	11 731	11 820	12 159	11 714	11 204	
Share in foreign-trained nurse	46,4	47,5	48,2	48,7	49,3	50,1	50,3	50,4	
Sweden									6.09
Physicians (stock)	421	485	564	628	735	817			
Share in foreign-trained physicians	4,9	5,3	5,8	6,1	6,7	6,9			
United Kingdom									5.65
Physicians (stock)	435	582	639	764	852	917	994	1 087	
Share in foreign-trained physicians	0,9	1,3	1,4	1,6	1,7	1,9	1,9	2,1	
Nurse (stock)					3 759	6 026	8 151	7 732	
Share in foreign-trained nurse					4,1	6,0	7,7	7,5	

Source: Author's calculation OECD (Health Workforce Migration) and Eurostat (Mean monthly earnings). Available at: <https://stats.oecd.org/Index.aspx?QueryId=68336#>
http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=earn_ses14_20&lang=en

The main motivation of migration and selection of destination countries is the wage differential. Available Eurostat data shows that at the level of 2016, the average wage differential in the health and social care sector was 4-5 times higher than that obtained in Romania.

Table 8.

The number of medical staff per 100,000 inhabitants

	2010	2011	2012	2013	2014	2015	2016
Romania							
Physicians/100000	243,51	245,69	267,63	270,65	275,90	283,16	290,85
Nurses / 100000	847,51	842,02	903,54	924,43	945,93	985,45	1029,46
Austria							
Physicians/100000	478,02	482,38	489,54	498,88	504,90	509,69	512,96
Denmark							
Physicians/100000	383,6	387,75	390,93	392,31	392,31	394,39	
Nurses/100000	2762,34	2744,82	2764,36	2785,82	2803,52	2814,40	
Belgium							
Physicians /100000	291,34	291,30	292,80	295,09	297,55	301,75	307,41
Nurses/100000	1887,73	1978,14	2091,71	2198,61	2317,75		
France							
Physicians/100000	327,23	330,77	331,83	332,56	333,73	333,82	334,62
Nurses/100000	1450,84	1486,43	1543,19	1584,37	1615,52	1643,17	1675,56
Germany							
Physicians/10000	406,11	416,32	423,71	436,97	449,00	452,52	457,70
Latvia							
Physicians/10000	317,84	336,41	339,33	339,55	338,30	336,13	336,92
Nurses/010000	579,13	615,25	605,85	612,18	609,75	597,36	593,61

Source: Author's calculation Eurostat (Health care staff). Available at:

http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=hlth_rs_prs1&lang=en
http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=hlth_rs_prsns&lang=en

As a result of the increase in the number of Romanian physicians who migrated, health services are provided by only 50136 doctors in the year 2016, although the number of medical graduates is growing. This means that there are 290 doctors on 100000 population.

Physicians in Romania are overwhelmed, aging and concentrated in the big universities centers, forced to deal with old appliances and long lists of patients who, although paying health insurance, do not have a fair access to health services, as is the case with patients from other European countries.

According to Eurostat data, Romania is on the last positions on the number of doctors per 100,000 inhabitants, only Poland and Albania are doing worse (Eurostat, 2018). On the other hand, there are over 500 physicians per 100,000 inhabitants in Austria, 450 doctors per 100,000 inhabitants in Germany, while in Latvia there are more than 336 doctors per thousand inhabitants. As for the number of nurses per 100,000 inhabitants, Romania has only half of the number of other states, around 1,030 nurses / 100000 inhabitants.

Migration and remittance model for medical staff

The migration and remittance decision can be analyzed from the perspective of the push-pull factors of the economic and social dimensions:

Economic factors

Push factors

- a) Low wages;
- b) Impossibility of career advancement;

Pull factors

- a) Higher incomes, which would help to reduce the poverty of the family left at home;

- c) Low living standards coupled with restrictions on funding opportunities, especially for young families;
- b) Possibility to advance in career
- c) Better living conditions;

Social factors

Push factors

Higher unemployment rate (Vasile V., 2014).
High level of poverty;
The impossibility of accessing quality medical services for people in rural areas;
The weakness of the educational system;
Lack of public policy measures aimed at supporting young graduates;

Pull factors

Low level of poverty;
Ensuring access to high quality medical services;
Access to higher education institutions;
Political stability.
Respect for human rights;

Besides the general factors determining the decision to migrate and to remit, in the case of medical staff, we also find the following specific features:

- the motivation of physicians migration is primarily for the pursuit of the profession and career progress in terms of performance and the availability of medical technology necessary for the specializations in which they are trained;
- doctors have a multiannual and / or definitive mobility period;
- doctors' households living standard is medium;
- predominantly migrate young / young graduates, who, in order to define the job according to the profession, migrate individually (without family) and the intention of migration is from the beginning motivated by comparatively attractive labour and wage conditions than in Romania;
- those migrating from the employment situation (nurses and doctors) have as an argument, the wage differential and the working conditions, and are willing for a certain period to change their training for better workplace accommodation in the destination country, the initial decision being multiannual migration;
- the lack of equipment in state hospitals, especially in rural areas, in order to ensure that investigations are carried out as well as interventions.
- remittances sent by doctors / nurses are primarily targeted to the family left at home and have a tendency to stagnate and to decrease as the family reunites in the country of destination;

The flows of remittances sent by doctors to Romania should be analyzed in the light of the trend of returning to the country of origin or family reunion in the country of destination. Those who intend to return to Romania transfer large sums of money to invest in properties, but their number is not very high. A study (Sechet et al, 2015) conducted among Romanian medical staff in France, the country with most Romanian physicians, mentions that more than 72% of the interviewed physicians aim to establish their residence for a long period of time or even permanent. They invest more money in France than in Romania. In total, 65% of them send money to Romania, but only 25% send regular monthly payments. Physicians performing regular remittances are mainly those who have been in France for a short period of time and whose family members have remained in Romania or who have poor family situations: support for older relatives, sickness or inability of members to work.

Therefore, the benefits of physicians' migration correlated with remittances can not be considered sustainable, because this category of migrants does not aim at short-term migration associated with monthly and constant remittances.

Thus, we note that, in addition to push-pull factors, the medical staff' decision to migrate and remit is formed by a mix of personal and professional factors. More than the economic factors materialized in the wage differential, bad working conditions in the medical system in Romania and

the lack of equipment which do not allow the correct fulfillment of the obligations towards the patients (Boncea, 2014) are the main factors that contributed to the medical staff crisis from Romania.

Conclusions

Migration among medical staff involves the exodus of highly qualified staff, which has an impact on the development and proper functioning of the medical system as well as on the health status of the Romanian population.

The main causes of medical staff migration are:

- The wage differential that they would earn in the destination country compared to the one in Romania. Mostly Romanian doctors chose Western European countries, which earns them a salary 5 times higher than in Romania.
- Poor work conditions associated with the poor equipment of hospitals, especially in rural areas (Tilea et al, 2013).
- Strategy lack on reforming health institutions.
- The lack of a correlation between the competences acquired in the university environment and those required at the workplace.

In order to reduce the migration of medical staff, the authorities should rethink the policy of attracting / retaining doctors and nurses and take into account the following measures:

- The remuneration of medical staff according to performance and efficiency.
- Implementing a strategy in the university environment, which would aim at correlating the necessary skills on the labour market with the gained theoretical knowledge.
- Investments in modern equipment, aiming the reduction of gap between medical institutions in rural and urban areas.
- Providing attractive working conditions for medical staff, especially for attracting and maintaining them in rural areas.
- Skills and knowledge exchange between Romanian and return medical staff (Boboc et al, 2011).
- Facilitating access to internal and external funds, aimed at financing investment projects in equipment and work infrastructure, as well as staff training programs.

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