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Analysis of labor market and employers` demands;

The labor market research has (may have) two principle benefits and/or functions for universities: (i) Provides the University with information on existing at the labor market workers' type and/or their lack and/or demand on characteristics required for the University new personnel (abilities/skills, "willingness to carry out the professional activity independently and/or under guidance"); That allows the university to develop new programs, to plan students cohort for existing programs, and/or determine existing program improvement goals, topics, to arrange most powerful educational tools for their (demanded abilities/skills) delivery; (ii) In case of the pro-active university (ideal situation) it "creates" new places for employment. In the context of this type of research, it is also important that modern globalization, the democratization, and internationalization of higher education, allow considering for the employment possibilities the local, as well as international labor markets; particular region or location (city, village), even type of medical service (hospital, polyclinic), diversity of further specialization (clinical or scientific activity, public healthcare, epidemiology, etc.) and opportunity for graduates to make such diverse choice; All of above mentioned make such kind of projects (employment market research) extremely large-scaled, require large data analysis (from international organizations, national governmental institutions), field work, as well as large-scale internal research of public institutions and universities; So that the study has beneficial effects in terms of practical application. It is also necessary to consider the periodical repetition of these types of studies (and also development: research design, etc.), as the "subject" (labor market) is not static, as well as the types and the scale of services (in our case, the need for development of educational programs), the expectations, needs and desires of the society and students are changing rapidly.

The goal of the DTMU research is to identify and analyze potential employment opportunities on the local and international labor markets for graduates of the Medical Doctor (MD) Program graduates

1. How demanded will be its graduate (Georgian and foreign student): at (I) the local and (ii) international market?

2. How adequate are students' expectations/desires for market demands?

3. What are additional requirements of the employer to the graduate's employment (including residency programs) in conditions of high competition? [(I) To analyze and define the need for implementing program changes; (II) For planning required for personal career growth measures].

Research objectives:

- ✓ Description of the geography for MD program graduates potential employment, analysis, determination of target (employment opportunities) countries
- ✓ Description and analysis of existing services in the target country (including Georgia)
- ✓ Analysis of the Government of Georgia strategies in relation with demands for human resources (medical doctors) (workload, specialization, requirements for services accreditation/licensing and/or expected changes in accreditation/licensing conditions, quality, etc.)
- ✓ Students expectations/plans study for employment and analysis of results
- ✓ Study of the opinion of healthcare providers in Georgia regarding the quality of human resources, their demands, and strategies
- ✓ Main reasons on disappointment with medical services and their use for the program development.

At this step, developed/planned research methodology consists of some stages and involves:

Stage 1. Situational analysis (descriptive research)

Identify the total number of students, foreign and Georgian students, the number of graduates. To describe the correlation between the health sector and health system in case of Georgia, India, Nigeria, Nepal and other countries, in case of foreign students origin, as well as global scale.

Research of potential employment markets from academic and non-academic sources (Such as searches on the Internet and web pages consideration).

Stage 2. Analysis of the need for quality medical education in the country: Employer's requirements for high-level professionals (doctors in this context) as a primary provider of quality medical services and patient safety.

Qualitative research on quantitative statistical indicators of health care Grounded Theory Analysis (Glaser, Strauss, 1967).

First of all, the stated stage involves semi-structured interviews with some of the healthcare sector principal representatives (regulatory bodies and services providers) to analyze such problems of human resources (as care for patients and their safety) that are relevant and require high-qualified workforce. The first working list of 12 respondents is drawn up, but data gathering will continue.

The first working list of 12 respondents is drawn up, but data gathering will continue. The next step involves interviews with medical education experts in order to identify reasons for the massive adoption of medical students by medical schools, its context, and consequences (existing, short- and long-term) for medical education workforce and medical students.

Semi-structured interview questions and guidelines have been developed and will be tested on volunteers to get feedback from young specialists and for improvement purposes if needed.

Health indicators will be adopted from existing third party databases.

Stage 3. DTMU analysis for current and strategic readiness of high-quality medical education for the future human resources of the health sector.

Expected Results of Research:

- ✓ The research will assist the university (as well as other interested stakeholders) to find out demand for MD graduates (Georgian / foreign students) on the local and international markets.
- ✓ Results of the survey will help the medical education specialists to define and analyze the needs of MD programs
- ✓ DTMU students' expectations for their career growth required for the development of the relevant algorithm and to offer students.
- ✓ Results of in-depth analysis of requirements for students employment, in particular, their involvement in the residency programs of targeted countries - Development of recommendations for the purpose of personal advancement promotion in pre-diploma education
- ✓ Develop new more accurate/relevant research design for further studies based on analysis of research results.

Current / first research (preliminary) data of the labor market

The purpose of this phase of research was to analyze the needs/requirements of the MD program based on existing databases.

Research objectives:

1. Medical and alternative employment areas for MD graduates as preconditions for student career promotion and implementation of program changes
2. Demand for human resources in medical services in Georgia and the World

Capacity for employment and professional development for persons with MD academic degree

Upon successful completion of 6 years (360 ECTS) educational program for students at David Tvildiani Medical University, academic degree of Medical Doctor awarded. At present, there are 737 active medical students, of which 368 are foreigners (267 from India, 81 Nigeria, 10 US, 4 Pakistan, 2 Egypt, 1 Nepal, 1 Israel, 1 Netherlands, 1 Germany) and 369 Georgians. 110 students (90 Georgian and 20 foreigners) completed successfully MD program in 2013-2017.

MDs have the opportunity to develop their career in a broad variety of directions. Of course, the leading direction is to continue the career in the clinical direction as a doctor in a hospital. Residency (or similar, internship e.g. in India) upon completion of the program or as a doctor's assistant immediately upon completion of the program; Alternatives considered as Public Health Worker, Researcher, Journalist in Health Care, "Medical" direction Teacher, Medical Expert, Paramedics, a Researcher in Medical / Pharmaceutical direction, Sports Medicine, Medical Sales Representative, Medical Legal Advisor, Doctor of Professional Diseases, Complementary and Alternative Medicine Practitioner, Health Promotion Specialist, Insurance Market, Transplantation Coordinator, Private Business Consultant, etc. (Alternative career options for Medics, https://www.sheffield.ac.uk/polopoly_fs/1.425853!/file/medic)ineoptions.pdf

Previous surveys have shown that about half of the students choose a way to obtain narrow specialization when 20% become a general practitioner. The resting 30% continues nonclinical careers, including almost 10% in basic medical sciences (Kumar et al, 2014).

Also, the choice of specialization of clinical practice also changes over time and varies dynamically [11] (Newton, 2003). In addition, as literary data show these abilities/ demands/alumni choice also variable not only between countries (access to medical education, population density, etc.) but for other reasons: An example of one of the most "high" influences in the United States - the lesser interest of MD students in the field of primary care (family physician) the reasons for which in the US is the high level of practicing nurses, providing primary health care services by the nurse as an assistant to a family doctor and / or a clinical doctor; Development of sub-specialties and the need for specialized treatment and use of new medical technologies; This reduced the number of applicants for career choices (family physician) in US students [11] (Newton, 2003); However, it may be of interest to graduates from foreign countries (Georgia, India, etc.) as there is a demand for different services and/or different requirements for these services. Which also confirms the need to study existing services, as well as their tendencies in different countries (particularly within the scope of this survey), including the purpose

of making correct recommendations.

Medical and healthcare human resources market in Georgia and in the world

Main stakeholders in this direction - main groups of employers are as follows

1. Hospitals
2. Primary healthcare institutions
3. Nursing care facilities
4. Pharmaceutical companies

According to the data of the Ministry of Labor, Health and Social Affairs of Georgia 01.01.2016 - 15.12.2016 at the Governmental portal: hr.ge were 2041 vacant positions in healthcare and neighboring sectors, and in 2015 the number of vacancies was 2500. The healthcare sector is the fifth employer in the country and the employment rate in the sector is 5.1%. *(Labor Market Analysis of Georgia, Ministry of Economy and Sustainable Development, 2017)*

According to the National Center for Disease Control and Public Health (NCDC, Health Care Brief Statistical Review, 2015), there are 569 physicians in Georgia on every 100 000 of the population (in total 21 201 doctors, including 1 256 in rural places). At a glance, the number of doctors in Georgia seems to be high compared to other countries in the world (as high-income, medium and low-income countries). However, according to this data, it is unknown how many of them are employed, how many unemployed and why. Also not clear employers strategic plans. There are 260 hospitals (11 675 beds) and 284 primary healthcare centers (polyclinics) in the country. According to the Ministry of Labor, Health and Social Affairs of Georgia, there are 1 790 outpatient clinics, 362 hospitals (16 510 beds in total) and 57 family doctors centers. (http://cloud.moh.gov.ge). Overall, 10 971 954 visits to Doctors registered in the country.

As for the pharmaceutical market structure, it is following: 68 manufacturer and more than 1300 retailer / pharmacies. The number of employees in this sector was 13,499 in 2014 when it was noticeable growth (more than 1000 employees compared to 2013), so it is likely that 16,000 people are employed in the sector now. The number of people employed in pharmaceutical production could not be verified (Transparency.ge, The Pharmaceutical Market in Georgia). Also unknown how many MDs' employed in the pharmaceutical industry.

Less known,

Complementary and alternative medicine (CAM) is another direction for the employment of doctors. As of today, it is impossible to determine the correct number of CAM employees, as well as impossible to determine how many of them are MD academic degree holders. Possible to assume that from CAM practitioners, up to 1,000 are MD academic degree holders.

While the number of doctors in Georgia compared to the population is relatively high, totally opposite picture is in countries of foreign students origin.
In India - 70 doctors per 100,000 population (total number of doctors in India 750 000). The lack of physicians is so sharp in the country that India has reduced the duration of curriculum for a year even to increase the number of graduates. Almost the same picture in Sri Lanka and Nigeria (the second by the origin of foreign students country) is worse than this - 38 doctors on 10 000 inhabitants. In one

more country of origin of foreign students - Nepal, the situation is most confusing - only 21 doctors per 100,000 inhabitants.

According to the American Medical College Association, the US is also expected to have a lack of doctors. According to their bulletin [9], the demand for doctors is increasing faster than "supply". Although doctors' "supply" will have a predictably growing tendency in 2013-2025, the demand for them will be significantly increased. The increase in demand for doctors is estimated to be 17% in the case of an increase in population growth/aging. By 2025 the demand for doctors will exceed 46,000 - 90,000. In total, the lack of physicians in 2025 will be different from specialties and include - the deficit of primary care physicians 12 500-31 000; Non-primary care physicians 28 200 - 63 700, Including medical specializations 5 100 - 12 300; Surgical Specialties 23 100- 31 600, Other Specialties 2 400 - 20 200. Some interested US individuals considered to reduce the duration of MD programs for up to 3 years [10] (Raymonds)

Within the framework of the survey following healthcare providers web pages have been studied:

1. Medical Corporation "EVEX" (evex.ge)
2. Tbilisi Central Hospital (only Facebook page)
3. Regional Healthcare Center (only Facebook page) 4. Aversi Clinic (aversiclinic.ge)
5. MediClubGeorgia (mcg.ge)
6. Khechinashvili University Hospital (tbilisihospital.ge)
7. New Vision University Hospital (newvision.ge) 8. Todua Medical Center (clinicalmedicine.ge)
9. Zhvania Pediatric Academic Clinic (zhvaniaclinic.ge)
10. Gudushauri National Medical Center (gudushauri.ge)

As a result of this search, specific information on the human resources demand not revealed, as the majority of websites have advertising character.

Governmental, non-governmental and international organizations:

1. The Ministry of Labor, Health, and Social Affairs of Georgia (www.moh.gov.ge)
2. The National Center for Disease Control and Public Health (www.ncdc.ge)
1. UN in Georgia (www.ungeorgia.ge)
2. Georgian Medical Specialties Association (www.gams.ge)

Significant focus on these platforms is on providing high-quality medical services, which is not surprising, as the official data shows 300 cases of legal responsibility for doctors in 2017. Including 207 cases of written warning and 93 temporary restrictions on medical activities. A relatively lesser medical error observed in 2016 - 198 sanctions, 105 warnings and 93 temporary restrictions on the medical practice. Even fewer physicians professional responsibilities came in 2014-2015: 97 warnings out of 174 cases and 77 restrictions on the medical practice. Remarkable that all these cases were studied on the basis of patients complaints under conditions when existing quality assurance processes failed to ensure relevant control. Visible growth trend may occur due to submitting more complaints by

patients, raising quality assurance and/or medical errors.

In 2014, life expectancy in Georgia was 68.8 in men and 77.3 years for women. This indicator is higher than the average CIS area for men (66.4 years for males and 76 for women), but lower than in Europe (74.2 years for men and 80.8 years for women, 2013). The difference in life expectancy between men and women was 8.5 years in favor of women, the largest in the European region (6.7 years) and less than in CIS area (9.7 years).

Healthy life expectancy in Georgia has increased by 66.4 years for both sexes, 63.4 years for men and 66.4 years for women, 2015 (13). This indicator is lower than the same indicator (14) in the same year in the European region, which constituted 68 years for both sexes, 64.1 for men and 70.5 for women. Data above shows that increase of MD number is not prerequisite for ensuring quality medical care in Georgia and selection should be based on the "quality" of the candidates during the "competition".

By the WHO Global Strategy on healthcare sector human resources: Workforce 2030, WHO and World Bank predicted more than 40 million new jobs to be created in healthcare and social security sectors by 2030 in comparison with 2013 when the research was carried out. These jobs include 4 million positions for medical doctors. Considering this indicator, it is important to note that the lack of physicians in the world will still be 2.3 million physicians (mainly in Africa and Asia), meaning "supply" will still be less than demand. In 2013, the shortage was 2.6 million medical doctors. As the population and economic growth, as well as the demographic and epidemiological changes, it is predicted that the demand for the health sector workforce will increase in the next decades. Also, the nature of health services will be changed to cover the growing range of patient services. However, the compliance with the healthcare sector's workforce needs, demands and "supply" in national, regional and global levels is unequal that result in uneven distribution and placing of professionals. To achieve the goal of ensuring universal access to health care at all levels requires the adequate and equal distribution of workforce in the health sector between countries and within countries. Observations also show that the migration of health care workers is increasingly intensive, which anyway cannot solve the problem of equal distribution and lack of personnel in WHO Regions (WHO, 2014) [12]

Labor market research 1 preliminary data confirms that

(i) Demand for MD graduates is high worldwide; herewith, this demand is unequally distributed among the countries and is very high in so-called targeted countries (countries from which students "come" to DTMU);

(ii) In Georgia, despite lack of deficiency, demand for qualified personnel is high; The general national indicator of MD graduates migration (leaving the country) is unknown, at the same time the DTMU graduates employment abroad is high;

(iii) In the country (and all over the world) there is a demand for highly competitive pre-diploma medical training programs (as well as post-diploma);

(iv) Results of the survey obtained to confirm the need for further studies to implement the recommendations for implementing changes in the MD program and for the personal career promotion of students;

(v) The outcomes of this stage of research in Georgia, as well as in developed countries and in so-called targeted countries (countries whose citizens are provided with MD program in Georgia) are required

to study existing medical services and their development trends for developing proper recommendations (see iv).

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