



The Recent Challenges of Medical Education in Georgia and the Ways to Deal with - Our Approach

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Abstract

It is generally believed that a global education crisis occurs within the health care occupations. There are several reasons that cause this condition, such as the discrepancy between educational systems and basic needs of the health care system, the rapidly-changing, complicated and dangerous environment (e.g., The COVID-19 pandemic) the problems with the disability of applying students' theoretical knowledge in a harmless clinical environment, especially in the condition of mentor's scarcity. At least – out of date system of medical education, where the emphasis is on getting knowledge and not its practical application. The article concerns our viewpoint and the ways, medical education can be improved upon in Georgia.

Keywords: Global challenges of medical education, integrated curriculum, outcome-based education, educational strategy, assessment tools, quality assuring of assessment

Introduction

Within a period of the last decades, medical education has become a distinct and highly professionalized institution. Worldwide, national and international societies have been founded, all over the world, medical education conferences are organized and attended by thousands of people, and new textbooks and journal publications on how to teach and assess medical education appear in high frequency (Fred C.J et al., 2012).

Medical education and the health professions are facing multiple global challenges that are context-specific yet are patterned across contexts. These challenges have been described as wicked issues that defy known solutions and are viewed differently by different people. Three simple approaches, inquiry, pattern recognition, and adaptive action, are presented as a way forward to tame wicked issues and take informed action (Stewart , 2021).

Ronald Harden (2006) says that almost every country has three ambitions for higher education. These are greater access; improved standards to compete in international markets; and equitable access without socio-cultural and ethnic discrimination. Harden sees globalization as the answer to these quests. To him, globalization which will lead, is a powerful tool available to learning organizations.

The modernization of medical education is closely related to economic growth and is connected to the transformation of the world by technology. The development of medical education as a disciplinary field fits into the structure of modernity in a typical way. Many countries struggle to modernize in the era of globalization. One feature of modernization is the drive for the development and application of scientific knowledge for human betterment, improved health, and poverty reduction. To this end, medical students are a strategic group in meeting the expectations and visions in health care for many countries (Fred C.J et al., 2012)

A premise of the worldwide strong focus in medical education on standardization of instructional techniques, instructional designs, and competency-focused assessment methods is believed that medical education is culturally indifferent, and that a set of shared values constitutes the backdrop from which the successful implementation and export of innovations in medical education worldwide take place (Schwarz MR. 2001). Nowadays medical schools are mandated priority tasks and objectives not only in Georgia. This refers especially to post-soviet countries regarding the process of integration in the global educational space. Tendency needs to be reviewed not only from the perspective of educational programs, but control criteria of educational process quality too.

Medical education recent condition in Georgia

Georgia is in a transitional period and educational concepts are supposed to be changed from the post-soviet traditional system to a new type of approach. It is true that Georgian medical education has excellent traditions but its present condition is a little complicated. There are many high schools that offer medical education which they view only as a business. But what good medical education demands first and foremost is experience and traditions.

Most universities carry out the educational process using traditional curricula (Figure.1). Overall, there is a noticeable tendency for modernization. In contrast to other post-soviet countries that are not yet members of the Bologna Process and therefore their universities fulfill educational processes using traditional curricula, most Georgian institutions strive for innovations.

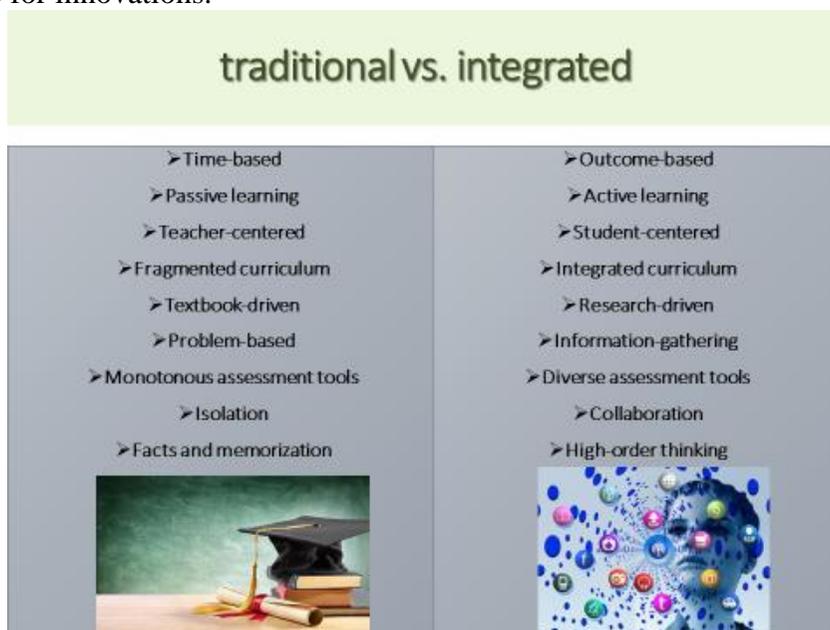


Figure.1. Difference between the traditional and integrated curricula

According to statistical data, we have more alumni (medical doctors and dentists) than is required. That's why the employment index is critically low, but competition is very high. In contrast, the deficiency of intermediate medical personnel is a big deal.

As for not-so-good elements, the major problem is the insufficient academic "quality" of university entrants, which is caused by awful entrance exams (the barrier is low and easy to pass). That's why, it's not easy to overcome the program, especially for first-year students.

As for admission pre-requisites, there are several those for the students to gain admission to the educational program. Firstly, students must be in possession of a high school diploma or equivalent educational qualification. Secondly, students have to pass the unified national admission examinations. No Georgian university has entrance exams /tests.

We think the domestic peculiarities of a nation are of great importance - the problem regarding vocational guidance - when the choice is often made not by a potential future doctor but by parents, grandparents, and others. That's why the motivation of students is not sufficient.

Because of the above-mentioned problems, the teaching process might not be very fascinating and the outcomes we have to reach may become unachievable. Often, we are trying to do our best, but the result is insufficient. The number of factors here is very important - low motivation of students, badly organized studying process, unreliability, infeasibility, and invalidity of some of the assessment methods. The assessment is one of the most cogent motivators of students' learning. Research findings point out that students' perceptions of assessment have considerable influence on their approaches to learning and studying (Struyven K et al., 2005) Especially, authentic methods of assessment, those which more closely resemble the ways in which skills and knowledge are used in the real world, can help to motivate students above and beyond more traditional methods of assessment. It is generally believed that a global education crisis occurs within the health care occupations. There are several reasons that cause this condition, such as the discrepancy between educational systems and basic needs of the health care system, the rapidly-changing, complicated and dangerous environment (e.g., The COVID-19 pandemic has put all that into sharp relief, and many of us are having to make quick and sometimes reactive adaptations to our best-laid plans) (McKimm,2020). the problems with the disability of applying students' theoretical knowledge in a harmless clinical environment, especially in the condition of mentor's scarcity. At least – out of date system of medical education, where the emphasis is on getting knowledge and not its practical application. This problem might concern not only developing but also developed countries. In any case, the criteria of countries' success are healthcare and education system quality. In Georgia sectorial characteristics aim to work out and implement the national programs that are in accordance with international standards and support recognition of qualification and mobility of alumni this way.

What sort of graduate do we need? – besides having fundamental knowledge in more than just biomedical sciences, the graduate should possess the latest clinical advances, practical and scientific skills coupled with fundamental knowledge across the whole spectrum of natural sciences.

He/she must be able to take responsibility for the health and life of the patient. The graduate must have a systematic scientific outlook and understanding of how to implement the integrative approach in solving professional problems, should realize a medical problem, and feel empathy for the patient.

So, the need for more and better training in the medical education system is linked with the significance of awareness of epochal challenges. On the one hand, it is dictated by the transition of the high school to the new paradigm. On the other hand, the present condition in biomedical sciences requires the application of an integrated approach to studying the complicated biological processes that appear in the body, of mastering new and innovative approaches to diagnosis, preventing, and treating diseases. Needs of modern medicine point to the need for the implementation of new courses related to finding diagnostic techniques in patients' genetic, constitutional and biological peculiarities.

Now about our approach, the ways, medical education can be improved upon in our country:

- First of all, **choosing the right student** can ensure progression to graduation. One of the key tasks of the modern educational system is providing continuity at all stages of education. It has now become apparent that improving education is not only high school's target, that systemic knowledge needs to be developed in general education schools. Formation of holistic knowledge of the universe and human in secondary school graduates becomes the first, but the essential stage of medical education. New approaches to higher medical education need to establish a mechanism of vocational guidance work during pre-university school. Ways to provide substantial assistance to pupils oriented on life sciences are different: establishment of specialized schools with a biomedical focus, involvement of schoolchildren in scientific research, and establishment of Foundation Medicine Courses.

The best way to solve this problem is the creation of one-year Foundation Medicine Courses like in European countries which equip students with the appropriate academic grounding. This would significantly increase students' readiness to overcome high school educational programs. Another way to improve this problem in our estimation is to implement and conduct admission exams for medical schools that help medical school admissions offices to select the most suitable candidates, and assess their problem-solving skills, critical thinking, and knowledge of natural, behavioral, and social science concepts, and principles.

- Making **the right choice of educational strategy** is crucial. In today's environment, outcome-based education is considered to be

one of the most effective models of medical education. Outcome-based education (OBE) was propounded by William Spady in the 90s to bring the focus of formal education to what the students learn rather than what they were taught. OBE is a system of education giving priority to ends, purpose, accomplishments, and results. All decisions about the curriculum, assessment and instruction are driven by the exit learning outcomes the students should display at the end of a program or a course (Rao N. J, 2020).

It takes into account the requirements of the National Health Care System and is simultaneously based on the international standards of modern-day medical education that will in the long term facilitate the development of the most competitive and successful medical doctors.

There has been a great deal of interest in educational strategies in the last decade. Rethinking approaches to medical education is of great importance in curriculum planning. Outcome-based medical education implies the development and implementation of an integrated curriculum. The objectives of Outcome-based studying must be presented by three cycle qualification model:

Cycle 1- “What the future doctor should be able to do” must describe the following competencies:

- Clinical skills;
- Patient investigation;
- Patient management;
- Health care and disease prevention;
- Communication skills;
- Collecting and summarizing information.

Cycle 2- “What are the Students' approaches regarding the problem solving “must describe the following competencies:

- In-depth/systemic knowledge of modern biomedical and clinical sciences;
- The fundamental ethical and legal values and professional awareness in the context of social responsibility;
- Students' ability to attain various professional specializations and certain clinical thinking in order to ensure not only the high quality of professional performance, but, based on critical analysis, also development of the skills for summarizing theoretical and practical data of varied complexity and, in general, for scientific research.

Cycle 3- “The doctor as professional” must describe the following competencies:

- The role of a doctor in health care service;

- Personal development skills.

The goal of integration is to break down barriers between the basic and clinical sciences currently in place as a result of traditional curricular structures. Such integration should promote retention of knowledge and acquisition of skills through the repetitive and progressive development of concepts and their applications.

The fundamental principle of the integrated program is the combination of the basic biomedical science and clinical disciplines. In order to qualify as a medical doctor, learning the fundamentals of medical science is crucial as it forms the foundation for the understanding and recognition of the various processes that occur in the healthy human body. The programs must provide the further establishment of in-depth knowledge of diagnostic tools in order to explore the structure, function, and development of the human body along with its dysfunction and disease.

Throughout the years in Grigol Robakidze University School of Medicine, the educational process had been offered with traditional curricula like other Georgian institutions, but several years ago we decided to move forward and answer the challenge - to promote more active learning and less passive learning.

We concluded that a new curriculum must be developed according to the highest possible standards of modern medical education taking into account the fundamental biomedical knowledge based on a combination of research and clinical skills. These components need to be implemented in order to ensure that the end result, that is competent medical practice, is achieved.

We implemented an integrated one-step educational program for medical doctors and reconstructed the educational program for dental medicine into an integrated one. The integration was achieved through the basic, pre-clinical and clinical disciplines of horizontal, vertical, and spiral principles (Figure.2).

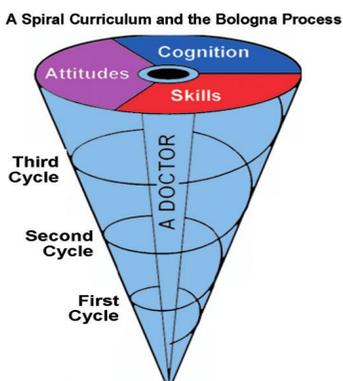


Figure.2. A spiral curriculum (Ronald Harden)

In general, preparing medical personnel with a range of competencies compatible with the standards of the World Federation of Medical Education (WFME) and the competencies defined by the Tuning Project was the aim. This means that the programs should prepare highly qualified specialists for the modern labor market and thereby contribute to the development of an effective health care system as well as boosting the country's economy.

- Regarding **teaching/learning methods**- besides interactive lectures, seminars, lab work, learning at simulation training class using simulators and manikins, role-play, bedside teaching, involvement in scientific research, clerkship, clinical practice, and electronic (Digital) teaching, we implemented student oriented methods that assure students' active involvement in the study process, such as PBL and CBCR.

PBL - Problem-based learning sessions - is a learning method based on the principle of using problems as a starting point for the acquisition and integration of new knowledge. It is the process of acquiring new knowledge based on recognition of a need to learn. PBL is a student-centered learning method that involves discussions among students who resolve loosely-structured problems to facilitate learning. The method not only facilitates the acquisition of knowledge but also other generic desirable attributes such as effective communication skills, ability to work in a team (teamwork), problem-solving skills, self-directed learning ability, ability to share information, appreciate other points of view, and identification of personal strengths and weaknesses. It enhances critical appraisal, literature evaluation and encourages ongoing learning in a team environment. We use Problem-based learning at the initial preclinical stage of the educational program.

CBCR - Case-based Clinical Reasoning - is an active problem analysis method aiming at teaching on the basis of specific examples (case analysis). This group work is based on the discussion of specific complicated/atypical cases, which may need search for additional information, diagnostic differentiation, and determination. "Case" is a so-called instrument, which enables the use of theoretical knowledge to solve practical cases. With the combination of theory and practice, the method supports the development of analytical and clinical reasoning, analysis and synthesis skills, working in a group, and decision-making abilities. Students develop abilities to participate in medical discussions, and effective communication with colleagues in a medical context within time limits. Students develop analytical skills, group work, alternative reasoning, planning activities, and projecting results. CBCR sessions are conducted at the clinical stages of the educational program.

We are sure that small group teaching like CBCR and PBL increases student interest, teamwork ability, retention of knowledge and skills,

enhances transfer of concepts to innovative issues, and improves self-directed learning. It develops self-motivation, the ability to investigate the issues, and allows the student to test their thinking and higher-order activities. It also facilitates an adult style of learning, and acceptance of personal responsibility for one's own progress.

- The problems that are related to **the assessment methodology**- there are a number of very important impact factors, such as a badly organized studying process, low motivation of students, unreliability, infeasibility, and invalidity of some of the assessment methods. Research findings point out that students' perceptions of assessment have a considerable influence on their approaches to learning and studying (Struyven K, 2005). Especially, veritable methods of assessment, those which look more like the ways that skills and knowledge are used in the real world, can help to motivate students. We have to realize whether we are using the right assessment methods to match the competencies. Why are we assessing? What are we assessing? How are we assessing? How well are we doing?

Since the 1950s the assessment system in medical education has rapidly changed. Several new methods have been developed and implemented by medical schools that have focused not only on the assessment of basic knowledge but on clinical and communication skills, and professionalism.

Assessment plays a major role in the process of medical education by certifying competent physicians capable of taking care of the public. The assessment drives the curricula of medical schools and students to measure their progress through the curriculum by the exams they have passed. In particular, it's of great importance to improve assessment methodology so that it can really represent the competencies of students, and the quality of graduates, as the reputation of the university depends on this. For an institution to be regarded as achieving excellence in the area of assessment there should be evidence of a remarkable strategy of assessment that can be demonstrated to actively promote learning in order to achieve the curriculum objectives and ensure patient safety.

The assessment strategy does not stand on its own and the institution should demonstrate how assessment fits into its overall context and vision of the learning/teaching process. A strong alignment between the assessment methodology and the curriculum, its outcomes, curriculum delivery strategy, and educational philosophy of the institution might be provided. It is important to make sure that assessment relates to student progression and are available and transparent to regulatory bodies, educators, clinicians,

employers, students, and patients. The assessment system should be subject to a rigorous and continuous quality control process.

The assessment methodology for MD and DDM programs was designed according to Miller's Pyramid, the basis for an important move away from the traditional medical education model that was largely dominated by theoretical knowledge-based assessments, toward examinations based on clinical performance. For the formative assessment which is process-focused and used for the student's progress monitoring, we use different types of tests, such as Open-ended questions, MCQ, True/False, Short Answer Questions, Modified essay questions, Oral exams, Extended Matching Items (EMIs)-the most reliable type of tests. At the end of instruction, when the extent of the learning outcomes achievement and the terminal performance of students should be measured by summative – outcome-focused assessment, we use different tools, the type of the tool depends on the competencies we are going to match, the course outcomes and at what level students are we assessing.

Several years ago we implemented the Objective Structured Clinical Exam (OSCE)-the golden standard tool for assessing clinical skills, and the psychomotor and affective domains of students. In 2012 we were the first in our country to implement OSCE for the Dental Program after the department of odontology of Tbilisi State Medical University did this. But the educational program as a living being requires dynamic development. Since 2012 our OSCE was revised many times and in the current curricula of the Program for Dental Medicine, the final OSCE consists of 22 stations, and covers all the fields of dentistry including operative odontology and endodontics, pediatric dentistry, orthodontics, prosthodontics, and oral surgery. Mini-OSCE is used for midterm exams too.



Grigol robakidze University Simulation Center -OSCE stations



So, the way we think assessment in medical education can be improved upon in Georgia is to make the right choice of educational strategy including assessment tools. Implementation of a new curriculum without changes to the approach to assessment may result in little or no change at all. Outcome-based assessment is distinctively different from earlier educational approaches. Assessment of each learning outcome should be accomplished by the most relevant tools, while choosing an assessment instrument for any examination should be depending on multiple levels of clinical competence that are suggested by Miller (Miller's Pyramid) (Figure.3). The adoption of newer, evidenced-based assessment methods to replace older traditional methods is crucial. The criteria we have to take into account while constructing the test are validity, reliability, impact on the learning process, and practicality including cost.

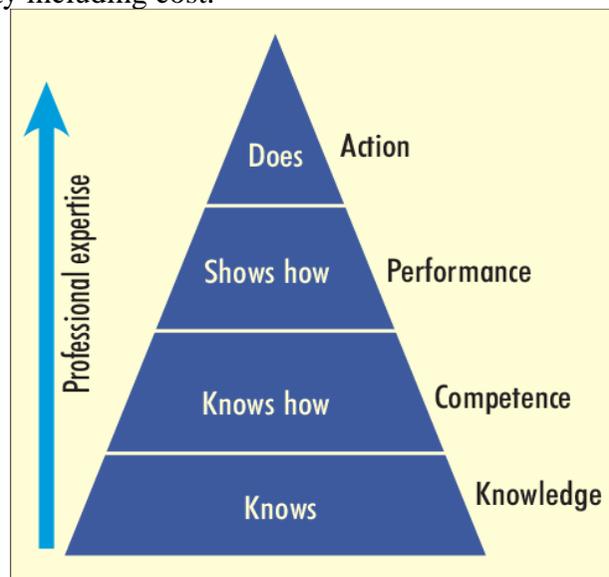


Figure 3. Miller's Pyramid

From this point of view schemes of assessment are important. First of all, medical schools must make sure that the scheme of assessment deals with all the curricular outcomes. This means assessment must allow students to demonstrate their different domains such as cognitive, psychomotor, and affective. The assessment should have feasibility that depends on the availability of resources such as the time for test development, test administration, analysis of papers, and availability of training for educators about assessment practices.

Often are used assessment tools that don't stimulate motivation and progress in learning, conversely, they become the "killers" of students' adequate self-esteem. That's why, medical teachers should be not only good clinicians and scholars but they should be trained in the field of assessment, and should have clear guidelines for marking assessments for achieving a guarantee of the quality of future doctors. Assessment tools must be constructed by professionals in the field.

From our point of view, the biggest barrier is the lack of **professional-pedagogical training**. Focus on personal experience only makes it impossible to develop modern assessment tools and adequately assess students' competencies in the right way. The rapid development of the field requires professional training. It's nothing new that being a good medical practitioner doesn't mean having the ability to teach. Furthermore, today's challenges in medical education require to rethink of the role of the teacher. If we choose active, student-oriented, and problem-based teaching, the teacher must become an information provider, facilitator, planner, and assessor. Teaching skills can be learned. We like the example of the UK, where all teaching staff is encouraged to be members of the Institute of Learning and Teaching. So, the occupational development of academicians is of great importance in the terms of becoming a "competent teacher". While conducting the training we have to focus on and take into the consideration that value of judgment of our student's competencies increases with the multiple-biopsy technique, which implies increasing the number of samples, independent examiners, and the diversity of examiners. With that view, mobility of academic staff, sharing of experience, and inviting of foreign professors are crucial.

And finally, the way to improve the current condition of assessment is **quality assuring of assessment**. A referencing framework should be applied to get accurate and useful results interpretations. Even though we are always focused on the real concepts of assessment such as validity, reliability, defensibility, and feasibility investigation of the discrimination index, difficulty index, and point biserial coefficient. It's of great importance to ensure the control of the assessment process that includes not only the relevant scores but the ability to improve gaps, motivate students to construct

their knowledge, improve their clinical skills, and be actively involved in the learning process. We have set the standard with the learning outcomes and objectives for being confident that the student has reached it. Criterion-referenced methods are our choice. But we need to work a lot and although the method is tedious and time-consuming, it is helpful for achieving the ultimate purpose.

- Improvement of **the material-technical resources** for providing the educational process qualitatively in a meaningful way. Medicine, including Dentistry, is one of the most rapidly developing fields, that's why we have to upgrade the university clinics, scientific research centers, diagnostic centers, and affiliated clinics that give student's opportunity to be involved in clinical and scientific activities more actively in order to enhance their cognitive domain – practical skills, psycho-motor domain – communication and scientific research skills, also affective domain-professionalism and help them to learn medicine in the community.

Conclusion

Today, knowing about medical education is necessary but not sufficient. There are multiple real and significant challenges along the way to successfully implementing medical education. The challenges can be characterized as wicked issues that appear as patterns without solutions. However, they can be tamed and managed through inquiry, pattern recognition, and adaptive action that provides a viable practical path forward (Stewart, 2021)

We need to solve global challenges by establishing a mechanism of vocational guidance work during pre-university school, developing university clinics and learning environments, renovating learning and assessment methods, enhancing students' scientific skills, supporting their mobility, and creating international educational programs. It's definitely of great importance to cooperate with global, relevant, regulatory, and legislative organizations. Invitation of foreign professors and sharing their experience is also important.

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