New Educational Program "Medicine + PBL" - Requirement of Time or Innovation?!

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Abstract

Changes that are made in education during last decade is the guarantee of Georgia’s integration in the European educational space. Accordingly, medical education must be based on the international standards and must be result oriented to get the competitive graduates on the medical market.

During the last 3 years, there has been implemented a new PBL teaching method within the medical educational program "Medicine + PBL" on the faculty of Medicine at ATSU. The innovations are the basic medical and clinical disciplines that are integrated in the program, their supporting courses and social disciplines. The structure of the program is divided into three steps: teaching basic, preclinical and clinical subjects and clinical practicing stages.

MD program is “hybrid” program, where PBL cases are integrated into Medical Disciplines To reach the Learning Outcomes, which includes knowledge, practical skills/habits and values development, the program is based on “4 spiral” model: the progress of knowledge and awareness, attitudes – “doctor-patient”, "public and population health" and "personal and professional growth". PBL teaching method and format strengthens the quality of program integration and provides the Medical Doctor with possibilities of effective achievement of LO.

Key words: Problem Based Learning, PBL, case study, integration, medicine, MD program, Medical Doctor

INTRODUCTION

New methodologies of medical education are very rapidly developing in the modern world altogether with other fields of science. Medicine of last period is inconceivable without the latest technologies, which require adequate knowledge. Obtaining and creation of this knowledge begins in the medical classes. Two main systems theory and practice should be merged. This is difficult, but not impossible. Variety innovativeness methods are implemented broadly in order to facilitate the processes of Medical Education. The recommendations and guidelines are worked out by an International Association for Medical European Education (AMEE), which determine the strategies and curricula of high medical schools/1/.

For success in Medicine is important to develop not only theoretical basic and clinical science knowledge. Also to obtain clinical skills, and to establish ethical values and attitudes very important
for the profession/2,3/. Within the Bologna Process frame, competencies of basic medical education is determined according to the learning outcomes, which are developed according to the TUNING/MEDINE demands.

At present, the result-oriented education is considered optimal in terms of the country’s requirements, as it is based on the international standards of medical education, which in fact provides a successful and competitive certified doctors.

Faculty of Medicine of Akaki Tsereteli State University (Kutaisi) was founded 20 years ago. It graduates students in three fields: Medical Doctor (one-step high medical educational program), Doctor in Dental Medicine (one-step high medical educational program) and Pharmacist (with the degree of Bachelor / Master).

There are Georgian and English language Medical educational programs. It is one-step program with the duration of 6 years, comprising 360 credits, and equals the second level of the higher education.

The Faculty has a long term history of cooperation with European partners and also involvement in TEMPUS/INTAS-grant projects. This gave us an opportunity to have high qualified teaching staff, which have been trained in the top rated universities of the world, to have in the latest modern electronic classes, to have research laboratories equipped with the newest facilities, all these make it possible to conduct electronic, distance learning with the partner universities.

To provide the quality assurance of medical education we permanently conduct the survey of our employers, graduates and students. For this purpose, last survey was done with total number of 130 from the second (49), fourth (40) and fifth (41) years students. They were asked just two simple questions: Do you like the learning process and what would you change in the educational process?

The results showed that in general, students are content with the educational process and despite positive attitudes, 47% of interviewed complained about the educational process resentment and stated that they would like the following improvements: to get more information from a lecturer (41%), more visual materials (48%) and to discuss more clinical cases (93%). The last request which implies desire and importance to do more case-study learning was underlined by the vast majority of the students (93%).

Because of a lot of objective and subjective reasons, this problem is more or less actually in all of the medical schools of Georgia. It should also be mentioned that during the last decades Georgia has been in the atmosphere of permanent changes, and then it becomes easy to guess that something was not done as it was necessary and some additional changes or improvements were required?!

THE GOAL

The quality of basic education as the most important preliminary conditions for a successful medical practice in compliance with international standards is a major problem of the health system to ensure optimal operation of Georgian healthcare system. The adoption of this in cooperation with foreign counterparts appeared to be more easily achievable.

In cooperation with our foreign colleagues (London St. George University, Thessaloniki Aristotle University, and University of Nicosia) and with the help of Tempus grant project 530519-TEMPUS-1-2012-1-UK-TEMPUS-JPCR "Establishment of the Supra-Regional Network of the National Centres in
**Medical Education, focused on PBL and Virtual Patient (ePBLnet)** Georgian Universities (David Tvildiani Medical University and Akaki Tsereteli State University, Faculty of Medicine); Ukraine (Sumy State University and Zaporozhye State Medical University); Kazakhstan (Astana Medical University and Karaganda State Medical University) started the modernization of the basic stages of the existing educational programs. The changes were based on the introduction of a new method of learning - problem-based learning /4/.

Although the problem-based learning, or pbl counts 2 decades of its existence and it is the most approved and recommended training method not only on medical but other faculties of the world’s leading universities, it is still “innovative” and strange for the post-Soviet countries /5,6,7,8,9/.

**THE WAY TO ACHIEVE THE GOALS**

The ePBLnet group, created on the Faculty of Medicine of ATSU in accordance to the requirements of the Tempus project started work in five different directions: modernization of the curriculum, translation and adaptation of dozens of cases, training of tutors, setting up the online library and PBL training infrastructure. What is more, all these had to be done in a short period of time in about 1.5 year. The implemented changes were mainly focused on the teaching / learning methods, in particular, the problem-based learning, as a relevant methodology of a new "study week". The “PBL Group” of Akaki Tsereteli State University designed quite a new integrated curriculum instead of modernization of the old one, which, in its turn, caused development of a new training strategy based on a new study approaches, aims, environment, new systems for assessment and evaluation. As results of this work a new one-step high medical educational program "Medicine + PBL" was created.

**NEW MD PROGRAM**

A new high medical educational program of ATSU is personalized and competence-based, characterized by vertical integration (of 6 years long) on basic training, pre- and clinical stages. It developed a type of teaching and learning, which brings the students to their future clinical activities as close as possible.
Figure 1. Number of PBL weeks in new MD Program and distribution of cases by semesters.

The basic concept of the educational program implies a deep understanding of profession. At any stage of training, ranging from basic to clinical sciences, a student analysis the obtained information / knowledge in terms of clinical practices. All these became possible through arranging PBL weeks (49 PBL weeks) redistributed from I to X semesters.

**NEW PROGRAM STRUCTURE**

Teaching courses are maintained unchanged for II, XI, XII semesters, while those for other mostly were grouped into 6 main modules: Life Cycle, Life Protection, Life Support, Life Maintenance, Life Structure, Life Control and are adjusted in accordance to issues considered by cases.

Some Cases were distributed among various Basic and Clinical courses. Accordingly, new program systematized and integrated them (PBL cases) in accordance to the above mentioned modules, as well as embedding in same Basic (e.g. Microbiology/Immunology) and Clinical Courses.

Particularly, organization structure of the program is conventionally divided into the following stages:

**I stage (I-IV semester) Basic:** It focuses on the structure and function of a Human’s main systems, have mostly modular organization and based on Basic Sciences horizontal integration; this stage also implies delivering some important professional aspects acquainted through/based on PBL cases; this stage is also good prerequisite for students preparation for learning in PBL format. Relatively, the definition Basic-Medical Science stage is only conventional; it includes important part of Clinical and Population Health which is promoted by PBL format. This stage includes 7 PBL weeks, good bases for
PBL studies during the next stages of MD education. Also it includes needed introduction material from Basic and Clinical sciences, which is basis for mastering in Fundamental Medicine.

![Table: "Medicina+PBL" (Years 1-2)]

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<tr>
<th>Semester 1</th>
<th>Semester 2</th>
<th>Semester 3</th>
<th>Semester 4</th>
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<td>Development of the Organism</td>
<td>Structure and Function of Organism – 1</td>
<td>Structure and Function of Organism – 2</td>
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<td>Structure and Function of Organism – 3</td>
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<td>Basics of Clinical Medicine [3 cases]</td>
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<td>Foreign Language – 1</td>
<td>Foreign Language – 2</td>
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**Figure 2.** Basic stage (I-IV semester) in the new MD Program

**II stage (V-X semester) pre- and clinical stage** study, which is mostly organized on understanding of important aspects of Human Health and Diseases as are: “Life cycle”, “Life Structure”, “Life Control”, etc. These stages also include non-modular approach in mandatory and elective disciplines. A/m modules are organized and embedded with PBL weeks which integrate Basic knowledge needed for Clinical case understanding with clinical “part” of content (symptoms, investigations, management, care, etc.) that promote integration in the way when knowledge acquired on the previous stage is “revisited” and “revised”, help to understand “in context” and deepening the knowledge (regard Concepts and Links between Basic and Clinical Science Concepts). An important aspect of this stage is also gradual development of the issues included in the module e.g. Life Cycle during the further study in the next module of the same cycle: e.g. Life Cycle 1, 2 in V semester, following “Life Cycle 3” in the VII semester; the way of PBL in the program begins with the linear cases, and then a student continues with branched cases where the “price” of the decision made is higher, as in case of an incorrect choice “Student – Doctors” group will harm (damage) the patient; this promotes the development of a student’s clinical decision/reasoning skills.
### Pre- and clinical stage (V-VIII semester) in the new MD Program

**III stage – clinical clerkship for clinical practice.** It’s a stage in General Specialization, when the students train their clinical skills mostly in clinical spaces.
Figure 4. Clinical internships stage (IX-XII semester) in the new MD Program

PBL WEEK MODEL/CREDIT/ASSESSMENT

One credit involves 25 hours of which 15-17 hours are intended for contact and 8-10 hours – for students’ independent work.

PBL week is structured as follows 3 PBL tutorials (Monday and Thursday mornings, Friday afternoon – summarizing) + teaching sessions (Tuesday, Wednesday and Friday mornings) + clinical attachment and/or a visit to the skills lab (Tuesday or Wednesday afternoon) + practical sessions; assessment at the end of PBL week and periodically experts forum (note: considering a particular case specificity the structure is slightly adjusted).
**Figure 5.** The PBL week of a patient (G.M.) with hearing impairment.

The assessment of a student in MD program is multicomponental (activity, attendance, daily testing, essay, presentations, PBL, surveys, final exam). The evaluation of the learning in the PBL format is also a part of the ongoing assessment and includes: the assessment of the PBL training level, logical thinking / reasoning, communication (with colleagues / patients) and clinical skills. It (above mentioned) has 10% share in the final evaluation of the student.

**DISTINGUISHING OUTCOMES AND ANALYZE NEW PROGRAM STRUCTURE**

ATSU’s MD program frame realizes the so-called hybrid program: integrating of Medical Disciplines and knowledge through PBL participation and integration; also it should be mentioned, that some parts of the program delivering fulfilled without it, with non-modular approach; It’s very important to describe the “way” of MD outcome's distinguishing, “own” spiral of Development regarding the knowledge, skills and attitudes of program’s graduate:

One of it we can image a spiral in Basic and Medical science knowledge and understanding progress, which is practically continuous; it implies not only learning but also understanding in context important issues of Basic Medical and Clinical Sciences: Introduction – Introduced Horizontally integrated module (I stage, ex: “Cardiovascular”) + followed by modules organized on the bases of important issues of a human norm and pathology (II stage – pre- and clinical study stage, ex: “Life Support”), ending with practice during the course of general specialization (III stage, Clinical clerkship).
Second spiral is also very important - professional competence of a future doctor, which can be described as the patient-doctor communication, and implies training and progress in those very important aspects of professional life: through focusing on PBL it covers all structure and organization of ATSU MD program e.g. Professional Aspects 1, Followed learning in PBL formed, Clinical studies and practice.

III Spiral conventionally can be imaged as “Social, community and Population Health”. This “way” also beginning from the theoretical and PBL teaching (Population Heath – 1) develops in context (contexts as – Specialization and/or child/adult/elderly, epidemiology, other items, can be seen in every PBL week’s educational case) and creates possibilities of stage by stage development of this part of outcomes in MD education.

IV spiral as “Personal and professional development” is also created step-by step, and is supported by theoretical (didactic courses) as well as case based approach (Professional Aspects -1); also promotes possibilities for graduate to be engaged and equipped with very important competences/skills defined in MEDINE 2 outcomes under the Chapter „Doctor as professional”.

So, PBL as an Educational Methodology and Study format enhances degree of Program integration, provides possibilities for effective achievement of learning outcomes of MD program, particularly through spiral organization of the program content.

At last, we can say, that learning progress is an outcome of multiple factors, some directly related to formal courses and some to informal and self-directed learning.
And we can be sure in ATSU a new medical program "Medicine +PBL" is benefit for students: this program increased integration level and complexity, it requires more self-directed learning in unstructured environment; PBL educational format increases their responsibility, reflection, teamwork skills and personal knowledge including increased understanding the “value” of an error and motivates them on life-long learning.

**Note:** The new medical program „Medicine +PBL” was successfully accredited in 2015 and the enrolment of students officially started in 2016.

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