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The Actual (Un)usefulness of the Bologna System in Medical Education

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ABSTRACT

Introduction: Faculty of Medicine, University of Sarajevo has officially started working on 22.11.1944, and is the oldest faculty in the medical field in Bosnia and Herzegovina. At the same time there are two systems of organization of the teaching process, the old system and the Bologna system. **Aim:** To analyze the implementation of the Bologna system, and making an overview of its justification. **Material and methods:** Answers from questionnaires from total of 459 students were analyzed (197 who had studied under the old system and 262 who studied under the Bologna system), so total of four generations of the Bologna system. They filled out a questionnaire in which they evaluated the teaching process. Student's opinion about quality of medical education was measured by modified Lickert scale. **Results:** Students of old system are older than students of the Bologna process, whose average age is increasing from generation to generation, given the growing number of students who repeat a year. All students of old system repeated an academic year once or several times ($p < 0.05$). Analysis of average grades showed statistically significant difference ($p < 0.05$), where students in the Bologna system had higher averages than students who were studying under the old system. The presence of large number of female students, in both systems is significant ($p < 0.05$). Out of 33 questions about satisfaction of class, 15 were answered with better average grade from students of the Bologna system. A slight improvement in the Bologna system is in terms of the evaluation of the quality of the educational process (teachers, methods, effects). The only significant progress has been proven in terms of rating the degree of computerization of the educational process—general records on enrolled students (old system vs Bologna system—3,44 vs 3,63), record of attendance (3,47 vs 3,73), obtaining certificates (3,08 vs 3,84), method of registration of exam (2,98 vs 3,71), method of practical exam (3,06 vs 3,36) and theoretical methods of taking exam (3,01 vs 3,14). Average grades where no average grade, on any issue, does not reach grade 4 of Likert Scale, talks about real problems of education in medical field. **Conclusion:** In a relatively large sample (four generations of students) true benefit and progress of the Bologna system has not been proven, in comparison to the old system. Bologna system has eased the students in the administrative sense by introduction of computerization of faculties, but the old problems and old questions about the organization's process and delivery have not been eliminated.

Key words: medical education, Bologna system, ECTS.

1. INTRODUCTION

The education system has become universally the most important link in the process of development of European integration in whole. The Sorbonne Declaration from 25 May 1998, which was underpinned by these considerations, stressed the Universities' central role in developing European cultural dimensions. It emphasized the creation of European area of higher education as key way of promoting mobility and

employability of citizens and the overall development of the continent. Bologna Declaration was formed based on the Sorbonne Declaration, the joint Declaration of the European Ministers of Education which was signed in Bologna on 19 June 1999. 29 states have joined, and the Declaration refers to the reform of high education system in Europe and that is the basis of the Bologna Process. Bosnia and Herzegovina (B&H) joined the Bologna Process in Berlin, 19.09.2003.

Currently, the process is implemented in 48 countries (1, 2). B&H (throughout all territory) accepted the Bologna Declaration, as a organization modality of teaching process (3, 4), at both, private and state universities (5). B&H from then seeks to the “western” manner of the teaching process organization, trying to reach European education standard and quality (6, 7) (quality and medical education can be defined in relative terms as a state of reaching required standards as prescribed by the external agencies and it meets those standards time and again (8). Faculty of Medicine, University of Sarajevo, has officially started working on 22.11.1944, and is the oldest faculty in the medical field in Bosnia and Herzegovina. Bologna process began to be used in Faculty of Medicine, University of Sarajevo, from the school year 2007/08 (copying Bologna process from Heidelberg University) and from that moment, two educational systems are taking place, the pre-Bologna (old) system and the Bologna process (1, 9). The most important determinants of the Bologna process are introduction of the European Credit Transfer System (ECTS), adoption of the new study structure consisting of three cycles, promoting mobility of students and teachers and adoption of system of comparable diplomas. The Bologna process introduces standards and norms that include the duration of study and weekly workload in teaching and overall work needed to master some skills, so that there is no arbitrariness. Under this process, the duration of study is divided into three clearly defined segments: undergraduate, postgraduate and doctoral graduate studies, which have precisely defined duration. For most professional profiles model is the 3 + 2 + 3 or 4 + 1 + 3. Number of hours of direct instruction (direct communication between students and teachers) is reduced to 20-25 hours per week) (2). University of Sarajevo is organizing the studies in three cycles. The first cycle leads to the academic title of completed undergraduate studies (the degree of Bachelor) or equivalent, and is gained after a minimum of three and maximum of four years of full time study after obtaining certificate on completed high school, which is valued with minimum 180 or 240 ECTS points. Then second cycle leads to the academic title of Master or equivalent, and is acquired after completing undergraduate studies, it lasts for one or two years, and is valued with 60 or 120 ECTS points so together with the first cycle that is 300 ECTS points. The third cycle leads to the academic degree of Doctor of Science or equivalent and lasts for three years and is valued with 180 ECTS points (1, 9).

At the Faculty of Medicine, University of Sarajevo, former generations of students at the end of Faculty have 360 ECTS points, (integrated first two phases of the study), so 30 points in each semester. Since the introduction of the Bologna process at Faculty of Medicine, debate about the justification of the process is made, and about the quality of education in Bologna process, and also about the quality of the newly formed doctors. A gap and hostility among the students, who study under the old system and the Bologna system was created. From the current school year, the first syllabus of subjects is reformed in which the Bologna system has been implemented, and it contains results and benefits of the reform, or whether they exist at all, which will be shown in the future.

2. AIM

To analyze the implementation of the Bologna system, and making an overview of it's justification.

3. MATERIAL AND METHODS

Answers from questionnaires from total of 459 students were analyzed (197 who had studied under the old system and 262 who studied under the Bologna system), so total of four generations of the Bologna system, starting from the first generation of students who studied under the Bologna system in Faculty of Medicine, University of Sarajevo. They filled out a questionnaire in which they evaluated the teaching process. The questionnaire contained eight groups of questions: basic information, the evaluation of the basic elements/variables on realized quality of the teaching process, the assessment of availability and quality of the teaching space (space, equipment, personnel), the evaluation of the quality of the educational process (teachers, methods, effects), the evaluation methods and quality assessment of students (exams, method, objectivity), the evaluation of the organization for implemented teaching process, rating the degree of computerization of the educational process, the availability, accessibility and quality of literature in the faculty library.

The questionnaires responses were of open and closed type and it mainly used Likert scale for assessment: grade 1-I am completely dissatisfied, grade 2-I'm not satisfied, grade 3-I'm partly satisfied, grade 4-I'm basically satisfied, grade 5-I'm fully satisfied.

4. RESULTS

Students of old system are older than students of the Bologna process, whose average age is increasing from generation to generation, considering a growing number of students who repeat a year (in generation 2015/16 a decrease in students average age is noticed).

All students of old system repeated an academic year once or several times ($p < 0.05$). The analysis of GPA demonstrated a statistically significant difference ($p < 0.05$), where students at the Bologna system have higher average grades than students who study under the old system). The presence of large number of female students, in both systems is significant ($p < 0.05$). Analyzed questions were those that give answers about satisfaction with physical activities (average grade of old system vs Bologna system is 3,21 vs 3,39), about organization of teaching (3,12 vs 3,04), quality of teaching (3,18 vs 3,23), quality of knowledge testing (3,22 vs 3,04), the degree of study computerization (2,72 vs 2,65) and availability and quality of literature in the library (2,62 vs 2,77) (Figure 1).

Next were questions about capacity of the lecture room (3,52 vs 3,34), capacity of the premises for practical exercises (3,09 vs 3,05), capacity of space for administrative purposes (3,39 vs 3,27), capacity of space for examinations (3,52 vs 3,43), the quality of space for students social activities (2,15 vs 2,05), the quality of students social standard (2,37 vs 2,22), the quality of library space – space for learning (3,44 vs 3,21) (Figure 2).

Other questions were about readiness of teachers for teaching (3,44 vs 3,55), eloquence (a way of transferring knowledge) (3,31 vs 3,42), motivation of teachers (3,02 vs 3,11) and about interactive approach to teaching (2,93 vs 3,15) (Figure 3).

There were also questions about objectivity of teachers in evaluating knowledge on exam (2,72 vs 3,3), the precision of the questions (2,98 vs 2,83), and possibility to choose the examination methods (2,33 vs 2) (Figure 4).

There were also questions that gave answers about the synchronicity of the organization of teaching (2,98 vs 2,79), the size of teaching groups (2,96 vs 2,71) and technical equipment of the laboratory /room for teaching (2,61 vs 2,58) (Figure 5). Some other important facts were analyzed such as general records on enrolled students (3,44 vs 3,63), record of attendance (3,47 vs 3,73), obtaining certificates (3,08 vs 3,84), method of exam registration (2,98 vs 3,71), method of practical exam (3,06 vs 3,36) and theoretical methods of taking exam (3,01 vs 3,14) (Figure 6). And finally, questions about the scope of the literature in relation to educational needs (2,82 vs 2,67), access to the literature (time, personnel) (2,68 vs 2,94) and the possibility of electronic access to the literature (2,36 vs 2,46) were analyzed (Figure 7).

About 61% of students in 2014/15 generation and 65% of students in 2015/16 generation (students of the Bologna pro-

Figure 1. Evaluation of the basic elements/variables on realized quality of the teaching process

Figure 2. The assessment of availability and quality of the teaching space

Figure 3. The evaluation of the quality of the educational process (teachers, methods, effects)

Figure 4. The evaluation methods and quality assessment of students (exams, method, objectivity)

Figure 5. The evaluation of the organization for implemented teaching process

Figure 6. Rating the degree of computerization of the educational process (cess) is considered that they are ready to engage in independent work (Figure 8).

5. DISCUSSION

Out of 33 questions about satisfaction of class, 15 were answered with better average grade from students of the Bologna system. There is a slight improvement in the Bologna system in terms of the evaluation of the quality of the educational process (teachers, methods, effects). The only significant progress has been proven in terms of rating the degree of computerization of the educational process - general records on enrolled students, record of attendance, obtaining certificates, method of registration for exam, method of practical exam and theoretical methods of taking exam, objectivity of teachers in evaluating knowledge on exam, readiness of teachers for teaching, eloquence (a way of transferring knowledge), motivation of teach-

Figure 7. The availability, accessibility and quality of literature in the faculty library

Figure 8. Preparedness for independent work (Bologna system)

ers and about interactive approach to teaching - the difference is in favor of the Bologna system, but average grade of any parameter is not better than 0.2. Average grades where no average grade, on any issue, does not reach grade 4 of Likert Scale, show real problems of education in medical field.

The only significant progress has been proven in terms of rating the degree of computerization of the educational process, which is primarily attributable to the progress of the modern world, where essentially everything is related to software solutions, which greatly improved the work of the administrative staff. Also, all information are available to students through web portals and there are electronic systems available for reporting exams and insight into grades. In other, more important parameters for student the evaluation of the basic elements/variables on realized quality of the teaching process, the assessment of availability and quality of the teaching space (space, equipment, personnel), evaluation of the quality of the educational process (teachers, methods, effects), the evaluation methods and quality assessment of students (exams, method, objectivity), the evaluation of the organization for implemented teaching process (number of students in the group, time, classroom technical equipment, technical aids, etc.) and the availability, accessibility and quality of literature in the faculty library a significant step forward has not been noticed. Even more in 54.6% of questions, the old system gave higher average grades - so with right we can ask whether the use of the Bologna system is actually correct model to apply in colleges that study medical field. The authors certainly believe that similar, if not identical results would be proven in other faculties in bio-medical field (stomatology, pharmacy).

The fact is that the bad financial situation of the country, and also financial crisis all over the world, do not leave much room to faculty in the development of infrastructure, and for that we can not blame the introduction of the new system. The students satisfaction in the implementation process of organizing of the teaching process is worrying, and also of quality of teaching and student testing, where the grades in the Bologna system are even lower, which certainly had to be repaired in introduction of the Bologna system. The number of students each year is increasing, actually the number of self-financed students, so of students who are paying for their studies is increased. It is an undeniable and proven fact that the length of schooling by introducing of the Bologna system is in decline. The fact that teaching staff faster and easier complete their doctoral studies, and sometimes are too quickly promoted from teaching assistant to professor is also proven. The time in which a young assistant becomes a teacher or assistant professor, is two or three times reduced than that was the case 20 years ago. The fact is that large number of staff, before breakup of the Yugoslavia left Bosnia and Herzegovina, and was promptly changed with a new one, and that also influenced the quality of the faculty educational process.

Method of assessment in the Bologna system is multiple choice questions (MCQ) way of testing. Unavailability and lack of motivation of the teaching staff to prepare different test over and over, have resulted with the possibility and practice of minor correcting and copying the questions, so in the end the examination doesn't have too much sense and does not require much knowledge. It is considered that the grades in Bologna process are not real reflection of the knowledge as they are too low for some students, or too high for some of them (1). The scale system wasn't successful and motivating, because the students who executed their responsibilities on time, in the end have lower grades, than the students who executed that with postponement (avoiding of certain parts of exam or whole exams, with manipulation of terms) (1).

MCQ tests in Bologna system supposed to contribute to the objectivity of teachers, but it brought more problems about the reality of the grade. The introduction of oral exam is an imperative, if the quality of higher education is wanted. "Sedation" of knowledge seems to be the major problem of the Bologna system, because the shift from one subject to another is simply too fast. It is an indisputable fact that there are no losing years (which used to be the rule, few of them could pass basic subjects - anatomy, histology, pathology; a person who had graduated from Faculty of Medicine in Sarajevo without losing a year was considered an extraordinary talent), exams would eventually get passed in the current year (repeated exams), calculating of grades reached its peak (the first generation after Bologna, and following generations, can not be compared by grade, the new generation have better grades).

It is not natural that the exam has to be taken the next days after the completion of lectures, basically the question is how realistic the student can learn in one or a few days. In essence, what is the purpose of knowledge which is short and is going to be forgotten in the course of the week. Great exam passing is not by itself a bad thing, but it would be good if that is a realistic picture, that the reality is that the students acquired knowledge for the high score. Unfortunately practice teaches us otherwise. Obviously, evaluation system must be changed.

Long-term study, particularly of basic subjects and clinical cases that are necessary to work in the family doctor's office, must be conducted. A good ratio of theory and extended practice has to be made. Quality of practical classes must be in optimal mode, and has to be implemented in practice as it is written on paper. Practical work is the biggest problem of the students, and this paper shows that. Students are not satisfied with the practical classes, and it must be known that practical work is the most important for medical students, especially practical work in clinical areas.

Literature available to students is mainly foreign and represent the books that are available worldwide. Teachers should have the imperative to write their own textbooks and manuals, because we must always keep in mind the fact that the medicine in modern world is molecular, and the causes are found in genes and chromosomes. Medicine of countries in transition, and that includes Bosnia and Herzegovina, is still clinical, where modern methods are often unavailable, so writing a manual on the better orientation of future doctors in such circumstances, is imperative. Probably this sounds a little old-fashioned, referring to the age of authors, but experience has shown that sometimes students know on which chromosome is the gene responsible for a disease and, on the other hand, they forget symptoms of disease or clinical examinations. Questions are usually designed like that for looking the little things, which are not so important for clinical practice, and avoiding the information that will certainly be important for young doctor, at least in some initial work. Faculty must do something about their own literature, as this is important for its rating. The country must help faculty primarily in material terms, in order to modernize its laboratory space that would be possible simulation for doctors and it would enable the faculty, and its teachers and students, to engage in scientific research. It must be known that the faculty, beside the fact that it is educational institution, it must be scientific and research institution and by that faculty at least partly has to be financed on its own. Preclinical subjects, clinical subjects, and the public health disciplines has to be closely interconnected and to make one compact unit. Public health, although often looked condescending, is the discipline that studies the health of the population, with all its biological, demographic and epidemiological determinants in the context of the impact of social factors (socio-economic) and environmental factors, as well as the health system and other subsystems of the society with all their interactions. The fact is that this area must be given greater importance, and it is necessary to educate a new generation of specialists in this area, which will improve tomorrow, especially the organization of the health system, because the health management is very serious discipline, and only qualified personnel will be able to cope with it.

Students in the early years of the study have to be fully recognized, and particular attention has to be paid to them and their knowledge and skills. Selecting the optimal number of students must be the responsibility of all teachers. By increasing the number of students, and keeping the same number of teachers, do not address the core problem of students - a large group and the lack of attention, primarily of assistant to student. A small group is the basis of Bologna, and the University must strive for this. We fear that the only option to solve this problem is reducing the number of enrolled students. University of Sara-

jevo, as an institution in the world list, is not rated sufficiently high. If we consider that the rating is get primarily by the work of the teaching staff in terms of scientific research, obviously there is room for improvement. Teachers need to be motivated for scientific research.

Teaching staff isn't satisfied with quality of teaching process that they are involved in. They usually think that the subjects are capacious, matter is capacious and it has to be handed over to the students more rapidly. This is simply not adequate teaching process and it seems that teaching staff hasn't done enough on equiformity of protocol for all activities, for all subjects, for diseases and states that are obligatory in legislative system (1). On the other hand, students don't have access to the teaching staff in full capacity, because of everyday duties of teaching staff, which is obvious on clinical subjects (1). The older teachers, who worked in the system twenty years ago, for years point the problem of working with students, in terms of large flattering to the students. Students were given greater rights in many ways and management of faculty still patronize students. The fact is that the faculty is there for students, and that they are the meaning and purpose of its existence, but balance has to be made, because that is the only way to achieve high quality of work and education. Teachers also must, in mutual cooperation, to raise their level of teaching, as well as the level of communication with students. Faculty must be turned to numerous international collaborations that are now available. Bologna system has improved the quality of teaching process in plenty of matters, but it has brought big number of high educated staff, that are younger than average and have average level of knowledge - Bologna system has brought averageness we tried to escape from (1).

One of the foundations of the Bologna system is mobility, of both teachers and students. However, in order to achieve student mobility, compatibility is necessary, but that does not mean uniformity. The compatibility for the purpose of mobility practically means uniformity when it comes to the duration of studies at first and second level. Student mobility is not sufficiently developed at the Faculty of Medicine, University of Sarajevo, and something has to be done about it.

A lot of young doctors appear on the market, and every year we have a growing number of unemployed doctors of medicine, which is, to say the least, a disaster. The young man who had invested so much in his education, in which the state has invested, in the end founds his professional way out of this country and that is disastrous for the development of the health system of Bosnia and Herzegovina. This is a question for the institutions and Government of this country, because the fact is that young people do not have the possibility to work in B&H. Going abroad is justified, but if this country wants to go forward, that must be prevented. Creating jobs is also imperative. Currently in B&H there are five state universities, and all five apply Bologna system. There is a trend of opening private universities, of dubious quality, which medicine could not be avoided. Reform must be done, which will primarily regulate enrollment to the faculty, and later on possibility for employment. Limited and politically driven possibilities for employment of young doctors is the cancer wound of the health system in B&H. Studies for manpower projections must be conducted primarily on the need for doctors in the market (at the cost of omitting one academic year, or to prevent enrollment in faculty if the situa-

tion is so bad), and based on that we can estimate the number or quotas for enrollment.

Authors suggest:

First step - finishing high school, At the entity level (in order to separate ministries) to make a quota about student enrollment: the total quota in the Federation should be divided into three parts (Sarajevo, Tuzla, Mostar), and in RS into two parts (Banja Luka, Foca). In addition to the prescribed quota of students who would be educated at the expense of the state budget, faculty supposed to receive another 20% as self-financing full-time students (the number is not supposed to be exceed) - studies have to be done that would show the real need for certain staff (at the state level, entities and cantons), The university entrance exams would be performed on the same day, at the same time, at the state level (entrance would contain questions in biology, chemistry and physics), Classes would still contain pre-clinic fields (first three years) and after that clinic and public health disciplines, The first year of education would be the basis for further education and students would not come in contact with clinical classes, From the second year, through the introduction into clinical practice, and later clinical propaedeutics, student would be prepared for further years of study, Reducing the number of classes - the introduction of "modern" subjects (medicine in developed countries is based on a molecular level, in countries in transition there is still a clinical approach to medicine) through which the best students in the sphere of scientific research would be selected - which would later stay at the university, Faculty must become not only an educational institution, but firstly scientific and research institution, and through that, partly financed by itself, International cooperation with other universities must be imperative, The necessity of continuing education of teachers (not just in theory but in practice), There must be introduced norms and standards—equally in public and private educational institutions with approximately the same concepts, After graduation, at least six months internship should be done (time for learning practical skills) and passing of the state exam (number of questions proportional to the number of hours of particular subject) which would make a ranking list of employees (the first on the list could choose the city, hospital, department and specialization) - all students with all state universities would take state exam (that would show the quality of all state universities, since in fact there are many unanswered questions in that area. Opening of private universities is growing and that can not be avoided - so if students from private universities would take the same state exam as students from state universities that could keep the quality of all universities at high level) - we think that this is the only correct mode for reducing corruption in the health system of Bosnia and Herzegovina.

From this year, a modification of the original Bologna has been introduced, and results are expected in the coming period. The authors sincerely hope that assessed student satisfaction and the real student satisfaction should be a priority for the management of a faculty and it will be larger in a new analysis. State institutions must implement themselves this analysis about the quality of education, as they are there, to improve the quality and facilitate the accession of Bosnia and Herzegovina to European standards. Teaching staff, starting with the author of this work, must do first on themselves, because dissatisfaction of the students with organizing the teaching process, the

manner of presentation of information and the organization of the examination, is not the question of the state, but rather to the teaching staff. Also, students should work on themselves, especially to realize that are there to learn, not to pass the exam, because the knowledge of what is essentially important. Kaizen, the Japanese philosophy about the way of life, promoted that the pursuit of continuous improvement must be applied at all levels of the organization of the teaching process, from the students to the management, and it is essentially the only way to improve the educational system, not only in the Faculty of Medicine, but also in the entire University.

6. CONCLUSION

In relatively large sample (four generations of students) true benefit and progress of the Bologna system has not been proven, in comparison to the old system. Bologna system has eased the students in the administrative sense by introduction of computerization of faculties, but the old problems and old questions about the organization's process and delivery have not been eliminated. Essentially, this Bologna which is currently taking place at the Faculty, is far from ideal mode. It must be changed and regional cooperation analysis, even continental, has to determine whether the Bologna process is appropriate for education in the field of medicine.

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