THE DEFICITS OF COMPETENCES DETECTED ANALYSING THE RESULTS OF A PEDIATRICS OSCE IMPROVEMENT AFTER IMPLEMENTING SPECIFIC ACTIVITIES

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Abstract

Introduction: In the context of a Teaching Innovation project in the Pediatric Clinical Practice Subject, since the academic year 2012-13, an Objective Structured Clinical Examination (OSCE) is performed as student’s evaluation. In addition, a series of improvement proposals were initiated to be implemented based on the marks obtained and implementing them during the following courses.

Objectives: Analyze the results obtained in each of the competences defined in the Pediatric Clinical Practice Subject by the students over 4 academic courses. Analyze the results obtained after making changes in the teaching methodology aimed at improving the deficits of competences.

Material and Methods: After obtaining data from the ECOE carried out in June of the years 2013, 2014, 2015 and 2016, we analyzed the scores obtained by the students in each of the competences evaluated and compared the results on a year-on-year basis. We analyze the variations obtained after some teacher changes introduced in years 2015 and 2016 after detecting competency deficits in the first two years.

Results: The best results were obtained in technical skills for which we had designed a training program since the beginning of the educational innovation plan and are kept unchanged throughout the courses. In 2013 and 2014, we had worse results in anamnesis, clinical management and physical exploration, so that from the year 2015 specific practical sessions were designed to improve the acquisition of these competencies and we obtained better results in the following years.

Communication skills and knowledge with for which there were no changes in teaching programming remained stable over time.

Conclusions: Analyzing the results by inter-annual competencies has served to detect areas of improvement. After implementing improvement activities through specific practices, a significant competency improvement in the students is objectified.

Keywords: OSCE, Pediatrics, Competences.

1 INTRODUCTION

The clinical competence is a group of knowledge, abilities, attitudes and good judgment required to solve properly the clinical situations involved in the exercise of Medicine. This competence includes several aspects related to the performance of the medical profession: communication, doctor-patient relation, professionalism, ethics, teaching, research, clinical management, group work, etc.(1) In medical education, the levels of pre-competence, competence and performance are differentiated. The competence is something that is demonstrated under evaluation controlled environments that simulate situations of the professional practice, whereas the performance is performed in the real professional activity (2, 3). The concept of pre-competence was developed considering that the professional medical formation is only the initial part of the educational process that must be followed to reach the competencies required for the exercise of Medicine(4).

In competence-based medical training relevance assessment to this approach is relevant, being the OSCE model the most widespread and used. Since its first use by Harden in 1975 (5) the Objective Structured Clinical Examination (OSCE) has been internationally validated for undergraduate students, their reliability, validity and their predictive ability to assess competences has been demonstrated in numerous studies. OSCE scores can help to detect deficiencies in specific competences and thus help to establish corrective measures.
In the Faculty of Medicine of Valladolid (Spain), from the academic year 2012-13, within a plan of teaching innovation in the Clinical Practice of Pediatrics, an OSCE was performed as evaluation model. In addition, a program of improvement proposals was initiated with the results obtained to be implemented in the following courses. The objective was to analyze the results by competences in an OSCE during 4 academic courses and to analyze variations in the results by competences in Pediatrics after making changes in teaching methodology due to the detection of areas for improvement.

2 MATERIAL AND METHODS

During the years 2013, 2014, 2015 and 2016, the Pediatrics Departments in the Faculty of Medicine of Valladolid was divided in two subjects to the same 649 medical students, in their last year of degree in the following way:

“Classical Pediatrics”, with classical methodology of transmission of knowledge through theoretical classes and seminars of clinical cases and Multi Choice Question (MCQ) for evaluation.

“Clinical Practice of Pediatrics”, where a teaching innovation project was established. New methodologies for the acquisition of competences were programmed through the virtual classroom, a clinical rotary in hospitals and simulation seminars. The evaluation consists in:

- Knowledge test: Multi Choice Question (MCQ), with 20 multiple-choice questions.
- OSCE test. Eleven stations were designed, ten with clinical cases and one with bibliographic search. At each station, some of different competences groups were evaluated: knowledge, anamnesis, physical examination, management, technical skills and communication.

Variables:

- Note of the MCQ carried out after the non-presence knowledge transfer program (“MCQ post-course”).
- Notes obtained in the OSCE for each of the groups of competences evaluated: anamnesis, physical examination, management, technical skills and communication.

Design and statistical analysis: The OSCE was held in 2013 (142 student), 2014 (149 student), 2015 (191 student) and 2016 (167 student). The exam duration for the first 3 years was 4 hours per student and it took three days to examine all the students. In 2016 we make a mini-OSCE reducing the duration of the same to 2:30 hours, being able to complete the test of all the students in a single day. We analyzed the competency scores (technical skills, anamnesis, clinical management, physical examination, communication skills and knowledge) obtained during the four courses and comparing the results on an inter-annual basis. We analyze the variations after the teachers changes introduced in the last two years when we detected the competences with the lowest scores in the first two years.

Trend differences were assessed by analysis of variance for three or more samples (ANOVA). P-value less than 0.05 were considered as statistically significant. Calculations were done using this statistic package R version 3.0 (R foundation for statistical computing. http://www.R-project.org), and SAS version 9.2. (Sas Institute Inc. Cary. NC, USA).

3 RESULTS

There are high scores on technical skills that remain unchanged throughout the courses (Table 1). In 2013 and 2014, there were worse results in anamnesis, clinical management and physical examination, so that from 2015 onwards, specific practical sessions were designed for these competences and as a result progressive improvements in competencies were seen in successive years.

Communication skills and knowledge for which there were no changes in teaching programming remained stable over time (Table 1).
Table 1. Competences analysis over the 4 years of the study

<table>
<thead>
<tr>
<th>Competences by years</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>Technical skills</td>
<td>8.27</td>
<td>1.32</td>
<td>8.68</td>
<td>0.76</td>
<td>8.51</td>
</tr>
<tr>
<td>Anamnesis</td>
<td>6.47</td>
<td>1.41</td>
<td>6.33</td>
<td>1.24</td>
<td>6.62</td>
</tr>
<tr>
<td>Communication skills</td>
<td>7.47</td>
<td>0.85</td>
<td>8.89</td>
<td>0.84</td>
<td>7.78</td>
</tr>
<tr>
<td>Physical examination</td>
<td>7.24</td>
<td>2.17</td>
<td>6.58</td>
<td>2.06</td>
<td>7.12</td>
</tr>
<tr>
<td>Clinical management</td>
<td>6.18</td>
<td>1.14</td>
<td>6.72</td>
<td>1.09</td>
<td>6.28</td>
</tr>
<tr>
<td>Knowledge</td>
<td>7.64</td>
<td>1.22</td>
<td>8.15</td>
<td>1.03</td>
<td>7.61</td>
</tr>
</tbody>
</table>

4 DISCUSSION

The competency deficit in anamnesis and management of clinical situations with better results in competencies of technical skills and communication is very constant in the results of other Spanish experiences of evaluation by competences (8,9,10). Kronfly Rubiano et al (8) describe the experience evolution and results of competency evaluation in Catalonia faculties of Medicine from 1994 to 2006 and find in their first experiences similar results to those contributed by our study. In evolution, they contribute to how it is possible to improve competency results by carrying out training strategies, such as the creation of clinical skills laboratories. Finally, from the analysis of the results of the evaluation by competences, it can be extracted relevant information to evaluate the teaching methodology in the faculties, if we analyze the deficits in competencies of their students we can implement improvement strategies (11,12).

The training in anamnesis skills can be structured in the form of a simulation workshop (13) and the execution of more clinical case seminars, focused on training students to make clinical decisions in a protocolized way. These are proposals for improvement for future actions of teacher innovation that are extracted from the analysis of the present work.

Our results support, together with the contributions of other authors (14-17), that the OSCE can be useful both for the detection of strengths and susceptible to improvement aspects in the field of medical training, helping to make decisions as to the introduction of changes in teaching planings, focusing on skills and problem solving rather than on subjects. From this it is possible to derive a contribution in the improvement of teaching methods that establishes from the pedegree, not only the aspects of clinical and professional competence, but also broader concepts such as professionalism.

During predegree medical training, the OSCE offers a formative and summative assessment. The formative evaluation identifies the deficiencies and encourages the improvement. Summative assessment helps to set the level, previously established, in particular areas. The OSCE provides immediate feedback to detect deficiencies within a curriculum, teaching methods, or both. Therefore, it is useful both for evaluation and for improving educational effectiveness(18).

Analyzing the information obtained from consecutive OSCE type examinations can serve to the institutions involved to justify that the detection of needs can be translated into planning and investment in improvement projects in the field of medical education. The innovation of training in medical faculties in the light of these findings, many of which may be of great complexity, will make it essential to learn and deepen the pedagogy of medicine.

In conclusion, analyzing the results by inter-annual competencies, has served to detect areas for improvement. After implementing improvement activities through specific practices, a significant competency improvement in the students is objectified.

REFERENCES


