ANALYSIS OF THE RESULTS OF THE FOUR YEARS OF RUNNING OF AN OSCE IN PEDIATRICS, DO WE DO IT WELL?

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Abstract

Introduction: Since the academic year 2012-13, a Structured Objective Clinical Examination (OSCE) is a final exam of the Subject “Clinical Practice of Pediatrics” in the Faculty of Medicine of Valladolid. This examination was established within a Teaching Innovation Plan, in which one of the proposed objectives was not only to change the way of evaluating our students, also to analyze the changes, the consequences of the same ones annually and establish actions of improvement to implant in the following courses.

Material and methods: The OSCE was done during these 4 years, in the month of June, at the end of the practices of the subject. The duration of the examination for the first 3 years was 4 hours, taking place over the course of 3 days, however, in the last course we did a mini OSCE, to adapt to the needs of the Faculty and reducing the duration of the same to 2: 30 h, being able to complete it in a single day in shift of morning and afternoon.

We analyzed the scores obtained in each of the OSCE stations, during the courses 2012/13, 2013/14, 2014/15 and 2015/16, of all the students who studied the subject “Clinical Practice of Pediatrics”, comparing the results of each year and between them and after the teaching changes introduced to detect areas with worse scores.

Objectives: Analyze the results of the students in an OSCE throughout 4 academic years.

Analyze the results in each of the stations after making changes in the teaching methodology.

Establish new areas for improvement.

Results: If we analyze the 7 stations that have remained the same during the days, we objectified a statistically significant improvement between the results obtained in the first year and those of the last year.

The stations: 1, 2 and 6, which value technical skills, received specific practical training, emphasizing each year in the deficits found in previous years, achieving better scores with statistically significant differences in two of them.

Regarding the stations which most valued professional performance in the clinical setting (3, 4 and 5), we aimed to improve the results in the two first OSCEs after implementing two new seminars that included techniques of anamnesis and physical exploration, these differences being statistically significant.

Regarding results obtained in the accomplishment of a bibliographical search, in spite of influencing its necessity and establishing the same as a mandatory task during the rotation, we have not achieved an improvement in the final score.

Conclusions: The realization of an OSCE as final examination meant a change in the methodology of the Subject that should be analyzed. Analyzing the global results, by stations, between years, has served to detect areas for improvement. After each improvement action, the impact of these actions must be evaluated in the shortest possible time, thus establishing their effectiveness.

Keywords: OSCE, Pediatrics, Score.
1 INTRODUCTION

According to the effect that the assessment has on the students and their learning process, the tool choosing to carry out the assessment process is one of the most difficult problems to face. In the moment of choosing an assessment instrument we have to take into account several reasons: first, those reasons that lead not to complete it, second, what we pretend to assess and third, the necessary requirements. It is essential that the assessment system eases the students’ training. It must be, as a whole, valid, reliable, feasible and efficient; it must have a diversified set of evaluating procedures and instruments to be able to assess all range of skills (1, 2). Miller Pyramid offers an interesting frame to establish the target of the evaluation in Medicine; it helps us to understand how significant the main evaluating systems are.

In the clinic sphere of the medical education simulations are used as evaluation procedure. They are artificial recreation of a clinic situation or circumstance with the aim that the assessed person can accomplish some tasks in a controlled way without any risks for the patients. Generally, the most used tools are: standardized patients, simulated patients and dummies. These simulation instruments can be used as unique although it is normal to used them in combination with other assessment instruments. It is done in different structured practical tests.

At the beginning, the structured practical tests were introduced with a training target, but more and more, they are being used with an adding target. The most usual is “Objective Structured Clinical Examinations” (OSCE), assessment method designed by Harden and his co-operators (3, 4), in the decade of the 70s. It consists in a serial of stations, through them we can evaluate skills and knowledge, by using standardized patients and structured assessing lists ‘checklists’. This method is much extended in Anglo-Saxon-influenced faculties. In our mean it has been deployed in the last years as evaluation and selection method in: specialized training, homologation of consultant titles and nowadays it is the established evaluation system by the National Dean Conference, in the Faculties of Medicine as students finish their Degree (5, 6).

The implementation of the new Degree of Medicine in the University if Valladolid has been developing, in a progressive way, course by course. This implementation finished in the course 2015-2016; in this year OSCE was established as Final Examination at the end of the Degree.

The Paediatrics Department decided to develop this kind of examination for the rotating internship time in the course 2012-2013 under the frame of a Teaching Innovation Plan.

2 OBJECTIVES

One of the proposed objectives in our Teaching Innovation Plan was to change the evaluation system for our students, setting the commitment of monitoring the changes and the consequences of those changes yearly to be able to implement improvement actions.

In this article we want: to analyse our students’ results in an exam, type OSCE along four academic courses. To analyse the results of each station after the changes made in the teaching method. To establish new improvement fields.

3 MATERIAL AND METHODS

From the academic year 2012-2013, in the Faculty of Medicine of Valladolid we started a Teaching Innovation Plan approved by the Paediatrics Department and the University of Valladolid. It had to be totally developed and analysed by 2016, moment when Bologna’s Plan would be definitively implanted in our Faculty. The program was developed in the subject Paediatric Clinic Practice, with 8 ECTS (European System Of Transfer And Accumulation Of Credits), following the scheme of the program of Tuning Project the credits were adapted.

Different teaching techniques were used: activities and presentation through Moodle platform belonging to UVA (University of Valladolid), practical seminars and workshops and a structuration of the internships carried out in hospitals. In addition, students were encouraged to practice technical skills, to practice abilities, to write documents, prepare and perform oral presentations individually or in groups and do bibliographic searches in specialized data bases.

The chosen assessment tool was “Objective Structured Clinical Examination” (OSCE), together with an exam of knowledge based on multiple choice questions.
The OSCE took place in June, at the end of the practical period of the subject. The first three years the length of the exam was four hours; it consisted of 12 clinic stations, and an exam of knowledge; two simultaneous identical sets were designed and three days were required to assess the whole of the students.

In the last course, as the OSCE has already been implemented to achieve the Degree, we decided to develop a mini-OSCE for our subject and in this way we adapted to the needs of our faculty. In order to get this, we reduced the stations to 6 and added a test on Case Reports (MEQ), the total length was two hours and a half. Four simultaneous identical sets were designed and all students were assessed in only one day in morning and afternoon shift.

We analysed the average scores got by the students who took part on the course Paediatric Clinic Practice (649) in each of the stations of the OSCE, along the courses 2012/13, 2013/14, 2014/15 and 2015/16. Comparing the results year-on-year and after the teaching changes introduced as areas with worse scoring had been detected.

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).

4 RESULTS

The stations analysed are described in the following table (See Table 1).

| STATION OSCE | Station 1 | Basic pediatric life support in a 3 months infant with Sudden Infant Death Syndrome, history-taking and resolution of the case. |
| Station 2 | Venous Access |
| Station 3 | Computer simulation station. Resolution of the case and therapeutic measures |
| Station 4 | History-taking, physical examination and anthropometric assessment of a 3 months healthy infant in a health check. |
| Station 5 | Medical literature search in PubMed. |
| Station 6 | Airway desobstruction in a high school patient |
| Station 7 | History-taking and supplementary tests in a 2 year old girl with fever without focus. |
| MCQ | Knowledge Test. |

As we explained above, the first three years we carried out an OSCE with 12 stations which we reduced to 6, in addition to the final test of knowledge and the bibliographic search.

If we analyse the 7 stations which stay still in time, we can objectify a statistically significant improvement between the results achieved in the different academic courses. (See Table 2)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>2013 (n=142)</th>
<th>2014 (n=149)</th>
<th>2015(n=191)</th>
<th>2016(n=167)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAN</td>
<td>DT</td>
<td>MEAN</td>
<td>DT</td>
<td>MEAN</td>
</tr>
<tr>
<td>Station 1</td>
<td>83,19</td>
<td>11,37</td>
<td>78,01</td>
<td>12,45</td>
</tr>
<tr>
<td>Station 2</td>
<td>71,90</td>
<td>14,82</td>
<td>72,27</td>
<td>12,33</td>
</tr>
<tr>
<td>Station 3</td>
<td>66,96</td>
<td>29,09</td>
<td>59,13</td>
<td>27,21</td>
</tr>
<tr>
<td>Station 4</td>
<td>69,96</td>
<td>11,87</td>
<td>68,24</td>
<td>11,80</td>
</tr>
<tr>
<td>Station 5</td>
<td>84,43</td>
<td>21,70</td>
<td>91,68</td>
<td>12,63</td>
</tr>
<tr>
<td>Station 6</td>
<td>81,08</td>
<td>17,08</td>
<td>80,31</td>
<td>15,38</td>
</tr>
<tr>
<td>Station 7</td>
<td>75,97</td>
<td>13,48</td>
<td>73,57</td>
<td>15,74</td>
</tr>
<tr>
<td>MCQ</td>
<td>76,36</td>
<td>12,24</td>
<td>81,39</td>
<td>10,23</td>
</tr>
<tr>
<td>GLOBAL</td>
<td>76,23</td>
<td>75,57</td>
<td>76,67</td>
<td>83,14</td>
</tr>
</tbody>
</table>
Stations 1, 2 and 6, which show technical skills, received a specific practical training based on practical seminars and simulations with dummies; focusing, year after year on those deficits discovered in the previous years’ evaluations. Applying this methodology we have got an improvement in the results that are statistically significant in 2 of them.

Analysing the results from those stations which most valued the professional performance in the environment of an examination room (3, 4 and 7), we objectify a clear deficit in the training programme; that is why some complementary seminar were developed. These seminars included anamnesis techniques and physical exploration in the courses 2014-15 and 2015-16 certifying an improvement from the results obtained in the first two OSCEs. These differences were statistically significant.

According to the results achieved through the bibliography search (Station 5), despite that we insisted in its need and importance and after establishing it as a compulsory duty during the rotatory shift, we have not obtained a consistent improvement in the final score.

5 DISCUSSION

The global average score of the OSCE in our study was slightly better than those given by national groups (7-9). These differences can be explained because, generally, the previous national experiences in pre-degree students consisted in global skills evaluation which included medical specialties (internal medicine, surgery, obstetrics and gynaecology, paediatrics ...) and with no specific programme of training by skills.

However in our study the students received previous specific training by skills and focused on competences in only one specialty, Paediatrics.

Analysing the results of each station of OSCE we can see significant differences in all of them, except in two of the stations, 1 and 5, and in the questionnaire. If we analyse Station 1, which assesses technical skills in CPR and the communication of an unfavourable fact to a relative, probably we cannot find differences along the years as the average mark is high from the very beginning and to improve it, a longer time in training this CPR (cardiopulmonary resuscitation) technique is required (10-13), not only a seminar and because our students are not able yet to notify “bad news”.

Most of our students have not had yet the necessity of searching information for the clinic practice or the research; due to this fact, they do not consider either attractive or necessary bibliographic searching or data bases. That is why they do not pay so much attention to it in spite of insisting so much about it along the course. So that, this is an area to improve in the following years.

The training deficit discovered in the stations which valued more the professional performance in the environment of an examination room (3, 4 and 7), improved clearly after launching the training seminars in small groups completing, in this way the training circle described by Project Tuning (14) and we can confirm that the training in clinic skills improves the performance in the skills evaluation. (15, 16).

The reliability data of the OSCE test, carried out the first year, (17-19) showed globally good results with Crombach alfa of 0.9 very similar to those given by other authors (9, 20-22), this allow us to valid the conclusions referred in the analysis of the analysed competences that built the trial.

6 CONCLUSIONS

Implementing an OSCE as final exam implied a change in the methodology of the subject that must be analysed. Monitoring global results, by stations and skills and detect the changes along the years has been useful to detect areas to improve. After each improving action the impact of the improvements in the shortest time must be assessed and in this way we can set up their effectiveness.

REFERENCES


