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Primary school children in a large-scale OSCE: recipe for disaster or formula for success?

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Abstract

Background

Many medical schools have moved to large end-of-year OSCEs in which it is difficult to involve children as patients. It is nevertheless important to assess student competencies in clinical examination of children.

Methods

We set up a partnership with a local primary school, where children aged 8 - 11 years have assisted with our OSCE annually from 2007 to 2012. Approximately 30 children attend each exam, and are distributed between 14 simultaneous stations, each part of a 20-station circuit. Approximately 280 candidates complete the same paediatric station (eg cardiovascular examination) in one morning.

Evaluation

160 children took part in the exams over this period, and of 129 (80.6%) who filled out a questionnaire: 99.2% agreed that they 'had enjoyed taking part in the exam'; 100% 'thought it was a good experience'; and 96.1% 'thought that it was well organised'. Parent and teacher feedback has been overwhelmingly positive.

Conclusion

We conclude that it is feasible to involve school children in a large-scale OSCE. A school - medical school partnership is mutually beneficial, improving assessment of important paediatric clinical skills, while providing a positive experience for children who participate.

(195 words)

Background

Many medical schools have changed their clinical summative assessment process from small examinations conducted repeatedly at the end of placements to large Objective Structured Clinical Examinations (OSCEs) held at the end of an academic year or session. These bigger exams tend to have greater reliability and are fairer since all students are examined on the same clinical tasks (Carraccio & Englander 2000; Boursicot et al. 2007). Within paediatrics, the OSCE format has been used successfully since the 1980's (Waterston et al. 1980), usually for relatively small exam cohorts of 60-100 candidates (Jackson 1981; Watson et al. 1982; Frost 1987). A disadvantage of moving to large multi-circuit examinations is that it is difficult to include real patients, particularly children. This is due to difficulties in assembling enough patients with a particular clinical sign, and also the challenging logistics and potential stress for children of involving them in a large exam (Carraccio & Englander 2000). One solution is to run the exam in small venues over several days, but this may result in exam content leaking out to students who have not yet done the exam. To overcome this, stations can be changed every day, but this makes comparison between students more difficult.

The School of Medicine in Leeds created a new end-of-year-4 summative OSCE exam in 2005, with 20 stations each lasting 8 minutes, comprising tasks from all the clinical placements in Year 4 (Paediatrics and Child Health, Obstetrics and Gynaecology, Psychiatry, Primary Care, and Medical and Surgical Specialities). The exam runs over 2 days in two adjoining large halls, with students attending on both days. On each day there are 14 circuits of 10 stations, with each day having a different set of stations. There are two exam sessions on each day, with the second set of

students 'quarantined' from the first during the changeover period. With this system, up to 140 students are examined in each session, so that all 280 candidates complete the first 10 stations on Day 1, and then stations 11 to 20 on Day 2. All are tested on exactly the same material, without the chance for leakage of exam content. Circuits with extended timings are provided for students with special circumstances (for example dyslexia).

Children in exams

The examination team considered that it was important to include children in the OSCE, because being able to examine a child is a core paediatric skill. Since assessment drives learning, it was felt that if children were not included, students may not prioritise this core skill. We agreed that these children did not need to be actual patients, since the primary skill being tested is the ability to examine a child appropriately and in a child-friendly fashion.

Aims

This paper has two aims:

- to describe how we have involved children in a large-scale OSCE over several years, and to offer practical advice to others who may wish to undertake a similar venture;
- to present an evaluation of the views of children, parents and teachers taking part, which supports our contention that this is both feasible and appropriate.

This report summarises our experience over 6 years (2007-2012),

Method

Practical implementation

We describe below details of how we have involved children in our exam. Box 1 gives additional practical tips.

The paediatric team approached several local schools, either in writing or in person, and in 2006 children came from a number of schools accompanied by their parents. By year two, an agreement was reached with one particular primary school that they would regularly send children to assist with our exam. Since then, children from one or two classes have been invited to participate in the exam, with the support of parents and teachers. All children participating must have a consent form signed by their parents/carers. Separate information sheets are provided for parents and children, and a short briefing session is held at the school.

From 2007 onwards, the exam has followed a similar format. The School of Medicine arranges coach transport to the exam for the school party, which consists of about 30 children aged 8-11, accompanied by several teachers and parents. Parents are invited to attend the exam, but it is made clear that this is not necessary. A group of nurse or student-nurse chaperones are recruited, one of whom is present with each child during the examination. Children are usually examined by 4 or 5 students consecutively (over about 35 minutes) before swapping with a classmate. When not being examined, the children return to a recreation room near the exam halls occupied by play specialists and other members of the paediatric team. Activities available included crafts, computer consoles, games, and some 'medical' activities such as listening to heart sounds with a stethoscope or testing reflexes. Refreshments are provided.

Children are briefed **just** before the exam, and understood that they should only participate if they want to, and if at any point they wish to withdraw, they should tell a member of staff and can return to the recreation room. Typical stations might include: examination of the cardiovascular or respiratory systems, examination of the abdomen or neurological examination of the legs. Children and parents receive general information about what the exam might involve at time of recruitment, and then detailed information (eg about the station focus) shortly before the OSCE.

Arrangements are in place to deal with any medical queries arising from examination by medical students, for example if a heart murmur is heard, the child is examined by a paediatrician. Children who attend the exam are given a certificate and small amount of pocket money (£5) in recognition of their help (standard practice within the School of Medicine). The paediatric team has visited the school on several occasions and has contributed to the school science programme as part of the developing partnership between the two institutions.

Evaluation process and ethical approval

Children, parents, carers and teachers **who participated in the exam were** asked to fill in an evaluation form at the end of the exam, **which included quantitative and qualitative elements.** From an ethical standpoint we felt wider consultation was **appropriate.** **Children have participated in our clinical examinations for many years (usually patients or relatives of faculty staff), but since this was a new direction involving school children, we sought advice from the Royal College of Paediatrics and Child Health and the General Medical Council, both of whom were supportive of the venture.** It was then agreed with the Year 4 examination team. In 2008 it was formally approved by the Educational Research Ethics Committee for the Schools of

Medicine and Dentistry, as part of a project where the children were asked to award a mark for each student.

Results

Children's responses

Children's written responses to questionnaires administered after the exams (2007-2012) are shown in Table 1. 160 children took part in the exams over this period, and 129 (80.6%) filled out a questionnaire. Children were asked whether they agreed or disagreed with the various statements: nearly all children agreed that they had 'enjoyed taking part in the exam'; 'thought it was a good experience'; 'thought that it was well organised'. A representative selection of qualitative comments from children about their experience are shown in Box 2.

Views of parents and teachers

Feedback from parents and teachers has been overwhelmingly positive. Typical parents' free text comments included: 'A good end-of-year experience for healthy children'; 'my children would like to come again'. 2 parents who thought it was not well organised explained that this related to arrangements for transport and refreshments that they felt had not been ideal. One parent commented that her child had 'talked confidently about his experience, describing the course of events. He was excited to show what he had been doing. It was good for his own learning and development.'

The school headteacher and other teachers involved have been very enthusiastic and supportive of this partnership. They see it as an opportunity for children to learn something about medicine and the process of clinical examination when they are well.

One teacher commented: “This is the third year I have attended with the children. The staff offer great activities for the children and your hospitality is wonderful. Many thanks, and keep things as they are.” Sessions in school have been positively received.

Discussion

Our experience shows that it is feasible and appropriate to involve primary school age children in a large OSCE exam, and that it is a mutually beneficial experience. We consider that our assessment process is improved through children’s participation, not least by the enthusiastic smiles that greet nervous students as they enter the paediatric station! It also means we are able to assess this essential skill within the OSCE format. We are glad that both the children and their school consider that there is an educational benefit from helping with our exam. Greater familiarity with aspects of medical practice may allay anxiety about future contact with health services, and may even influence children’s future career choices. To our knowledge, this partnership for medical student assessment is unique, although we are aware of a successful university-school partnership focused on teaching clinical paediatric skills in the school setting (McConnell et al. 2010).

Historically children have often taken part in undergraduate and postgraduate assessment, but their views on participating in this way have not usually been elicited (Waterston et al. 1980; Watson et al. 1982; Frost 1987). The limited literature on the views of children helping with assessments or exams reports that children perceive this as a positive experience (Woodward & Gliva-McConvey 1995; Lane et al. 1999; Carraccio & Englander 2000), and are motivated to help educate doctors (Klaber & Pollock 2009). However there is no literature reporting their experience of participating in the large OSCE format. We consider that asking children their views

empowers them as participants in the process of assessment and as potential future patients. This is in line with a greater emphasis in medicine and society at large, to listen to the views of children and young people regarding services that are provided for them. This has recently been emphasised by the Royal College of Paediatrics and Child Health (RCPCH) (Wood et al. 2010), and The Office of the Children's Commissioner (2012). Medical schools have increasingly emphasised the importance of the 'patient voice'. The RCPCH have recently developed a 'Patient Reported Experience Measure' in consultation with children to evaluate their experience of urgent and emergency care. This demonstrates that children can both design and complete evaluations related to their care (Davies 2012).

Children participating in our exam have been very positive about the experience. Specific negative comments (although few) from the children about their experience of the process of examination have helped us to ensure that any issues are addressed. This also improves how we educate students about examining children.

One concern about involving children in the exam in this way is whether their consent is freely given, since they may feel under obligation to participate, particularly if most of their class are involved. However, we are reassured by our observation of children during the examination, and the positive feedback from the children, their parents and teachers. We also emphasise that children do not need to take part in seeing students even once they have attended the exam, and in our briefing we explain that if at any point they wish to withdraw, they are able to do so by telling their chaperone or examiner. However, we have been pleased to see children returning in consecutive years, eager to see more students.

We have chosen to involve children aged between 8 and 11 years because younger children may not understand what is expected of them, and older children are more likely to have entered puberty, which increases likelihood of embarrassment in certain clinical examinations. We brief chaperones to ensure that the child's dignity and comfort is paramount.

One potential hazard of involving children is that exam content may leak out to medical students. At the initial recruitment stage, children and their parents are given generic information that outlines the range of potential systems examinations that could be the focus of the station. They are also asked to declare if they know any Leeds medical students (in which appropriate steps would be taken). Details of the clinical task to be carried out within the station are only explained to the children in a briefing a few days prior to the exam to minimise the risk of content leakage.

Involvement of school children as opposed to child patients raises the issue as to whether this sufficiently simulates clinical practice. However, being able to examine a system, whether pathology is present or not, is a core clinical skill. The purpose of involving children is not so much about testing students' ability to elicit physical signs, but primarily about assessing their approach to the clinical examination of children, with emphasis on a child-centred adaptation of the standard clinical method learned in earlier years. Supplementary clinical information can be added to the station (eg recording of cardiac murmur) to simultaneously test interpretation of some clinical signs. During their paediatric attachments, students must demonstrate

competence in paediatric clinical skills. Thus students are also assessed with 'real' patients during day-to-day clinical practice.

Conclusion

We have shown that it is feasible to involve school children in a large-scale OSCE. A partnership between a school and Medical School is mutually beneficial, improving assessment of important paediatric clinical skills, whilst providing a valuable experience for participating children.

Contributors

JD developed the initial concept of involving children in the OSCE in this format. JD and RB jointly led the implementation and ongoing development of the project. JD and RB jointly wrote the manuscript, and approved the final version for publication.

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Declaration of interest

The authors report no declarations of interest.

Notes on Contributors

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Tables and Boxes

Table 1 Feedback from children participating in the OSCE 2007-2012

Agreement with statement:	Agree %	Disagree %
I enjoyed taking part in the exam	99.2	0.8
I thought it was a good experience	100.0	0
I thought it was well organised	96.1	3.9

n= 129

Box 1 - Tips for including children in large-scale OSCEs

- Obtain written, informed consent from parents of participating children.
- Brief parents, teachers and children about the process, including details about what is expected and ensuring that clothing facilitates examination (eg wearing shorts for lower limb neurological examination). **Written information, photographs, video, or a prior visit to a similar exam (if practical) may all be helpful.**
- Ensure you have an experienced staff team to look after children. Our team includes play specialists, and experienced children's nurses.
- Have well-briefed chaperones whose primary role is to support and act as advocate for children within the OSCE setting.
- Brief examiners, chaperones and students, to ensure that the child's comfort is paramount.
- Have a good range of activities and resources, which could be a mix of educational and recreational.
- Have a system to address any unexpected medical findings identified during the exam.
- Ensure that your system allows for rapid changeovers, and that all children attending have a chance to take part.

Box 2 Feedback from children - themes from free text comments

'What did you like about helping with the exam?'

- helping student doctors (one child added 'and I could tell they needed the help!)
- meeting different people and students
- getting the chance to see doctors without being ill / learning about what doctors do
- great fun, craft, computer games
- missing school
- pocket money
- food
- using medical equipment (eg auscultation)
- being a good patient
- the examiner

'Was there anything you didn't like about the exam?'

(Majority left this blank)

- exposure/lifting up dress or top (8.5%)
- cold hands (0.8%)
- specific issues relating to type of clinical examination (3.1%): pressing on my tummy (abdominal examination); 'light too bright' (cranial nerve examination - pupillary responses); tendon hammer discomfort (plantar reflex).
- not enough money!' (0.8%)

'Do you have anything else you'd like to tell us about the morning?'

- thank you for being so nice.
- I really enjoyed it
- enjoyed the arts and crafts
- the biscuits
- the computer games