Testing a Team Objective Structured Interprofessional Clinical Assessment (TOSCA)
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Abstract
The aim of this project was to test and evaluate a Team Objective Structured Interprofessional Clinical Assessment (TOSCA) procedure as a measure of effective interprofessional team-working. An interprofessional case history was developed and trialled with 2 groups of volunteer 3rd and 4th year students drawn from four professional disciplines suited to the scenario; (Physiotherapy, Occupational Therapy, Mental Health Nursing and Social Work). The 4 students in each test group were briefed and provided with a copy of the case notes and some background information regarding the social and interpersonal difficulties of the patient described in the case. Each group of 4 students was then instructed to discuss and come to an agreement of a case plan for the patient and then left to discuss the case for 20 minutes during which time a filmed record of the discussion was made.

The results were clear and encouraging in that all the students engaged with the task and were able to contribute meaningfully to it. In both filmed TOSCA encounters the students were able to communicate effectively and bring discipline specific relevant information to the discussion. The student evaluations indicated that the students saw the assessment as a suitable methodology and the researchers feel that this form of assessment will be able to inform future developments in interprofessional skills teaching and assessment.

Background
Interprofessional Education aims to develop all health and social care students’ understanding and competence for working in an interprofessional caring environment; it should help instil the knowledge, skills, attitudes and values that are thought to be important for the effective delivery of collaborative teamwork in today’s complex health and social care environment. The importance of learning which promotes interprofessional working is endorsed by the NHS Healthcare Quality Improvement Strategy1 which acknowledges the importance of team-working to ensure safe, effective, person-centred care. Similarly, the Institute of Healthcare Improvement highlights the importance of human factors in preventing adverse incidents which risk patient safety. Interprofessional education is a necessary step in preparing a ‘collaborative practice-ready’ health workforce that is better prepared to respond to local health needs2

Authenticity and customization are important mechanisms for positive outcomes of IPE3; Reeves4 has also emphasised the need for IPE educators to develop team based assessments of team effectiveness. However, attempting to assess teamwork can be problematic and there is limited evaluative evidence currently available in the literature. One potentially useful approach to assess interprofessional team performance is to employ an objective structured clinical examination (OSCE) approach. Symonds et al5 describe the use of an OSCE which they term the interprofessional team objective structured clinical examination (ITOSCE) by employing a mixed group of medical and midwifery learners rotating through a series of scenarios on common labour-room problems. Two further examples of designing and piloting TOSCA for wider interprofessional application were presented as oral presentations at The ATBH V1 Conference in Kobe Japan, where promising results were reported6,7.
Our proposal therefore was to find out if we could use our clinical simulation environment as an area where students could experience an interprofessional case conference and have their contribution filmed and assessed reliably by trained observers.

**Aim of proposed research and development project**

To evaluate the effectiveness of the TOSCA approach to assessing interprofessional team working in a clinical skills environment.

**Methods**

The TOSCA assessment chosen (see Appendix 2), was adapted from a similar assessment developed at McMaster University. The assessment was chosen specifically to suit input from at least 4 disciplines and for students who were experienced enough in their training to contribute to an interprofessional discussion. To this end we sought 3rd and 4th Year student volunteers drawn from Nursing, Social Work, Occupational Therapy and Physiotherapy. Ethical approval was given for the project by the Glasgow Caledonian University School of Health and Life Sciences Ethics Committee.

The 8 student volunteers were allocated into interprofessional groups of 4 and were provided with a written information sheet in advance of the trial describing what they would be asked to do and what to expect. They were told at recruitment and again told before we ran the simulation that their participation was voluntary. The students signed a form indicating that they had been given informed consent and they were reminded that they could withdraw at any time without penalty and for any reason. They were also told that they would be asked to complete a short questionnaire regarding their feelings about the TOSCA experience but this was voluntary and not compulsory. The student volunteers received a brief explanation of the purpose of the study at the beginning of their participation and any questions were answered. It was emphasized to the students that the purpose of the study was to test the feasibility of assessing student performance in an interprofessional discussion. The discussion was filmed and audio recorded using automatic fixed position cameras and audio recording equipment designed for this purpose.

The research team were then given copies of the two filmed group discussions and independently assessed the effectiveness of the students contributing to a team discussion against agreed collaborative competencies using an adapted version of the McMaster validated TOSCA encounter checklist, i.e.

- Communication,
- Collaboration,
- Understanding roles and responsibilities,
- Adopting a collaborative patient/client centered approach,
- Delivering an input to the team.

Team performance was observed and rated independently by the 3 project team observers. Observers were able to view the filmed recording of the discussion and scored the students on a 0-9 scale with a score of 1-4 indicating worse than expected and a score of 6-9 indicating better than expected and with a score of 5 acting as a midpoint. The 3 observers’ sets of scores were analyzed using Cohen’s kappa coefficient, a statistical measure of inter-rater agreement.

The validity and reliability of the TOSCA experience from a student perspective was also provided by analysis of questionnaire responses relating to questions investigating how the students viewed the assessment experience.
RESULTS

Table 1: Group 1 judgements by student and observer rating.

<table>
<thead>
<tr>
<th>SKILL</th>
<th>Observer</th>
<th>STUDENT A</th>
<th>STUDENT B</th>
<th>STUDENT C</th>
<th>STUDENT D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>A B C</td>
<td>A B C</td>
<td>A B C</td>
<td>A B C</td>
</tr>
<tr>
<td>Communication</td>
<td>6 7 7</td>
<td>7 7 8</td>
<td>6 7 6</td>
<td>7 8 7</td>
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</tr>
<tr>
<td>Collaboration</td>
<td>7 7 6</td>
<td>7 7 8</td>
<td>7 7 7</td>
<td>8 8 8</td>
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</tr>
<tr>
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<td>7 7 8</td>
<td>5 6 6</td>
<td>7 7 7</td>
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<tr>
<td>Collab. Approach</td>
<td>7 7 7</td>
<td>6 6 7</td>
<td>6 6 6</td>
<td>7 7 8</td>
<td></td>
</tr>
<tr>
<td>Team Function</td>
<td>7 7 7</td>
<td>7 8 8</td>
<td>7 7 7</td>
<td>8 8 8</td>
<td></td>
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</tbody>
</table>

Table 2: Group 2 judgements by student and observer rating.

<table>
<thead>
<tr>
<th>SKILL</th>
<th>Observer</th>
<th>STUDENT A</th>
<th>STUDENT B</th>
<th>STUDENT C</th>
<th>STUDENT D</th>
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<tbody>
<tr>
<td></td>
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<td>A B C</td>
<td>A B C</td>
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<tr>
<td>Communication</td>
<td>6 6 6</td>
<td>7 7 7</td>
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<tr>
<td>Collaboration</td>
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<td>6 7 7</td>
<td>6 7 7</td>
<td>7 6 7</td>
<td></td>
</tr>
<tr>
<td>Roles</td>
<td>7 7 5</td>
<td>7 7 7</td>
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<td>Collab. Approach</td>
<td>6 7 6</td>
<td>7 7 6</td>
<td>6 7 6</td>
<td>7 6 7</td>
<td></td>
</tr>
<tr>
<td>Team Function</td>
<td>7 6 5</td>
<td>7 7 6</td>
<td>7 7 6</td>
<td>7 7 7</td>
<td></td>
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</tbody>
</table>

Table 3: Consistency of Observer Judgement (N=120 paired judgements)

<table>
<thead>
<tr>
<th>Observers</th>
<th>% Agreement</th>
<th>Cohen’s Kappa/Level of Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>A + B</td>
<td>68%</td>
<td>0.52 / Medium-Strong</td>
</tr>
<tr>
<td>B + C</td>
<td>66%</td>
<td>0.50 / Medium – Strong</td>
</tr>
<tr>
<td>A + C</td>
<td>66%</td>
<td>0.50/ Medium to Strong</td>
</tr>
<tr>
<td>Question Type</td>
<td>Strongly Agree</td>
<td>Agree</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------</td>
<td>-------</td>
</tr>
<tr>
<td>Positively Phrased questions</td>
<td>77.5%</td>
<td>22.5%</td>
</tr>
<tr>
<td>Negatively Phrased Questions</td>
<td>7.5%</td>
<td></td>
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</tbody>
</table>

**Discussion**

The investigation provided clear evidence that this type of interprofessional assessment exercise is feasible and could be used as a teaching and assessment tool in interprofessional education. The 8 volunteer students embraced the task seriously and reported the experience to be of value to them. The three observers assessed the team discussion independently using the filmed record and there was medium to strong agreement in the consistency of judgement of the individual student input into the discussion (see tables 1 and 2). The student response to the questionnaire (see table 3) indicated a strong support for this type of interprofessional experience and it was also interesting that they felt the TOSCA assessment was definitely an appropriate method for assessing student input.

The researchers were agreed that this approach of assessing interprofessional competence through assessment of filmed interpersonal communication skills is worth pursuing. It was noted that the case study chosen in this trial was critical in providing students with the opportunity to participate meaningfully. There was sufficient information embedded in the case study from both a clinical and a social perspective to engage the 4 professions. This is something that will need to be retained and checked in the development of further appropriate TOSCA scenarios that will be needed for team assessment of alternative professions to the ones used here.

**Recommendations**

The TOSPA can be recommended as a feasible method for students to experience and be assessed in interprofessional communication.

The mechanism of automatic filming did not interfere with the process. The filming is important in providing a standard record for independent marking. The TOSPA film can also be used as a formative teaching aid when feeding back to students about what they did well and where improvements could be made.

The TOSPA experience would seem to be valued by students as a truly useful exercise making ‘interprofessional sense’.

The TOSPA used in this project was thought to be successful because the case was accessible and important to all four disciplines. More TOSPA cases relevant to a different mix of disciplines will be needed and time and funds will need to be allocated to develop and pilot them.
References


3. CAIPE (2012) Interprofessional Education in Pre-Registration courses. A CAIPE guide for Commissioners and Regulators of Education.


Appendix 1

Copy of questions used in the questionnaire

Q1. The Assessment was explained in a way that I knew what I was supposed to do
Q2. The Assessment room was appropriate to the task
Q3. The other students seemed to know what to do better than me
Q4. It was difficult to know who was leading the group
Q5. I found it difficult to get my point across to the rest of the group
Q6. It was interesting to hear the other professions’ viewpoints on the case we were discussing
Q7. I felt uncomfortable that I had to say stuff when I didn’t really have anything to say.
Q8. I can see why this type of assessment would be useful to us in our professional lives
Q9. I didn’t like the experience of being assessed
Q10. I think being taught and then assessed in interprofessional activities by simulations like this is a good idea.
Appendix 2

You have 20 minutes to discuss the case and suggest a care plan and you will be assessed on your contribution to the discussion.

Alan Kettle, 37 yrs old, is morbidly obese and has low self-esteem and social phobia. He fell last week getting out of the shower and his elderly parents had trouble getting him up so called 999. He is asking for a motorized scooter as he has been having increasing trouble walking due to weight, OA (knee and hip) and SOB. He previously requested a scooter 1 year ago but was declined. The Occupational Therapist thought the scooter would decrease his functional status. Alan is coming in for his appointment next week to once again request a scooter. The clinician, with whom he has booked his time, has requested that he be reviewed by the team to develop a response and an approach, prior to his visit.

Alan’s Medical History is attached (see below)

DOB: April 13, 1977 /Weight: 325lbs/ Height: 5’10”/ BMI: 46.6 (> 90th percentile for age) Obesity onset: Childhood Diabetes- Type 2 medication dependant since 2005; Oral weight loss meds and various diets have failed. Social anxiety: (has prevented follow-up with obesity clinic)

OA (knees and hips) Sleep apnea (intermittently compliant with CPAP)

Most Recent Investigations

HbA1c 0.088 BP 149/92 BMI 46.6

Renal function: Sodium 137; Potassium 3.6; Urea 8.7; Creatinine 128

Medications :Celecoxib 60mg po od (for pain) ; Orlistat (Xenical) 120mg po tid with each main meal (anti-obesity); Metformin 500mg tid (for diabetes); Clonazepam 0.5mg tid prn (for anxiety); Ramipril 2.5mg po od (for blood pressure and kidney care)

Social History College –courses x2 Writing literature; Introduction to Journalism; online Employment- occasionally publishes fiction stories via ‘people watching’ at shopping malls etc.

Social phobia


Non smoker; Non drinker

Parents- Mabel and Patrick Kettle- did counselling course 2006 “ Food and Enabling’

Sisters –older- Alicia-healthcare admin; Cindy- nurse; Stephanie; pharmaceutical rep