

Assessing team in team objectively structured bedside assessment (TOSBA)

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Abstract

Team objectively structured bed side assessment (TOSBA) is one of the tools used by medical students to assess teamwork.

The aim of this study was to measure the team scores and to correlate team performance scores with individual performance in final year medical students using TOSBA. It was a quasi-experimental study including 100 students, divided into 22 teams comprising of 4-6 members. TOSBA sessions were setup for module assessment of teams. Their individual and team performance scores were measured. Correlation between individual and team scores was calculated using Pearson correlation test. Results of the study showed seven (7) high scoring, eight (8) medium scoring and seven (7) low scoring teams. Team scores had a statistically significant correlation with individual scores ($p < 0.05$). Reliability of the tool was 0.58 with a high convergent validity.

TOSBA is a tool that can be used for individual and team assessment during clerkships.

Keywords: Team, Collaboration, Assessment

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Introduction

Medical students are taught collectively but most assessments are carried out individually. Current evidence suggests that teamwork in hospitals is related to improved patient outcomes and physician well-being.¹

Few studies have assessed teamwork in under-graduate medical students. One of the studies done in Vienna on 1st year medical students elaborated that students working in teams perform well than when they work alone.² Their team scores, when compared with their final exams scores were found to be significantly higher indicating the impact of teamwork on learning.² Many tools have been developed to assess teamwork in medical students. NOTSS (Non-technical skills for surgeons), Team objectively structured clinical examination (TOSCE) and

Team objectively structured bed side assessment (TOSBA).^{3,4}

TOSBA comprises of teams of five members who in 25-30 minutes and perform five clinical tasks including history taking, physical examination, making a differential diagnosis, formulating an investigation and management plan and discussing patient drug treatment chart,⁴ given grades by facilitators followed by standardized verbal group feedback.⁵ Previous studies have used TOSBA for formative assessment of individuals working in teams.⁶ Role of TOSBA as a summative assessment tool has not been studied. In this study, TOSBA will be used as formative and summative assessment tools as it is used for bed side learning useful in clerkship years, its objectivity and simplicity.^{4,6-8} The previous studies done in Irish Medical Schools, have shown its reliability of 0.6.

The aims of this study were to measure the individual and team performance scores using TOSBA and to correlate team performance scores with individual performance scores.

Methods

It was a quasi-experimental study carried out in the Department of Pulmonology Fauji Foundation Hospital, Rawalpindi from October 2016 to June 2017, on final year medical students of Foundation University Medical College, on clerkship rotations to medical wards. It was a single institutional study aiming to get an insight into the contextual experiences of assessment.

The sample size was calculated using Raosoft Sample size calculator.⁹ In a target population of 140 final year students who gave consent to participate in the study, with a confidence interval of 95% the sample size was 103. Three students were absent, hence they were excluded from the study and 100 students actually participated, divided into 22 teams by simple random sampling, using lottery method on their roll numbers, each team including 4 to 6 students.

Sixty three (63) female and thirty seven (37) male students participated in the study, in accordance with female gender preponderance in Pakistani Medical Schools.¹⁰

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During TOSBA, students in teams of 4-6 students followed 5 step evaluation on real patients. Every team-patient interaction lasted for 25 minutes in TOSBA. At one time, three teams were trained and assessed with a total of 5 sessions on TOSBA. The checklist of TOSBA sessions is given in Annexure 1.

For purpose of standardization, individual and teams were assessed on clinical evaluation of Respiratory System only. Five respiratory themes were identified; including Asthma/COPD, Tuberculosis, Bronchiectasis, Pneumonia and Pleural effusion and were assessed by the five components of TOSBA.

Two examiners were trained to conduct TOSBA, observe and assess teams and give a constructive feedback.

Annexure: TOSBA Checklist Components of Respiratory System History and Examination ("Clinical_Examination_7th_Edition_9780729541473_Talley.pdf.crdownload," n.d.). Score P+ (>80%) P (60-79%) P-(<60%).

History	Examination
Personal profile Name/ age/sex/residence/mode of admission/date of admission	Inspection Shape of chest/ type of respiration/ respiratory rate / scar marks/ deformities/ visible pulsations/veins
Presenting Complaints Shortness of breath/cough/chest pain/fever in chronological order	
History of Present Illness 1.Detail of Presenting Complaints Onset/duration/progression/aggravating/relieving factors	Palpation Trachea/apex beat/chest movements/ chest expansion
2. Associated Complaints 3. Systemic review General Fever/weight loss/ anorexia	
GIT Nausea/vomiting/ diarrhea/constipation	
Cardiovascular Palpitations/edema /syncope	
Genito-urinary Dysuria/ hematuria/dysmenorrhea	
Musculoskeletal Joint pains/skin rash/eye symptoms	
Neurological Headache/fits/blackout/ drowsiness	
5.Treatment history Drug history for current problems Procedure history Operation history	
Past history 1.Past medical history/2.Past surgical history/ 3.Comorbids	
Family History History of diabetes, asthma, Tuberculosis, any respiratory illness	Percussion Rules of Percussion 1.Middle finger on middle finger(pleximeter with plexor), 2.Movement at the wrist joint 3. Percuss twice and lift your finger
Personal History 1.smoking/addictions 2.occupational history Exposure to farms, coal, cotton, sugarcane	Auscultation 1.Auscultation: * Breath sounds (vesicular/ bronchial), * added sounds(crepts, wheezes, pleural rub)
3.Environmental history Exposure to birds, moldy hay, trees, mites	2.Vocal resonance (normal/increased/decreased)
4. Marital/sexual history	3.Whispering pectorliquy (positive/negative)
5. Socio-economic history	

Table: Demographic data and TOSBA scores.

Demographic character	Results
1. Age	Mean 24.17 Median 24 Standard Deviation 0.761
2. Gender	Female 63(63%) Male 37(37%)
3. Gender distribution in teams	Predominantly female 11 Predominantly Male 7 Gender Equal 4
4. Individual scores (Total students 100)	High scores (P+) 33(33%) Medium scores(P) 41(41%) Low scores(P-) 26(26%)
5. Team scores (Total teams 22)	High scoring 7 (31.81%) Medium scoring 8(36.36%) Low scoring 7(31.81%)
6. Reliability (Cronbach alpha)	0.584
7. Convergent validity	High *
8. Pearson correlation test	(0.413)*

*statistically significant ($p < 0.05$).

Students were instructed to perform one of the five tasks taking help from their team members. Each team prepared the case using five components of TOSBA for 25 minutes and presented it to the examiners in a sequential manner; one student presented history, the other student performed examination and so on. Students were awarded grades as originally described by Miller.⁶ These include P+ (Honours Achieved), P (Pass) and P- (Fail).

Team scores were calculated from average of individual scores and classified as high scoring, medium scoring and low scoring teams. The final scores were calculated from the mean of individual and team scores.

The data was analyzed using SPSS software version 20. Correlation of their individual scores with team scores was measured using Pearson correlation test taking p -value of 0.05 as significant.

Results

The mean age of the students was 24.13 ± 0.761 . Sixty-three (63%) students were female and 37(37%) were male. The demographic characteristics of our teams are described in Table.

Correlation between individual and team scores was carried out using Pearson Correlation test. Results of Pearson Correlation Test are given in table.

Discussion

The aims of this study were to measure the individual and team performance scores using TOSBA and to correlate

team performance scores with students' individual performance.

Reliability of TOSBA in the present study was moderate (0.58); same as in previous studies. There was statistically significant correlation between these individual and team scores, indicating that each member contribute to performance of a team. The convergent validity of the tool is high ($p < 0.05$), indicating strong relationship between individual and team scores and strong construct validity of TOSBA. TOSBA design was elaborated in our study. All teams experienced five sessions of TOSBA, one with each theme. They had time to learn from the feedback and their peer mistakes. This advantage of TOSBA has not been described in the previous studies. In the study by Miller and colleagues, peer learning was postulated as learning from watching their peers.¹¹ However, the study does not describe the complex social interactions that are a necessary pre-requisite for peer learning.

Themes of respiratory system were assessed by using TOSBA to ensure uniformity. Patients including multiple themes; respiratory, cardiovascular and neurology were used in the study by Miller.^{6,11} Few later studies used one theme like a study by Deane et al obstetrics and gynaecology⁵ and the study by Jain; otolaryngology.¹² In our study, in addition to the individual scores measured by TOSBA, team scores were calculated by taking the mean of all individual scores in a team. This has not been described in the previous studies on TOSBA. Also, complex team interactions were not explained. In this study, students interact and their team dynamics were noted by examiners.¹³

The reliability of individual and team scores using two examiners is 0.584. In the study by Meagher and colleagues, reliability was 0.6 using 3 examiners.⁶ This indicates that two or 3 examiners does not make much difference.

For purpose of standardization our study used respiratory themes only. More themes, related to other systems in medicine may be added to improve the internal consistency.

Future studies need to incorporate TOSBA during clerkships for entire curriculum. There was a significant correlation between individual and team scores in TOSBA.

Conclusions

TOSBA is a valuable tool for assessing teamwork. It is feasible, moderately reliable and has a good impact on medical students. It can be used to assess individual performance and team performance.

Disclaimer: It is a thesis-based article.

Conflict of Interest: None.

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