ORIGINAL ARTICLE

Moving from long case to scenario-based clinical examination: Proposals for making it feasible

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ABSTRACT

Introduction: Our faculty used one long case (LC) and three short cases for the clinical component of the final professional examinations. During the COVID-19 pandemic, the LC had to be replaced with scenario-based clinical examination (SBCE) due to the impracticability of using recently hospitalised patients. While keeping the short case component as usual, the LC had to be replaced with SBCE in 2020 for the first time at a short notice. To evaluate the positive and negative aspects of SBCE and LC to determine the feasibility of replacing LC with SBCE in future examinations.

Materials and methods: We compared the LC scores of three previous years with those of the SBCE and studied the feedback of the three stakeholders: students, examiners, and simulated patients (SPs), regarding their experience with SBCE and the suitability of SBCE as an alternative for LC in future examinations.

Results: The SBCE scores were higher than those of the LC. Most of the examiners and students were not in favour of SBCE replacing LC, as such. The SPs were more positive about the proposition. The comments of the three stakeholders brought out the plus and minus points of LC and SBCE, which prompted our proposals to make SBCE more practical for future examinations.

Conclusion: Having analysed the feedback of the stakeholders, and the positive and negative aspects of LC and SBCE, it was evident that SBCE needed improvements. We have proposed eight modifications to SBCE to make it a viable alternative for LC.

KEYWORDS:
SBCE, scenario-based clinical examination, issues of long case, simulated patients

INTRODUCTION

Many medical schools use real-patient long case (LC) for examinations because of the longstanding tradition, its availability, and face validity. However, many western medical schools have moved away from real-patient LC, alleging it to be low in validity, reliability, and objectivity,[1] and replaced it with Objective Structured Clinical Examination and Objective Structured Long Examination Record (OSLER).[2,3] In the pandemic year of 2020, The Faculty of Medicine and Health Sciences, UNIMAS used Scenario-Based Clinical Examination (SBCE) with simulated patients (SPs) for history-taking to replace LC, as already practised by others.[4,5] The short cases tested physical examination (PE) without any changes. Our SBCE could be compared to OSLER with the exception that the former did not assess PE. The expected first response of any experienced clinical examiner would be a 'no' for the prospect of SBCE replacing LC. The traditional LC assesses the student's clinical acumen, soft skills, PE skill, depth of knowledge of multiple conditions, and drug effects. At the same time, SBCE assesses the students' history-taking skill and the knowledge domain using written scenarios and SPs. The aim of this study was to consider all the positive and negative aspects of LC and SBCE in order to determine the practicality of moving from LC to SBCE in future examinations.

MATERIALS AND METHODS

The SBCE scenarios for the final professional examination (FPE) of the year 2020 were written, and SPs were trained by the same disciplines as those regularly involved in the previous years' LC examinations. The disciplines involved were medicine, surgery, obstetrics and gynaecology (O&G), paediatrics, orthopaedics, and psychological medicine. Some examples of the topics used in the scenarios were bronchial asthma, acute rheumatic fever, anaemia, acute cholecystitis, breast cancer, antepartum haemorrhage, and gestational diabetes. The students were briefed in advance about the process of the SBCE. The lead question, based on which the history was to be taken, was provided to the student 5 minutes before entering the examiners' room, where the SP was also seated. Five teams, each with three examiners from different disciplines, assessed the students' performance. The examiners were provided with the relevant scenarios, the information to be gathered by the students, the diagnosis, and the likely clinical signs and investigation results. Each student took the history from the provided SP to reach a diagnosis and possible differential diagnoses. The examiners observed the 15-minute history-taking session uninterruptedly. During the following 30-minute discussion segment, the student presented the case summary with the diagnosis and/or differential diagnoses and answered the examiners' questions. The questions included the likely physical findings, how the diagnosis was reached, the interpretation of investigation results provided, and a management outline. The Medical Education Unit (MEU) had prepared new marking rubrics for the SBCE. It showed the

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Table I: The students' responses to the questionnaire

Students (all the 106 responded)		
Questions	**Options and responses**	**Comments**
1. Your experience with the just completed SBCE—SR	Liked it—M3 S7 P2 OG7 OR1=20 (18.87%) It was a nerve-wrecking experience—M12 S9 P6 OG6 OR1 Psy7 = 41 (38.68%) It was fair—M12 S14 P5 OG9 OR5 Psy0 = 45 (42.45%)	• SBCE does not assess clinical skills, but communication skills • Some students may take more time to organise their thoughts • SBCE is good for focussed history-taking • SBCE is very different from real patients; it is good for exam purposes. It should not replace LC entirely • SBCE is good enough to replace LC, but students need more exposure to it before the exam • The time allocation is enough only for focused history • SBCE is a textbook presentation, so it is easier than LC • Real patients are very complex with multiple issues and drug side effects. • It will be easy to create many SBCEs for practice • LC is classical, and it cannot be replaced with SBCE fully • SBCE needs quick thinking, and it will be good to have more exposure to it. • SBCE is more challenging, as it needs quick decision making. It may be the way forward • SBCE demands more thorough thinking to form the differential diagnoses • In SBCE, we need to clerk in English. It creates problem, as we tend to use medical jargon • LC focusses on history, PE, DD. In SBCE, the discussion becomes more theoretical • It will be challenging for slow-thinking students • The SPs having medical background was helpful • Real patients talk irrelevant things, but SBCE is focussed • SBCE is structured and straight to the point, unlike LC • The lead question in the scenario was too broad • The scenario should be clearer and more direct • Real patients come with multiple problems unlike SBCE • The success of SBCE depends on how well-trained the SPs are • The SP fumbled and was slow to answer • Facing lecturer as SP was nerve wrecking. But it will be OK with more practice • Clerking under observation is intimidating, but it tests the communication skills • Scenarios were straightforward in surgery, but complex cases were given medicine. • There is a risk for students training among themselves rather than going to hospital to see patients • Students need more practice on targeted history-taking • Psychiatry cases need more time
2. Should SBCE replace LC in future—SR	SBCE is better than LC—32 (30%) SBCE should not replace LC—10 (10%) Can be used only in Covid-like situations—64 (60%)	
3. History-taking while being observed by examiners—SR	It did not affect me—35 (34%) It made me nervous – —62 (58%) It affected my performance considerably—9 (8%)	
4. Your opinion about using SPs for SBCE—MR	SPs are better than real patients—46 (43.4%) SPs misled the students sometimes—8 (7.5%) I was nervous to face lecturers as SP—28 (26.5%) SP fumbled while answering my questions—8 (7.6%) SPs need more training—15 (14%)	
5. Regarding time allocation for history-taking session—SR	It was sufficient—68 (64%) It was insufficient—38 (36%) It was too long—0	
6. Rate your satisfaction with the SBCE process 1–10—SR	1 – 1 6 - 15 2 – 1 7 - 24 3 – 5 8 - 27 4 – 3 9 - 13 5 – 12 10 – 5 Mean 7.04	

DD = differential diagnoses, G = O&G, LC = long case, M = medicine, MR = multiple response, P = paediatrics, PE = physical examination, R = orthopaedics, S = surgery, SBCE = scenario-based clinical examination, SR = single response, Y = psychological medicine.

criteria for unsatisfactory, borderline, satisfactory, and excellent performance in each domain, such as history, diagnosis, investigation, and management (80%), communication skills (10%), and global assessment (10%). The MEU compiled the marks and prepared the results.

The first part of the study was to compare the scores of the previous 3 years' LC with the score of the SBCE. The second part of the study was to conduct short surveys among the three stakeholders using semi-structured questionnaires. The three questionnaires were written and vetted by the authors. Each questionnaire contained four to six questions—eliciting single or multiple 'tick responses' and free comments, which

Table II: The examiners' responses to the survey questionnaire

Examiners—16 responded – M5 S3 G5 P2 R1 Y0		
1. Regarding the just completed SBCE—SR	• It is better than LC—2 (12.5%) • It can safely replace LC – 4 (25%) • Suitable only in a covid-like situation – 8 (50%) • It is inferior to LC – 2 (12.5%)	• SPs were not quite well trained; need fine tuning; need to instruct them which history to give spontaneously and which, when asked • The SBCE scenarios were not well designed, rather artificial. • SBCE should be a temporary alternative for the much better real-patient LC. • I still prefer traditional LC. However, SBCE is adequate to replace it in special times. • SBCE is fixed and closed type of assessment. In long term, students may catch up with the questions we ask, and it will be difficult to differentiate good and weak students. • Physical examination is lacking in SBCE. • LC has more varieties. Even same disease has personal variations, management can be different. • SBCE marking scheme is rigid with no flexibility • Question stem given to the candidate is too generous providing a clue on the diagnosis • It is good enough to replace LC. • SBCE—work in progress • Very artificial. Perhaps only good for history. It is too easy for weak students to excel. Someone whom I would have given a bare pass, now able to achieve near distinction marks. It is not a good way of grading, too structured • One advantage of SBCE is the inclusion of emergency cases, not possible in LC, e.g. gastrointestinal bleeds or infectious diseases. This is useful for testing overall knowledge. • The distribution of marks seems to be arbitrarily decided; must be discussed by a panel • Taking history right under examiners' nose may put extra stress on the student. • Clinical examination in a LC cannot be compensated by short cases, as they differ widely. • SBCE can replace formal LC. • SBCE marking is more objective compared to LC • We should replace LC with SBCE. It's quite difficult to move patients from hospital to examination centre. • SBCE is not on par with LC. More pressure for students to ask SPs compared to real patients. • Definitely, SPs cannot replace actual patients. For example, in the surgical scenario of cholecystitis, student asked SP the urine colour. He answered deep yellow; deep yellow like what? SP answered, like tea. The LFT result did not show obstructive picture, which threw students off. It's just not real.
2. Regarding the scenarios used in SBCE—SR	• They were adequate – 4 (25%) • Only some of them were adequate – 7 (43.75%) • More care and thoughts should be given while writing scenarios—5 (31.25%)	
3. Regarding the SPs—MR	• Satisfied with their performance – 12 (75%) • They did not perform well—0 • They need more training – 4 (25%) • Some of them were distracting to the students—0	
4. Regarding the marking scheme—MR	• It was done nicely—11 (69%) • It was confusing and difficult to follow—1 • It needs improvement—4 • It was too wordy and confusing—0	
5. Rate your satisfaction with SBCE 1 – 10—SR	4-1 6-5 7-5 8-3 9-1 10-1 Mean 6.2	

DD = differential diagnoses, G = O&G, LC = long case, M = medicine, MR = multiple response, P = paediatrics, PE = physical examination, R = orthopaedics, S = surgery, SBCE = scenario-based clinical examination, SR = single response, Y = psychological medicine.

the respondents volunteered. Due to the time constraint, no formal questionnaire validation could be done. The respondents comprised 106 students, 16 examiners, and 18 SPs, who answered the questionnaires soon after the FPE with no incentives provided. We analysed the responses and feedback and arrived at the conclusions based on the results.

Ethics approval was obtained from Faculty Medical Ethics Committee, Universiti Malaysia Sarawak (UNIMAS), Sarawak, REF: FME/21/71. Informed consent was obtained from the participants. The methods were carried out in accordance with the country's guidelines and regulations.

RESULTS

There was no strong support from the students for SBCE replacing LC, although some considered SBCE better than LC. A quarter of them felt that it was a nerve-wrecking experience, especially to face lecturers as SPs. Majority of them opined that SBCE was suitable only in special situations. History taking under observation affected the performance of only 8% of the students. Nearly half of the respondents felt that the SPs were better than patients for giving the history. A few of the students complained about the SPs fumbling or misleading them. Thirty-six percent of them expressed that the time allocation for the history session was insufficient. The mean overall rating given by them for the SBCE was 7.04 (Table I).

Half of the examiners opined that the SBCE was unsuitable to replace LC, while a quarter of them expressed that it could safely do so. The general opinion about the scenarios was that they needed refinement and more care in their preparation. The majority of the examiners were satisfied

Table III: The simulated patients' responses to the survey questionnaire

Standardised patients: 18 (all doctors)		
1. Your discipline in SBCE—SR	M3, S6, P2 R2, G3, Y2	• SPs also need to know how the students are marked • SPs need to know how much info to reveal and when to reveal them • Professional training is needed • SBCE is better than LC, as real patients often deviate from the point • Patient is always better • SPs sometimes forced to fabricate the answers, as they do not have the entire details of the cases • SBCE is an effective method for focussed history-taking • It is easier to grade students in SBCE, because the key points are fixed. That way, it is very different from LC • Real patients, unlike SBCE, do not come with textbook presentations • Assessment of soft skills, like handling the patients, is missing in SBCE • SBCE being a role play, SPs need a lot of information about the case
2. Regarding the training and information given—SR	• It was sufficient – 14 (78%) • It was insufficient – 4 (22%)	
3. Your experience of being an SP—MR	• Enjoyed – 15 (83%) • I would not like to do it again – 0 • I had to cook-up some answers—1 • I would like to do it again—1 • It was stressful—1	
4. Rate your satisfaction with the SBCE process 1 – 10—SR	5-1 8-5 6-3 9-7 7-1 10-1 Mean 7.94	
	Mean of 3 groups = 7.06	

DD = differential diagnoses, G = O&G, LC = long case, M = medicine, MR = multiple response, P = paediatrics, PE = physical examination, R = orthopaedics, S = surgery, SBCE = scenario-based clinical examination, SR = single response, Y = psychological medicine.

Table IV: Descriptive statistics of LC and SBCE scores of the four FPEs

YEAR of FPE	*N*	Minimum	Maximum	Mean	SD	*p* value
1. 2017 LC	112	5.00	15.60	11.82	1.74	$p<0.01$**
2. 2018 LC	118	8.00	17.00	11.46	2.08	$p<0.001$***
3. 2019 LC	1 22	8.00	17.00	11.81	1.74	$p<0.01$**
4. 2020 SBCE	106	7.25	17.60	12.56	2.32	-

p value reached from independent sample t-test.
*$p<.05$, **$p<.01$, ***$p<.001$.

with the marking scheme used, while some asked for changes to make it more user-friendly. The mean overall rating given was 6.2 (Table II).

The majority of the SPs were satisfied with the training given to them, and they enjoyed the experience. Several pertinent points for improvement were mentioned in their comments. The mean overall rating given by them was 7.06 (Table III).

Comparison of the scores (out of 20) of LC and SBCE in the four FPEs

Table IV depicts the scores of LC and SBCE for 4 years. Analysis revealed that the mean score of SBCE was higher than those of the previous 3 years' LC. The independent sample t-test revealed that the mean difference was statistically significant between years 2017 and 2020 [t(df)=2.652(216), $p<0.01$)]. Similar differences were found also between years 2018 and 2020 [t(df)=3.792 (222), $p<0.001$)] and years 2019 and 2020 [t(df)=2.765(226), $p<0.01$)].

DISCUSSION

We admit upfront that SBCE could be an efficient tool only for observed and focused history-taking and viva voce to assess the student's cognitive domain and communication skills.

The survey results and feedback have brought out the plus and minus points of both SBCE and LC. It was encouraging to note that the stakeholders' overall rating for SBCE was a satisfactory 7.06.

The students who expressed that the time allocation for the SBCE history session was insufficient might be those who faced the psychological medicine and medicine scenarios, which, some students commented, were complex, while the surgical scenarios were straightforward. A good number of students opined that history-taking from SPs was better than doing it from real patients. Experiencing nervousness during examinations and the apprehension of facing lecturers as SPs all on a sudden for the first time was understandable. Such issues could be minimised in the future by more training and exposure by making SBCE part and parcel of the training and assessment. The positive feedback about SBCE could be attributed to the plus points of SBCE, such as being structured, observed by examiners, shorter than LC, assessing communication skills, and the possibility to include scenarios about emergencies. Most of the negative comments about SBCE were explainable by the hurried manner in which it was executed. More thorough vetting of the scenarios, making them focused, and giving more detailed instructions to the SPs could improve the efficacy.

The examiners' displeasure with SBCE was evident in most of their feedback. They were divided in their opinion about the suitability of SBCE to replace LC altogether. Most of the examiners were satisfied with the performance of the SPs, although they advocated more training and preparations for them. Some examiners observed that the SPs being doctors could tackle the students' unexpected questions properly without fumbling and misleading. We admit that the concerns expressed by the examiners were legitimate, and that they pointed out the areas that needed more attention. Some pertinent suggestions made by the SPs were: it would be good for SPs to be informed about the marking scheme, have more details about the case, and know when to reveal and when to withhold information. A downside of the LC mentioned was that the patients often deviated from the points, and that SBCE, being structured, was an efficient method for focused history-taking. Most of the shortcomings they mentioned were explainable by the fact that it was the first experience of SBCE for all of them.

SBCE has been criticised for being theoretical, not testing PE, not challenging enough for good students to perform, and not being well validated.[4,5] All these drawbacks were also observed in our study. Many of the students' comments highlighted these issues: "SBCE assesses communication skills, not clinical skills"; "It is textbook presentation, not challenging like real patients"; "Real patients have multiple problems, including drug side effects"; "SBCE discussion is theoretical"; "The SP's performance is vital for the success of SBCE"; "The scenarios in surgery were straightforward, while those in medicine were complex". Some of the examiners' comments in this regard were also pointing to such shortcomings of SBCE: " Some scenarios were artificial, only good for history taking"; "It is too easy for weak students to excel"; SBCE is a 'fixed and closed' type of assessment"; "PE is lacking in SBCE, and short cases cannot compensate for it"; "Some scenarios were too generous with clues to the diagnosis"; "It is more stressful for students to talk to SPs". Our FPEs assessed sufficient PE skills, as each student took three short cases from medical and surgical disciplines. Therefore, we considered our SBCE could be exempted from PE. We also realised that the construction of scenarios needed expertise, multidisciplinary vetting, and meticulous training of the SPs to avoid flaws.[6]

The student performance in LC and SBCE was comparable, with a higher mean score in SBCE. This trend was observed in other studies also.[6] Our LCs were not observed by examiners as in other studies.[1] SBCE offered the advantage of being observed. The element of luck in LC, as mentioned in other studies[1] could be halved in SBCE by doubling it to two sessions for each student in future, as pointed out in another study.[7] This change would make it more challenging and allow good students to excel, as they would take one SBCE from medical and another from surgical disciplines. Making the viva sessions shorter would make SBCE less of a theoretical discussion. LC patients becoming inconsistent and fatigued, causing problems for students, was pointed out in one study.[8] The feedback corroborated this point, which could be eliminated in SBCE. Students' opportunities to experience multiple SBCEs during their training would be useful. The practice of focused history-taking would improve the clinical acumen of students, as mentioned by several authors[9-12] and would also likely reduce their nervousness in facing lecturers as SPs.

Organising LC for a large batch of students was labour-intensive, expensive, and had inherent limitations. Getting sufficient number of patients was often impossible, leading to multiple repetitions. Patients, especially those taken from a referral hospital, as in the case of our faculty, were bound to be unstructured, inconsistent, and unreliable for an objective assessment. They were often too complicated with multiple pathologies and unsuitable for undergraduates. These issues were reflected in the feedback, too. Prior vetting of patients by examiners was practised in our FPEs, but it could not be detailed enough due to time constraints. The element of luck for students was unavoidable, as they performed only one LC. Examiners did not observe the 1-hour LC. LC has been acclaimed as a superior assessment, as it involved real-life situations [13], which could assess the real calibre of students. However, it would be impractical to use real patients for a large batch of students, as expressed by other authors.[14] LC being a significant contributor to the final scores in the FPE, it is important to eliminate the bias, as stressed in another study [14] In this regard, the SBCE would offer a practical solution, as it would enable to double the assessment by testing the students with two SBCEs in 1 hour. This would be possible by reducing the viva voce segment to 10 minutes from the current 30 minutes. Expanding the assessment to reduce case bias and examiner bias is very important for high stake examinations, as pointed out in another study.[14] A modified SBCE would meet these demands.

LIMITATIONS

This study encountered several limitations. First, it was planned at a short notice, as the faculty's decision to substitute LC with SBCE in the FPE of the year 2020 was a compromise due to the COVID-19 pandemic, which did not allow the use of real patients for the traditional LC, safely. Second, the survey questionnaires were arbitrarily prepared and not systematically validated. Third, this study involved only one cohort. The results cannot be generalised to other universities. Fourth, external examiners could not participate due to travel restrictions of the pandemic. It is recommended that any future study should validate the survey questionnaires, as required.

CONCLUSION

Some students, a few examiners, and most SPs were optimistic about the feasibility of an improved SBCE replacing the LC. Based on the survey results highlighting the limitations of LC and the advantages of SBCE, we recommend the following modifications in SBCE to make it a more reliable and valid assessment: (a) Make the 15-minute history-taking session focused, (b) shorten the viva-voce session to 10 minutes, and make it structured (c) test each student with two scenarios from different disciplines assessed by different examiners, (d) give students prior exposure to SBCE, (e) prepare focused and flawless scenarios, (f) fix the examiner questions for each scenario, beforehand (g) prepare structured, and objective marking schemes befitting each scenario, and (h) use medical professionals as SPs.

CONFLICTS OF INTEREST
None of the authors declared conflicts of interest.

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