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Original article

Faculty's Perceptions toward Strengths and Challenges of Long-Case Exam: Experiences from Low-Income Countries

Mohamed D A Gismall[a], Yassir O A SidAhmed[b]

[a] Department of Surgery, Faculty of Medicine, University of Gezira, Medani, Sudan. Department of Surgery, Faculty of Medicine, Al-Baha University, Al-Baha, Saudi Arabia

[b] Department of Medicine, Faculty of Medicine, Al-Baha University, Al-Baha Saudi Arabia. Department of Biochemistry, Department of Biochemistry, Faculty of Medicine, University of Bahri, Khartoum, Sudan.

Correspondence to: Mohamed D A Gismall, Department of Surgery, Faculty of Medicine, University of Gezira, Medani, Sudan. Department of Surgery, Faculty of Medicine, Al-Baha University, Al-Baha, Saudi Arabia

Email:

mohadaff22@gmail.com

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Abstract:

Background: The long case exam is regarded as the oldest method for assessing clinical competence. However, its administration has raised some concerns. This study aimed to explore faculty perceptions of the strengths and challenges of long-case exams. **Methods:** This cross-sectional study was conducted among Sudanese faculty members from June 15th to 25th, 2024. An online questionnaire was designed to gather faculty perceptions regarding the strengths and challenges of long-case clinical exams. Participants' views on long-case exams were collected using Likert scale statements. Open-ended questions were also included to assess these exams' strengths and challenges. Data was compiled into an Excel sheet to determine frequencies, and mean Likert scores were calculated. A *P*-value below 0.05 was considered statistically significant. **Results** Participants' experience in teaching and assessing students ranged from two to 40 years, with a median of 14 years. Participants used the long-case exam alone in 10% of cases, while the Objective Structured Clinical Exam (OSCE) alone was used in 41%. However, long-case exams in combination with OSCE were used by 48%. Most participants agreed that the long case is authentic and real-life. Concerns about exam bias, subjectivity, and the struggles of arranging the exam were considered challenging tasks. However, many faculty examiners and clinical cases (patients) were required for long-case exams. **Conclusion**: Participants agreed that long-case exams have the property to assess the students in history, examination, and management planning for one patient. However, there are organizational challenges in addition to the examiner 's bias. It is upgraded by utilizing an objective structured long examination record (OSLER) or might be used in combination with an objective structured clinical exam (OSCE).

Keywords: long case exam, clinical competence, psychomotor skills, objective structured clinical exam, objective structured long examination records

Introduction

The long case exam is a longstanding method for assessing clinical competence and cognitive skills [1]. This method has been regarded as a crucial component of teaching and assessment structures for acquiring clinical skills and evaluating competency among undergraduate students [2]. It is considered a valuable teaching tool during clerkship years for imparting psychomotor skills [3]. Students spend 40 to 60 minutes gathering patient history and clinically examining the patient, after which the case is presented to the examiner (assessor or evaluator) [4]. Finally, the examiner (or assessors) questions the student about the case, focusing on the summary of the condition, differential diagnosis, investigations, and management plan [4].

Long-case exams usually resemble real patients and hospital situations while allowing students to face real-life scenarios. As a result, they are a more authentic and valid method and allow students to adopt a holistic patient approach [4]. Furthermore, they permit students to be evaluated and assessed in a variety of cases. This requires good preparation and is ready for a wide range of patients, situations, and scenarios [5]. Medical educators have expressed significant concerns about the reliability and limitations of long-case exams as assessment tools. Students typically encounter a single case with limited supervision during history taking [6]. The assessment heavily relies on the student's ability to present the case coherently and respond to the examiner's questions with competence and logical reasoning [7]. Consequently, since 1970, medical educators have begun abandoning long cases in favor of OSCE to address the shortcomings of long case exams [8]. However, OSCE has also encountered challenges associated with participants' discomfort, assessment practices, and exam organization [9]. To mitigate its weaknesses, long-case exams require standardization and structure. Despite these issues, some medical educators believe discontinuing long cases as a clinical examination assessment tool would be premature [10,11]. In Sudan, medical schools have adopted varying approaches to clinical assessment. While some have innovated by transitioning from long case exams to OSCE, others have focused on standardizing and structuring the traditional long exam [12,13]. This survey explored faculty perceptions and experiences regarding long-case clinical exams. It looks for strengths, challenges, and difficulties of long-case clinical exams according to participants' views and opinions.

Materials and Methods

Study design

"This survey-based, cross-sectional study" was conducted among Sudanese medical school faculty members from June 15 to June 25, 2024. An online questionnaire was used to assess participants' perceptions of the strengths and challenges of long-case exams.

Participants and setting

Faculty members from Sudanese medical schools were invited to participate in this survey. These schools included faculty from Gezira University, Omdurman Islamic University, and Bahri University. In Sudanese medical schools, the final clerkship exams typically require many examiners,

necessitating the involvement of visiting examiners from other medical schools. Regularly, medical schools in Sudan invite external examiners while conducting their final exams. As a result, most faculty members have gained experience and knowledge about student assessments and evaluations through OSCE and long-case exams. Participants comprise teaching staff from various Sudanese medical schools. They educate in their respective workplaces and possess experience in assessing students both internally and as visiting examiners at other institutions.

Inclusion and exclusion criteria

Faculty members employed at... who provided informed consent were included in the study. Faculty members working... outside of Sudan, those who declined to participate were excluded from the study. These faculties are governmental medical schools and are accredited by the Sudan Medical Council (The national accredited body in Sudan)

Sample size and selection

Cluster probabilistic sampling methods were used, and the total sample size is 67 staff members

Data collection tools

An online Google Form questionnaire was distributed in English. It is categorized into four groups: firstly, participants' data and characters. Secondly, participants' perceptions of the strengths of long cases (eight items). Thirdly, participants' perceptions of weaknesses and challenges of long cases (six items). Lastly, an open-ended question for detailed feedback was performed. A Likert scale measured participant responses, with 1 indicating strong disagreement, 2 indicating disagree, 3 indicating agree, and 4 indicating strongly agree. The minimum score was 14, and the maximum score was 56. A score of at least 35 out of 56 was considered favorable. A value of more than 35 will be considered of positive response. This questionnaire was developed for this study and revised by two experts in medical education. A pilot study was done for validity and reliability. A copy of the questionnaire was attached as supplementary data.

Statistical Methods

All collected data were tabulated for analysis in an Excel sheet. Statistical analyses were performed using IBM SPSS Statistics for Windows, Version 20.0 (IBM Corp., Armonk, NY). The frequency was collected for any participant's response. The mean and standard deviation (SD) for each response were ruled out. Furthermore, a correlation analysis, t-test, and ANOVA test between age, years of experience and specialty were conducted. A *p*-value of less than 0.05 was considered statistically significant.

Responses to open-ended questions regarding the strengths and challenges of long-case exams were analyzed thematically using qualitative data analysis. The author took the following steps: familiarization with the data, creating the codes, generating the themes, and then reviewing the themes.

Ethical approval and consent to participate

Informed consent was obtained from each participant, participation was voluntary, and the data were collected anonymously. Ethical approval was obtained from the University of Gezira, Faculty of Medicine, Education Development Center, Ethical Review

Committee, Department of Medical Education Human Ethics Advisory Group (Ethics ID number: 4/2024).

Results

Participants characters

The total number of faculty members who agreed to participate in this survey is 67. Most of them are male, 54 (80.6%). Their median age is 50 years, ranging between 28 – 75 years. The commonest age group was between 41-50 years, with a range of 21(31%). Participants' post-graduate specialties are shown in (**Table 1),** with the common specialty of general surgery 26 (38.8%), followed by pediatric and child health 12 (17.9%). Participants' experience in teaching and assessing students ranged from 2 to 40 years, with a median of 14 years. OSCE with Long Case has been used as a clinical evaluation method among (47.8%) of participants. Participants' experience in utilizing long cases and OSCE while assessing and evaluating clinical competence in their employing working schools is shown in (**Table 1)**. OSCE alone is used among 41.8%) of participants as a clinical evaluation tool. Long Case and OSCE have been used in combination with among 49% participants. Hence, long-case exams alone are used by 10 %.

Perception of participants toward the long case exam

The reliability of this survey question was determined using the Alpha Cronbach's Coefficient test. The results revealed that the value of the Alpha Cronbach coefficient for subscales is (0.896 and 0.553); which proves the tool's reliability is high (**Table 2**).

The mean total score of the participants is 39.4/56(70.4%). The mean score of long case strength is 23.7/32 (74%), and in challenges is 15.7/24(65.4%). Participants' Views of the strength of the long case are shown in (**Table 3)**. Participants agreed and strongly agreed that the long case is a valid, reliable, authentic, and real-life scenario, with a mean Likert scale of 2.9, 2.7, 2.8, and 3.5, respectively. They agreed and strongly agreed that the examiner could appropriately examine the students.

Furthermore, the long case can be considered as a teaching modality. The perceptions of participants in this survey regarding the challenges and difficulties of long-case exams are presented in (**Table 4)**. Long case exams need many faculty examiners and clinical cases (patients) with a mean Likert of 3. Most of the participants agreed 21(31.3%) and strongly agreed 21 (31.3%) that evaluations of students depend mainly on students' presentations, and bias cannot be avoided with a mean Likert of 3 and 3.2.

A t-test comparison analysis was done for the gender effect on results; it showed no statistical significance (Table 5). A one-way ANOVA test showed no significance between the participants' experiences, their specialty, and their mean response (Table 5).

Thematic analysis of the open-ended questions

Two open questions were constructed in this survey to determine the views of faculty toward the long-case exam's strengths and challenges. Participants reported that long-case exams allow them to assess history and examinations. The second report is a long-case exam that can position students to be evaluated in real-life situations. Long-case exams can examine students' knowledge. Objective structured clinical exam record

OSLER is the strongest format for long-case exams. The three key themes of the strength of long-case exams are demonstrated in (**Figure 1)**, while the two key themes of the challenges of long-case exams are demonstrated in (**Figure 2).**

Table 1: Character of participant in the study (N=67)

Variables		Frequency	Percent
Age	30 to less than 40	11	16.4
	40 to less than 50	21	31.3
	50 to less than 60	20	29.9
	≥ 60	15	22.4
Sex	Female	13	19.4
	Male	54	80.6
Specialty of participants	General Surgery	26	38.8
	Internal Medicine	10	14.9
	Pediatric and child health	12	17.9
	Obstetrics and Gynecology	6	9.0
	Other specialty	13	19.4
Clinical exam used in working place medical school	OSCE	28	41.8
	Long case with/or without short case	5	7.4
	Both OSCE and Long case	32	47.8
	OSLER	2	3.0
Participation using long case as examiner	1-3 times	19	28.4
	4-6 times	5	7.5
	7-9 times	10	14.9
	10 or more times	33	49.2
Participation using OSCE as examiner	1-3 times	14	20.9
	4-6 times	16	23.9
	7-9 times	14	20.9
	10 or more times	23	34.3

Table 2: Alpha Cronbach coefficient of the questions in the survey

Subscale	Number of items	Alpha Cronbach coefficient
Subscale 1 (strength)	8	0.896
Subscale 2 (challenges and difficulties)	6	0.553

Table 3: Perception of participants towards the strength of long case clinical exam (N=67)

	Strongly disagree	Disagree	Agree	Strongly agree	Sum	Mean Likert	SD	P-value
Regarding the long-case exam, it is an authentic assessment tool	8(11.9%)	17(25.4%)	25(37.3%)	17(25.4%)	185	2.8	1	0.9
In long-case exams, students face real-life case	1(1.5%)	5(7.5%)	19 (28.3%)	42(62.7%)	236	3.5	0.7	0.9
Long-case exams admit students to proper gathering information (history taking) skills	2(3.0%)	7(10.4%)	20(29.9%)	38(56.7%)	228	3.4	0.8	0.9
Long-case exams can allow students to present and summarize the finding	2(3%)	7(10.4%)	18(26.9%)	40(59.7%)	230	3.4	0.8	0.7
Long-case exam, allows students to outline a management plan	-	3 (4.5%)	20 (29.8%)	44 (65.7%)	242	3.6	0.6	0.2
In long-case exams, the examiner can test the effectiveness of communication skills	2(3%)	9 (13.4%)	23(34.3%)	33(49.3%)	221	3.3	0.8	0.3
Long-case exams can allow the examiner to assess the medical reasoning	3 (4.5%)	6 (8.9%)	29 (43.3%)	29(43.3%)	218	3.3	O.8	0.3
Long-case exams can be used as a teaching modality	2(3%)	7(10.4%)	26 (38.8%)	32 (47.8%)	222	3.3	0.8	0.4

Table 4: Perception of participants towards challenges and weaknesses of Long case clinical exam (N=67)

	Strongly disagree	Disagree	Agree	Strongly agree	Sum	Mean Likert	SD
Long-case examinations need many examiners or assessors	3 (4.5%)	17(25.4%)	19 (28.4%)	28 (41.7%)	206	3	0.9
The long-case exams are difficult to organize and need many cases, places, etc.	7(10.4%)	14 (20.9%)	15(22.4%)	31(46.3%)	204	3	1
The assessment and evaluation depend on the presentation of the students	4(6.0%)	7(10.5%)	35(52.2%)	21(31.3%)	207	3	0.8
Long-case exams cannot assess the performance of procedure skills	14 (20.9%)	16(23.9%)	15(22.4%)	22(32.8%)	179	2.8	1.1
During long-case exams, it is hard to avoid bias or selection of the case or examiner	4(6.0%)	12(17.9%)	15(22.4%)	36(53.7%)	217	3.2	1
Long-case exams need to be combined with short-case exams and or OSCE	3 (4.5%)	1(1.5%)	8(11.9%)	55(82.1%)	249	3.7	0.7
Long-case examinations need many examiners or assessors	3 (4.5%)	17(25.4%)	19 (28.4%)	28 (41.7%)	206	3	0.9
The long-case exams are difficult to organize and need many cases, places, etc.	7(10.4%)	14 (20.9%)	15(22.4%)	31(46.3%)	204	3	1

Table 5 : Relation between gender, years of participant experiences and specialty to perception of the total strengths and challenges score

Variables	Perception of	
	Strength Mean ± SD	Challenges Mean ± SD
Gender		
Male	3.3 ± 0.6	3.1+/-0.5
Female	3.4 ± 0.5	3.1 +/- 0.6
P- value	0.1	0.9
Years of experiences		
1-5 years	3.3 ± 0.8	3.1 ± 0.6
6-10 years	3.4 ± 0.4	3.3 ± 0.6
11-15 years	3.3 ± 0.6	3.2 ± 0.5
16-20 years	3.4 ± 0.6	3 ± 0.4
More than 20 years	3.2 ± 0.7	3.1 ± 0.6
P value	0.4	0.6
Participant specialty		
General Surgery	3.5 ± 0.6	3.1± 0.5
Internal Medicine	3.5 ± 0.4	3.3 ± 0.4
Pediatric and child health	3.3 ± 0.6	3.2 ± 0.5
Obstetrics and gynecology	3.3 ± 0.9	2.9 ± 0.7
Other specialty	2.9 ± 0.6	3.1 ± 0.5
P value	0.5	0.9

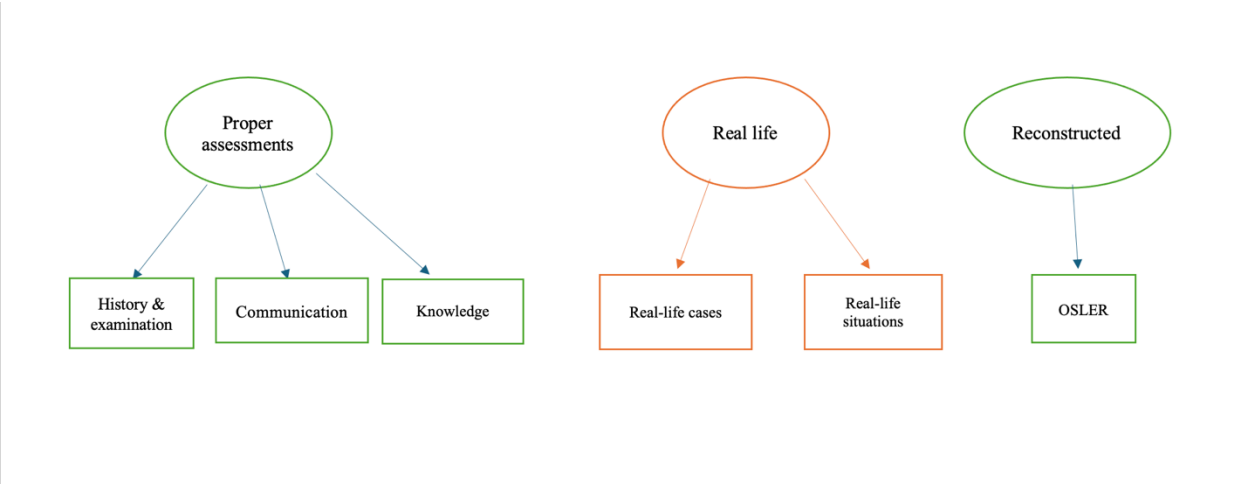

Figure 1: Thematic analysis diagram for open questions towards the strengths of the long-case exam.

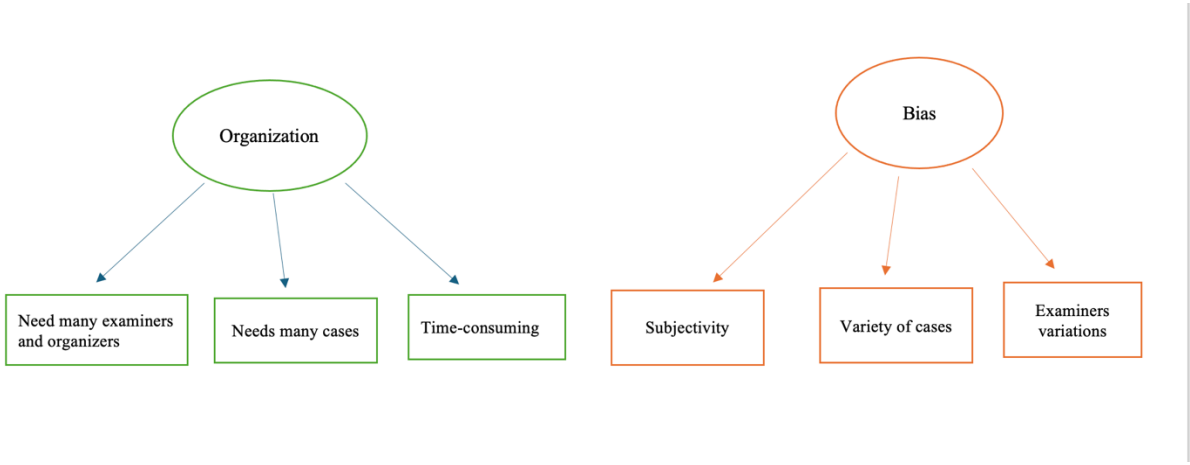

Figure 2: Thematic analysis diagram for open questions towards challenges of the long-case exam**.**

Discussion

Long case exam is still an area of debate, while many educators utilize it for clinical competence assessment [2,4,6]. Some schools and teachers had a lot of concern about the conduct and bias, and were replaced by the OSCE [9,12]. Students' assessment in clerkship years depends mainly on testing knowledge and psychomotor evaluations [14].

The knowledge domain was evaluated by using written exams such as multiple-choice questions and essays. While psycho-cognitive assessment for clinical and communication skills is conducted by long case exams [7] and

OSCE [14]. In this survey, the participants present positive responses about the strengths and superior character of the long case exam. Long-case exams are considered a valid and authentic clinical exam. They allow the examiner to evaluate the students properly [15].

History taking and clinical examination could be estimated for the same patients. Furthermore, students presented their patient scenarios in a logical, comprehensive manner, with the ability to conclude a differential diagnosis [6]. Lastly, the examiner can assess communication skills and professionalism. Long-case exams are flexible in teaching students, and they can be used to teach some additional skills. This survey concludes the weaknesses and challenges of long case exams. Case heterogeneity and examiner subjectivity are the main challenges in long-case exams. The assessment marks of evaluators towards students are not usually the same [16]. Some students faced easy, cooperative patients, while others examined tough, difficult cases. Preparing the long case exam needs many examiners, staff moderators, and a large number of patients. Using an objective structure long-case exam, OSLER is recommended to minimize the risk of bias in traditional long-case exams. Furthermore, the age of participant, their postgraduate specialties, and years of experience did not affect their choices and perception towards long-case clinical exam.

OSLER is commonly used and replaces the old model of long-case exams [17]. The application of long-case exams with the OSCE exam as two different assessment tools is recommended for psycho-cognitive assessments. This combination can be performed by separate exams, long case, and OCSE rounds. In long-case exams, procedure skills cannot be tested [18]. In the study, some of the participants recommend and utilize both long-case exams and OSCE to assess clinical competence, professionalism, and other cognitive skills. Both tools complement each other. One of the limitations of this study is the small sample size, which cannot reflect the whole view. However, data can be used for further studies.

Conclusion

This study demonstrates the perceptions of medical school faculty members toward the long-case exam. Most of the participants have positive perceptions of the exam. They agreed that long-case exams have the property to assess the students in history, examination, and management planned for one patient. In contrast, they have concerns about challenges and weaknesses during conducting the exam. Arrangements of exams need many cases and the examiners. Exam case heterogeneity and subjectivity are major components of bias. Long-case exams as a modality of clinical competence should not be entirely abundant. It could be upgraded by utilizing OSLER. Additionally, it might be used in combination with OSCE.

Abbreviations

OSCE: Objective structured clinical exam; OSLER: Objective structured long examination record

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