

ORIGINAL ARTICLE

Establishing Validity of SLICE –As an Assessment Instrument of Long CaseAbdul Ghani Waseem¹, Shamaila Sharif², Muhammad Saqib Habib³, Rehan Ahmed Khan⁴, Usman Hameed⁵, Adil Hameed⁶**ABSTRACT**

Objective: To establish the content and construct validity of Structured Long Interview and Clinical Examination (SLICE) as an instrument for the assessment of long case.

Study Design: This was a quantitative analytical study.

Place and Duration of Study: The study was conducted at Pakistan Railway General Hospital during the period between March 01, 2016 to August 31, 2016.

Materials and Methods: SLICE is a tool of Long Case assessment, however, it's content and construct validity are not established. Examiners, who had used SLICE for the long case assessment, were requested to fill the questionnaire. The questionnaire contained questions about the relevance and clarity of SLICE. Each examiner individually rated the relevance and clarity of all the items on the SLICE using a five point Likert Scale. Content validity index of SLICE was established for individual items and overall scale. The construct validity of SLICE was determined by factor analysis using principal component analysis method.

Results: Content Validity Index of SLICE (S-CVI), for relevance and clarity was 0.92 and 0.90 respectively. KMO value of SLICE was 0.655. Bartlett test value of SLICE was 0.00.

Conclusion: The content validity index for overall scale (S-CVI) and construct validity indicates that SLICE is a valid instrument for the long case assessment.

Key Words: *Assessment, Long Case, SLICE, Validity.*

Introduction

The long case examination assess the clinical competency of the medical students with real patients, in real clinical environment.¹ In undergraduate setting, the conventional method for the assessment of long case has many drawbacks. During undergraduate long case examination by conventional method, the student's performance in history taking and clinical examination is unobserved by the examiner.² The assessment of the long case examination is also un-structured. The examiners are devoid of the structured checklist and the marking scheme, so the examiners are free to award marks, depending on their personal

inclinations, personal will and perceptions about the examinee.^{3,4} Another problem is that difficulty of long case is not marked in the assessment. The result of long case assessment depends considerably on difficulty of the clinical problems of the patient allocated to the examinee. If the examinee gets a difficult case with multiple clinical problems, he may fail or get poor grades as compared to the clinically less competent fellow who gets a patient with a single problem.^{5,6,7,8}

In Pakistan each class of MBBS, consists of 100-300 students. It is impractical to observe the history taking and clinical examination of every student by the examiner, because this would require a lot more resources in terms of time, faculty involvement and the patients' commitment. The only practical way to hammer the drawbacks, confronted during the long case assessment is to assess the long case by using the structured assessment tool, so that the results are valid, reliable and free of bias. For the structured assessment of long case, many instruments had been designed as OSLE (Observed Structured Long Examination Record), PBAC (Practice Based Assessment of Clerks in internal medicine), and SCCP (Structured Clinical Case Presentation).⁹ Similarly SLICE was established for the structured assessment

^{1,2,3,4,6} Department of Medicine/Gynaecology/Surgery
Islamic International Medical College
Riphah International University, Islamabad

⁵ Department of Medicine
Agha Khan Medical College, Karachi

Correspondence:
Dr. Abdul Ghani Waseem

Associate Professor
Department of Medicine
Islamic International Medical College
Riphah International University, Islamabad
E-mail: abdul.ghani@riphah.edu.pk

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of long case, of final year medical students at Islamic International Medical College. The SLICE (ANNEXURE. 1) has 13 items for the long case examination record. The examiners assess the examinee on these 13 items over 15 minutes. The examiner after giving marks for each individual item on the SLICE sheet, calculate the overall marks and takes pass/ fail decisions. Rehan et al established the reliability and face validity of SLICE, however, the content validity and construct validity of SLICE were not established.¹⁰

The purpose of this study was to determine the content and construct validity of SLICE sheet, which is a new instrument for the structured assessment of the long case.

Materials and Methods

This quantitative analytical study was planned to establish the content validity and construct validity of SLICE. The study was conducted in Pakistan Railway General Hospital, which is a teaching hospital affiliated with Islamic International Medical College. The study was conducted between March 01, 2016 to August 31, 2016. SLICE is already in use for the assessment of long case examination of final year MBBS students at Islamic International Medical College. Examiners who had used SLICE, as an assessment instrument of long case at Islamic International Medical College were included in the study. These examiners were from the Departments of Medicine, Pediatrics, Gynaecology/Obstetrics and Surgery of Pakistan Railways General Hospital. Examiners, who came from other teaching hospitals for the summative assessment of final year MBBS and used SLICE as assessment instrument, were also included in the study. Examiners and faculty, who had never used SLICE for long case assessment, were excluded from the study.

The questionnaire was designed and approved from the ethical committee of Islamic International Medical College. The questionnaire with the covering letter explaining the purpose of the study was distributed among participants by the researcher. The questionnaire comprised of two parts. The sheet 1 of questionnaire comprised of questions about the relevance of SLICE items, on a five-point Likert scale. The five responses were, not relevant, some -what relevant, un- decided, relevant, very relevant. The sheet 2 of questionnaire

comprised of questions about clarity of items, of SLICE, on a five-point Likert scale. The five responses were, not clear, some -what clear, undecided, clear, and very clear. Purposely chosen 16 experts, who used SLICE sheet for assessment of long case, were asked to review the 13-items SLICE. Each reviewer independently rated the relevance of each item on the SLICE using a 5-point Likert scale.

Content validity index for the relevance and clarity of individual items and overall scale was determined. The I-CVI was calculated by number of expert giving 4 or 5 rate to the individual items on the scale (4 or 5 rate show relevance of the individual items in the scale under study) and then dividing it by the total number of experts. $I-CVI = \text{Number of experts giving a rating of either 4 or 5 to individual item in scale} / \text{Total number of experts}$. The S-CVI was calculated by the following method, $S-CVI/Ave = (.90+.90+.90+.90+.90)/6 = 0.90$

SPSS version 21 was used to analyze the data. The data was non parametric. The construct validity of SLICE was determined by factor analysis using principal component analysis method.

Results

Relevance

History taking domain of SLICE consists of 03 items. The CVI – I of all three items of history taking domain turned out to be +1 (Table I). Examination domain of SLICE consists of 02 items. The CVI – I of the two items of examination domain was 0.94 and 0.88 (Table I). Defending diagnosis domain of SLICE consists of 02 items. The CVI – I of two items turned out to be 0.94 and +1 (Table I). Investigations domain of SLICE consists of 02 items. The CVI - I of the two items was 0.88 and +1 (Table I). Management domain of SLICE consists of 04 items. The CVI – I of 02 items of management domain was 0.88, the other two items had CVI-I 0.94 and 0.75 (Table I).

Clarity

History taking domain of SLICE consists of 03 items. The CVI – I of one item had value of +1 and the other two had values 0.93 and 0.94 (Table I). Examination domain of SLICE consists of 02 items. The CVI – I of both the items was 0.88 (Table I). Defending diagnosis domain of SLICE consists of 02 items. The CVI – I of both the items was 0.94 and +1 (Table I). Investigations domain of SLICE consists of 02 items. The CVI – I of both the items had value of +1 (Table I).

Management domain of SLICE consists of 04 items. The CVI – I of these four items was 0.81, 0.69, 0.88 and 0.75 respectively (Table I).

S-CVI of SLICE regarding the relevance of SLICE is 0.92 (Table 1). The S-CVI regarding the clarity of SLICE is 0.90 (Table I).

Table I: Content Validity Index of SLICE

ITEMS OF SLICE	CVI-I Relevance of SLICE SHEET	CVI-I Clarity of SLICE sheet
HISTORY TAKING		
Presenting complaints in chronological order with Relevant comprehensive, logical history of presenting complaints in orderly manner	1	0.93
Systemic review, Past history , Family history, Socioeconomic history, Allergic, Drug and transfusion history	1	1
Presentation skills	0.94	0.94
Examination		
General Physical Examination	0.88	0.88
Relevant Regional Examination	0.94	0.88
Defending Provisional Diagnosis		
Making a provisional diagnosis and providing relevant points to defend it	0.94	0.94
Providing a list of relevant D/D and excluding them logically	1	1
Defending Investigations		
Suggest and justify relevant routine investigations	0.88	1
Suggest and Justify relevant specific investigations	1	1
Defending Management		
Suggest and justify the appropriate treatment scheme	0.88	0.81
Describe the complications of treatment	0.94	0.69
Describe the follow up plan for the patient	0.88	0.88
Describe Recent advances	0.75	0.75
S-CVI of SLICE	0.92	0.90

Factor Analysis

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO), measures the sampling advocacy and determines if the responses given are supportive or not. KMO should be close to 0.5 for a satisfactory factor analysis. Kaiser recommended values of 0.9 as superb, values between 0.7 to 0.8 as acceptable and 0.5 as minimum. Table II shows that KMO value of SLICE was 0.655, which is close to acceptable and above the minimum requirement. Barlett test also

indicates the strength of the relationship among different variables. The significant is less than 0.05. Table II shows Bartlett test value of SLICE was 0.00, which also shows a strong relationship among the different variables. The Scree plot (Fig 1) is the graphic representation of the Eigen values against all the factors. The graph helps in determination of how many factors to be retained. The point of importance is where the curve begins to flatten. So it can be recognized that the curve starts to flatten between factor 5 and 6. It can be noted that factor 6 onwards have Eigen value of less than 1, so only 5 factors have been retained.

Table II : Kaiser-Meyer-Olkin and Bartlett's Test of SLICE

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.655
Bartlett's Test of Sphericity	Approx. Chi-Square	194.433
	df	78
	Sig.	.000

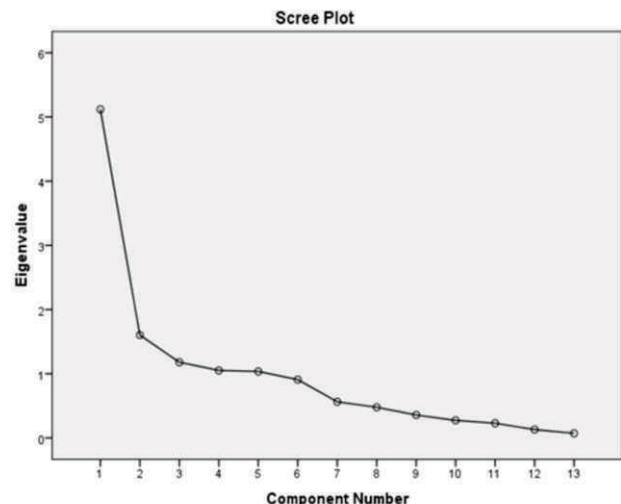


Fig 1: Scree Plot for SLICE

Discussion

SLICE, including 13 items, was designed and used for the assessment of long cases at Islamic International Medical College. It proved to be useful and an appropriate effort to increase the reliability and validity of long case examination. Examiner can generalize the results after objective assessment of fixed number of items of SLICE. SLICE can also be considered examiner friendly as it reminds the examiner to check the same domains for all students.

SLICE is also feasible because it assesses the long case over 15 minutes while many other tools assess the examinee over 20–30 minutes.

The CVI – I of individual items regarding their relevance were found to be 88% and more except for one item, which is describe the recent advances. However, CVI – I of this domain is still in the acceptable range i.e.75%. The content validity index of overall scale for relevance was above 92% (Table I). These results strongly determine the relevance of items of SLICE thus endorsing its content validity. The CVI – I of individual items for clarity was 81% and more for eleven, out of thirteen items. These two items were, to describe the complications of treatment and the recent advances. The CVI – I of these two items were also in acceptable range i.e. 69% and 75%. The content validity index of overall scale for clarity was above 90% (Table I). These results strongly prove the clarity of items of SLICE thus endorsing its content validity.

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO), measures the sampling advocacy and determines if the responses given are supportive or not. Table II shows KMO value of SLICE was 0.655, which is close to acceptable and above the minimum requirement. Barlett test also indicates the strength of the relationship among different variables. The significant value is less than 0.05. Table II shows Bartlett test value of SLICE 0.00, which also shows a strong relationship among the different variables. The Scree plot (Fig 1) is the graphic representation of the Eigen values against all the factors. The graph helps in determination of how many factors to be retained. The point of importance is where the curve begins to flatten. So it can be recognized that the curve starts to flatten between factor 5 and 6. It can be noted that factor 6 onwards have Eigen value of less than 1, so only 5 factors had been retained. The results of factor analysis show that different items in SLICE had strong relationship among themselves and significant Eigen values. The results of factor analysis shows that the SLICE had good construct validity.

Rehan et al established the reliability and face validity of SLICE, however, the content validity and construct validity of SLICE were not established. SLICE had good face validity and the reliability of the SLICE had been found to be 0.87.¹⁰ The results of present study show that SLICE had good content and construct validity. Considering the present results

and those contributed by Rehan et al study,¹⁰ SLICE turned out to be valid instrument for the long case assessment.

Some other instruments for the structured assessment of long case includes Objective Structured Long Examination Record (OSLER), Structured Long Interview and Clinical Examination (SLICE), Structured Clinical Case Presentation (SCCP), Practice Based Assessment of Clerks in Internal Medicine (PBAC), Long Case Assessment (LCA), Observed Long Case in Clinical Assessment (OLC), Partially Observed Long Case Exam (POLE), Direct Observation Clinical Encounter Examination (DOCEE), Integrated Direct Observation Clinical Encounter Examination (IDOCEE). These different instruments which were designed for structured assessment of long case vary in the observation of history taking and clinical examination by the student, number of examiners assessing the student at one time and time required by the examiner for assessment of the students. The Objective Structured Long Examination Record (OSLER) was introduced by Gleeson as a method to introduce better standardization to the long case. The student conducts an hour long observed history and examination with a patient followed by 20-30 minutes of structured questioning by the examiner using a 10 item analytical record. As a part of the effort to reduce “the luck of the draw” aspect, examiners are asked to formally document the difficulty of the case. Unfortunately there is no evidence as to reliability and validity of the OSLER.¹¹ In short, long case assessment with itemized list would lead to enhancement in validity of long case assessment, satisfaction of the students, better learning of the students and motivation of the students.

Conclusions

The content validity index for overall scale (S-CVI) of SLICE and construct validity indicates that SLICE is a valid instrument for the long case assessment.

Limitations

SLICE is used at Islamic International Medical College only; the questionnaire was filled by the examiners of final year MBBS examination. Better evaluation of SLICE could be done if the number of experts is increased and experts from different medical colleges are contacted for the responses.

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