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## Original Research Article

### **Perception of Students towards Structured Oral Examination (SOE) in comparison with Conventional Oral Examination (COE) in Forensic Medicine & Toxicology.**

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#### Key words

Summative assessment, Conventional Oral Examination, Structured viva.

#### Abstract

**Background:** Oral examination is a part of formative and summative assessment in medical education. Conventional oral examination in university examinations is criticized for being subjective, and often whimsical. We conducted a study to assess the relative efficacy of Conventional Oral Examination (COE) versus Structured Oral Examination (SOE). **Method:** From the batch of second year MBBS students studying Forensic Medicine in 4<sup>th</sup> Semester, 60 students were chosen for the study. They were subjected to COE and SOE. Detailed feedback was obtained through specially designed five point Likert Scale to assess their perception. The data was collected and analysed using SPSS software version 2012. P value was calculated using Chi square test. **Results:** Majority of students came out in favour of SOE against COE. The main reasons cited were uniform allotment of time (96.7%), less variability in the difficulty level, at the same time, greater coverage of content. Most participants (93.3%) agreed that SOE was well organized system. **Conclusion:** Structured viva was perceived as more effective tool for formative assessment which can also be extended to summative assessment with adequate planning and logistics.

#### 1. Introduction

Current literature in assessment suggests increasing the validity and reliability of use of plethora of tools and techniques, for assessment.<sup>1</sup>

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Oral examination is a part of both formative and summative assessment in medical profession. Oral Examination is a form of assessment wherein; a set of stimulus questions are asked that address critical areas of competencies. Students are expected to respond verbally in their own words, which allow an assessment of the student's depth of comprehension, and ability to apply their learning to different situations. Oral examination can assess various domains that are required to be achieved by the student in medical course.<sup>2,3,4</sup> Conventional oral examination conducted as a part of university examinations is subjected to a number of criticisms. It is affected by examiners' attitude, mood, whims and fancies, and often influenced by nonacademic factors.<sup>5</sup> Some examiners tend to be stringent, while others are lenient, which affects the reliability. Another criticism is the variability of time allotted to students appearing in the beginning and at the end. In spite of all these drawbacks, oral examination is popular because it tests students' ability to defend the decision in a given clinical situation that cannot be tested by written examination.<sup>6</sup>

One of the ways out to improve the quality of oral exam is to modify it as structured oral examination (SOE).<sup>7</sup> Few studies conducted on structured oral examination in small groups, have shown to be reasonably reliable and valid. Both faculty and students have shown positive perception toward this examination tool.<sup>7</sup>

Currently, little information is available on the implementation of SOE in a large group as it is a resource-intensive and time-consuming exercise. The main aim of our study was therefore, to explore the possibility of conducting SOE in the context of a medical college that admits 250 students per batch and to study the perceptions of students to compare this method with the Conventional Oral examination (COE). The study was conducted in the Department of Forensic Medicine & Toxicology, in a Medical College, in South India.

## 2. Material & Method

Considering the logistics issues in organizing viva examination, we selected a purposive sample of 60 students from among the second year MBBS batch studying Forensic Medicine and Toxicology at Mahatma Gandhi Medical College and Research Institute, Pondicherry between 2016-17. The criteria used for sampling were stratification of high, moderate and low achievers based on the previous

test scores and their willingness to participate on voluntary basis. They were divided into three groups of 20 each again, to meet the logistics. Students were informed in advance about the purpose of study and their participation was solicited on voluntary basis. Approval of Institutional Ethics Committee was obtained.

We designed a Five Point Likert Scale (Strongly agree, Agree, Neutral, Disagree & Strongly Disagree) consisting of 14 statements to capture students' perception about various aspects of oral examination. This instrument was piloted with a few volunteers to judge the user-friendliness. Based on the inputs and the responses provided by the volunteers, the instrument was modified and finalized. Then, the instrument was sent to experts for their opinion, who validated it for its content and construct of individual questions and the reliability for internal consistency on the instrument. The Conventional oral examination was conducted by three examiners. After the examination, feedback was obtained using the Likert scale.

The SOE was conducted after one week of conventional viva for the same set of students. Prior orientation was given to students about the procedure of SOE. The questions were prepared by two faculty members, further subjected to peer review and finalized with the approval of head of the department. A consensus was reached among all the assessors on the content, marking, and estimated difficulty level of the questions developed. The key to answers were also prepared and agreed by all examiners. Out of ten marks allotted to viva, the marks distribution was based on difficulty level, so that initial three questions were labeled as easy, two questions were moderate in difficulty, and one question was difficult. Questions were framed from the topics covered in 4<sup>th</sup> semester and included general consideration of toxicology, agricultural poisons, corrosive poisons, metallic poisons, organic and inorganic irritant poisons, CNS depressants and deliriant poisons.

The questions developed were of graded levels of difficulty for different topics of the examination. Development of questions and answers according to difficulty level took more time and effort. However, this can be minimized with dedicated time for curriculum planning in later years. Each student was asked questions from the list developed, and students had to answer the questions to a single

assessor. Students' feedback was obtained on SOE at the end, through an anonymous Likert scale questionnaire, to indicate their perception. The data collected was analysed using SPSS software version 2012. P value was calculated using Chi square test. The variables studied were listed with individual statistics. Statistical analysis of the Likert scale

questionnaire submitted by students for conventional and structured oral examination was done. Agreement was calculated by adding 'strongly agree' and 'agree' to both COE and SOE (Table 1 & 2). Likewise, disagreement was calculated by adding 'strongly disagree' and 'disagree'. The neutral response was not included in the analysis.

**Table 1: Comparison of agreement and disagreement by students on Conventional Oral Examination.**

S.no	Conventional oral examination			
	Statement	Agree	Disagree	P-value
1	Time allotted for each student was uniform & Adequate	30 (50%)	26 (43.3%)	0.4654
2	Questions were asked from a list/set of questions available to examiners	08 (13.3%)	47 (78.3%)	NA*
3	Level of difficulty of questions varies between examiners	52 (86.7%)	0 (0.0%)	NA*
4	Covers most of topics from syllabus	32 (53.3%)	16 (26.7%)	0.002
5	Process is Comfortable with less stress level	32 (53.3%)	06 (10%)	NA*
6	Questions were easy to understand	56 (93.3%)	0 (0.0%)	NA*
7	Questions ranged from easy to difficult level	30 (50%)	08 (13.3%)	NA*
8	Sequence of questions helped to maintain chain of thought while answering	22 (36.7%)	16 (26.7%)	0.238
9	Provides more time to think before answering	38 (63.3%)	09 (15%)	NA*
10	This method will be more helpful in enhancing performance in the final exam	33 (55%)	09 (15%)	NA*
11	This is a well-organized system/method	14 (23.3%)	26 (23%)	0.020
12	Scoring depends on appearance, vocabulary & language of candidate	24 (40%)	26 (43.3%)	0.711

\*p-value was not calculated since one of the frequencies is zero

**Table 2: Comparison of agreement and disagreement by students on Structured Oral Examination**

S.No.	Structured oral Examination			
	Statement	Agree	Disagree	p-value
1	Time allotted for each student was uniform & adequate	58 (96.7%)	02 (3.3%)	0.000
2	Questions were asked from a list/set of questions available to examiners	60 (100%)	0 (0.0%)	NA*
3	Level of difficulty of questions varies between examiners	27 (45%)	15 (25%)	0.021
4	Covers most of topics from syllabus	55 (91.7%)	04 (6.7%)	0.000
5	Process is comfortable with less stress level	44 (73.3%)	04 (6.7%)	0.000
6	Questions were easy to understand	54 (90%)	0 (0.0%)	NA*
7	Questions ranged from easy to difficult level	56 (93.3%)	0 (0.0%)	NA*
8	Sequence of questions helped to Maintain chain of thought while answering	36 (60%)	03 (5%)	0.000
9	Provides more time to think before answering	46 (76.7%)	02 (3.3%)	0.000
10	This method will be more helpful in enhancing performance in the final exam	48 (80%)	0 (0.0%)	NA*
11	This is a well-organized system/method	56 (93.3%)	0 (0.0%)	NA*
12	Scoring depends on appearance, vocabulary & language of candidate	26 (43.3%)	24 (40%)	0.711

\*p-value was not calculated since one of the frequencies is zero

**Table 3: Comparison of Agreement by students on Conventional and Structured Oral examination**

S.no	Statement	Agreement		P-value
		COE	SOE	
1	Time allotted for each student was uniform & adequate	30 (30%)	58 (96.7%)	0.000
2	Questions were asked from a list/set of questions available to examiners	08 (13.3%)	60 (100%)	0.000
3	Level of difficulty of questions varies between examiners	52 (86.7%)	27 (45%)	0.000
4	Covers most of topics from syllabus	32 (53.3%)	55 (91.7%)	0.000
5	Process is comfortable with less stress level	32 (53.3%)	44 (73.3%)	0.000
6	Questions were easy to understand	56 (93.3%)	54 (90%)	0.509
7	Questions ranged from easy to difficult level	30 (50%)	56 (93.3%)	0.000
8	Sequence of questions helped to Maintain chain of thought while answering	22 (36.7%)	36 (60%)	0.010
9	Provides more time to think before answering	38 (63.3%)	46 (76.7%)	0.112
10	This method will be more helpful in enhancing performance in the final exam	33 (55%)	48 (80%)	0.003
11	This is a well-organized system/method	14 (23.3%)	56 (93.3%)	0.000
12	Scoring depends on appearance, vocabulary & language of candidate	24 (40%)	26 (43.3%)	0.711

\*p-value <0.005 was considered significant.

### 3. Results

Majority of students felt that the overall process was better in SOE against conventional viva voce. Most of the respondents (96.7 %) felt that time allotted was uniform and equal in SOE as against 30% in COE (Table 3). Nearly half (43% students) felt that time was neither uniform nor adequate to answer in COE. All the 60 students (100%) were satisfied that in SOE the questions were asked from the list available to examiners which was prepared in advance with consensus.

Nearly half (45%) of students agreed that the level of difficulty of questions varied between examiners in SOE. However, this variation was felt by a large number of participants in COE (86.7%).

There was strong agreement supported by a vast majority (93.3%) that SOE was well organized system that covered most of topics from the syllabus. The also thought it was helpful for enhancing performance in final examination

When the students were asked about 'Time allotted for each student was uniform & adequate in COE, 50% agreed and 43.3% disagreed for the statement (Table 1). The difference in proportion of agreement and disagreement was not significant ( $p = 0.4654$ ). Similarly, when the students were asked whether 'Sequence of questions helped to maintain chain of thought while answering', 36.7% of participants agreed and 26.7% disagreed for the statement. The difference in proportion of

agreement and disagreement was not significant ( $p = 0.238$ )

Likewise, when the students were probed whether 'Scoring depends on appearance, vocabulary & language of candidate', 40% agreed and 43.3% disagreed with the statement. The difference in proportion of agreement and disagreement was not significant ( $p = 0.711$ ). For all other statements, the difference in proportion of agreement and disagreement was significant ( $P < 0.005$ )

When the students were asked whether 'Questions were easy to understand', 93.3% agreed in COE and 90% agreed in SOE for the statement. The difference in proportion of agreement between COE and SOE was not significant ( $p = 0.509$ ). Similarly, when they were asked about scoring, whether 'Scoring depends on appearance, vocabulary & language of candidate', 40% agreed in COE and 43.3% agreed in SOE for the statement. The difference in proportion of agreement between COE and SOE was not significant ( $p = 0.711$ ).

### Discussion

In the present study, most of the respondents (96.7 %) felt that time allotted was uniform and equal in SOE. They all were satisfied that in SOE the questions were asked from the list available to examiners. 86.7% of students felt that level of difficulty of questions varied between examiners in COE. 93.3% students agreed that the SOE was well organized system that covered most of topics from

the syllabus. Most number of students (93.3%) agreed that the questions asked in COE were easy. Oral examinations are being used as a mode of assessment of medical students for years. Conventional oral examinations consist of a dialogue or discussion with the examiner who asks questions to which candidate must reply. This method gives the examiner the unique opportunity to explore students' depth of knowledge as well as their ability to express it in a precise manner. They are used for their flexibility and potential for testing higher cognitive skills.<sup>8</sup>

An assessment tool must be valid, reliable, and objective. Most authors agree that structuring and preplanning viva voce leads to a better validity and reliability of viva as an assessment tool for undergraduates.<sup>9</sup> Validity is the most important characteristic of good assessment. Feasibility and acceptability are other considerations. Our findings in terms of student perception reveals that SOE is more preferred modality.

The oral exams enable instructors to test the students on all five cognitive domains of Bloom's taxonomy.<sup>10</sup> The examiner can ask the student about his/her knowledge and comprehension (levels 1 and 2), ask question to see if the student can apply the concepts (level 3), use a case scenario to test the student's analytical ability (level 4), judge if the student can combine concepts into a new whole (Level 5), and even determine if the student can evaluate or critically assess various concepts or theories (Level 6). While some of these levels can be assessed through the written exam, the oral exam allows the instructor to assess cognitive domains along with the skill (psychomotor domain) and the attitude (affective domain) combined together.

Most of the Indian medical schools conduct viva by conventional method. Many of them have experimented the SOE in different subjects. But it is not incorporated across all the subjects in medical course. The present study carried out to get the feedback from students as to whether structured viva voce is making any difference from conventional oral examination. In the present study the viva voce was structured and made more objective. Questions were prepared with specific objectives in consensus with other faculty members in the department. The entire faculty agreed upon asking the questions from the list of questions. In COE method, examiners take their own time with whatever questions they feel to ask to

a student. In SOE method uniform time was allotted for each candidate. The results showed that there were less biases in the structured viva as compared to the conventional viva. 73.4% participants agree that SOE method is comfortable with less stress level when compared to COE (53.4%). But still there is not much difference in both methods which results in stress. This has also been confirmed by other studies which claim similar results regarding the agreement of participants to SOE.<sup>11-14</sup>

In the present study, the student's perspective regarding SOE was very encouraging with students considering SOE more reliable and comfortable method of assessment. Students felt that it covered the complete syllabus on given topics and explored the knowledge of the subject. Similar findings were reported in other Indian studies done in the subjects of physiology.<sup>15</sup>

In our study, a vast majority of students preferred structured viva over conventional viva. This is probably due to decreased biases and increased objectivity of the structured viva. This is in line with other studies which claim that 93% of vivas are biased.<sup>16</sup> Moreover, the majority of the students in the present study claim that structured viva was more student friendly, to the point and better in terms of preset questions and uniform coverage of the syllabus. This opinion reinforces other studies in which students share a similar opinion.<sup>17,18</sup> Many studies show that students prefer a SOE as compared to COE because it is uniform, fair, less stressful, reliable and less biased.<sup>14,19,20</sup>

Strengths of our study: We made a pioneering effort to use SOE in UG assessment in Forensic Medicine which is a step towards the attainment of Competency Based Medical Education launched by the NMC (National Medical Commission). The new MBBS curriculum by NMC, lays stress on formative assessment and internal assessment, but questions are raised regarding how reforms can be extended to summative assessment which falls under the purview of universities.<sup>21</sup> We have shown how SOE can be effectively implemented as formative and part of summative assessment tool in university examination in consensus with other examiners. No doubt, convincing other examiners especially external examiners is a challenging issue. However, with proactive action from the Department and support from Medical Education Units that support Faculty Development, this can be achieved sooner or later.

### Limitations of our study

Our study was conducted with 60 students in one medical school hence the generalizability is limited. Due to logistic issues, we could draw only purposive sample of 60 students. The instrument which we developed also needs further study for their validity

and reliability. We recommend that further studies are needed with a large sample using multi centric approach, which can substantiate this method for recommending to all medical schools across the country. A SWOT analysis of our experience has been depicted in [table 4](#).

**Table 4.** SWOT analysis of structured v/s Conventional viva voce

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Structured process</li> <li>• Transparent</li> <li>• Acceptable</li> <li>• Feasible for both students and teachers</li> <li>• External examiners assessment would be uniform</li> </ul>	<p><b>Weakness</b></p> <ul style="list-style-type: none"> <li>• Requires more thinking skills</li> <li>• Requires advance preparation /and training of faculty</li> <li>• No scope for external examiner to ask his own /new questions</li> </ul>
<p><b>Opportunity</b></p> <ul style="list-style-type: none"> <li>• Strengthening of competency to foster skill and knowledge</li> <li>• Communication skill development</li> <li>• Bringing about best in evaluation strategies</li> <li>• External examiners can suggest for the improvement in specific areas based on assessment</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• How to incorporate in the current curriculum</li> <li>• How to change the mindset of conventional experienced faculty</li> <li>• Convincing external examiners for SOE as many may not like it and have no experience</li> </ul>

### 5. Conclusion

Majority of the students were in favour of structured viva as more effective tool for formative assessment in the Department of Forensic Medicine possibly, due to its increased objectivity and less biases. Our study is also an example to show how this can be organized in a large group setting. This can also be extended for summative assessment with adequate planning and logistics.

### 6. Recommendations

The candidates should be informed about the examination process in advance. Examiner performance can be enhanced by appropriate guidelines and instructions and training of new examiners. Training of examiners may produce more rigorous evaluation of student performance. Large amount of preparatory work required in setting up the protocols and question bank. Hence faculty development and proactive leadership hold the key. We also suggest further standardization of questionnaire before the implementation of SOE for summative assessment.

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**Conflict of interest:** None to declare.

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