

Feasibility of a Design of an Objective Framework for Internal Assessment of Post Graduates in Prosthodontics

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ABSTRACT

Background and Objectives: Post Graduate Assessment in the Indian dental profession occurs only during the time of examination. There is no objective systematic record of evaluation conducted either in a formative or summative manner. Even if these records are present there is no weightage of internal assessment for evaluation of postgraduates. The study is intended to construct an objective framework with an appropriate curricular pattern for internal assessment for post graduates in prosthodontics specialty in dentistry. The model to be analysed for testing the feasibility of the model through an online focus group discussion involving the subject experts.

Material and Methods: Situation analysis was carried out with feedback obtained from the trainees, trainers of the post graduate programme in prosthodontics. The proposed design was then subject to an online Focus Group Discussion involving subject experts at a senior level with more than 10 years of post-graduate training in the field all over India.

Results: The inputs of the analysis was used to create a design of a curricular framework for post graduate prosthodontics and Crown & Bridge training programme. This had the scope of systematic objective formative and summative evaluation in four modules – Pre-clinical, Basic clinical, Advanced clinical and Master clinical. The curriculum spacing and guidelines for assessment and scoring pattern was outlined. The outcomes of the Focus Group Discussion was analyzed by thematic analysis based on the lead questions and results were interpreted with a narrative description.

Conclusion: The proposed tool was found to be feasible and acceptable with the minor modifications suggested from the focus group discussion.

Keywords:

Formative assessment, Dental postgraduate, Prosthodontic training, Curriculum design

INTRODUCTION

Post-graduate assessment in dental education is normally done by assessment of the trainee on the day of examination in the Indian System of Evaluation. In any event, where the post graduate performance is poor during a practical examination, a recommendation for a pass is usually made by the internal to the external examiner, which is mostly based on the rapport the postgraduate has with the internal. Generally, there are no records of the performance of the student through the course except for the log book and records with the number of completed cases. It is important to point out that there is no allotment of internal assessment marks that are added to the final examination scores. An objective assessment of the

trainee would help in such a situation, which could help to arrive at a decision of pass/fail in an unbiased manner. Periodic assessments in different settings by multiple assessors would be the best way to obtain a reliable and an unbiased evaluation. The post graduate performs many clinical procedures, which are traditionally assessed in a subjective manner by faculty with varying experience.

The art and science of assessment has progressed remarkably from the traditional “read and recite” to objective, valid and reliable assessment tools which could be customized for different situations and the method of learning involved.¹ There is a rigorous implementation of teaching learning

and assessment. The criteria based assessment like Rubrics, Likert Scale, Checklists for assessment of students are available.² Use of Rubrics has been recommended as the norm for objective and structured assessment in clinical examinations as in OSCE-Objective Structured Clinical examinations.³ With the advancements in assessment methods and strategies, it is disappointing that the Indian scenario has not adapted to the scenario. If assessments do happen, the fairness to which it is conducted is a big question.⁴ There are a few initiatives made by the Dental Council of India to incorporate objective assessment in few areas like seminars and pedagogies. The passing of a candidate undoubtedly should be based on meticulous observation and objective assessment of the post graduate during their course.⁵

With the background of all the above mentioned problems, a literature search was made which revealed that there is neither clearcut curriculum guidelines for a Prosthodontic post graduate to follow or a systematic objective framework for the faculty to assess. Many studies have mentioned guidelines of internal assessment for undergraduates.^{6,7,8} Very few studies or recommendations are available for post graduate assessment.^{9,10} In order to address these deficiencies, we designed a study with the intent to construct an objective framework with an appropriate curricular pattern for internal assessment for Post Graduates in Prosthodontics specialty in Dentistry and to subject the model for testing the feasibility of the model. The study setting is in a private dental institute located in South India

MATERIAL AND METHODS

The study consists of two parts namely

1. Construction process of a modular curriculum and construction of the objective framework
2. Focus group discussion /interview – Critiquing the Model.

1. Construction process of the modular Curriculum and development of the Objective

Framework: In the beginning the researcher conducted interviews on the existing curriculum of training and some of the common findings are listed here which are based on formal and informal feedback from the teachers and students.

The training faculty felt that objective assessment of the post graduate is often not possible because of the work load and insufficient time. Inadequate time is available for planning by the faculty or the student which cannot facilitate objectivisation. The post graduates felt that short term goals or targets are always easier than assigning a whole lot of cases to be completed at the end of three years. The teachers have felt that the post graduate training fraternity have not made strong guidelines on how it should be done. It is also felt by the teachers that objective assessment should be done during internal assessment in the Clinical, Pre-Clinical or Academics. It was also pointed out that other than the areas mentioned above, it can also be used to assess professionalism which is not usually carried out. Lack of faculty training and unavailability of faculty development programmes may also keep the trainers in the dark and ignorant about the science of education and concepts like objectivisation and other assessment tools and strategies. Need for an internal assessment is not felt by the faculty members as the marks do not influence the final examination.

Process of Curriculum Development

With the background of the above mentioned problems an objective framework for the post graduate evaluation for internal assessment was generated. The author along with the opinion of faculty and stake holders tried to develop a feasible curricular design. All the work distributed across the modules are to be assessed for completion in time, the number of cases and quality of work along with a verbatim evaluation to check the knowledge of the related work. DOPS [Direct Observation of Procedural Skill] scoring and 360 degree evaluation scoring are used as formative assessment scores to assess their clinical skills in treatment planning, decision making, handling of patients with ethics, empathy and respect. Open book test scores are also used as formative assessment scores which are not included in the final scoring pattern. Formative assessment scoring is mainly used to provide instant feedback for progress of the trainee. Discipline, attendance also to be scored objectively. Intended learning outcomes for each module is different and is prescribed in the model. The topics for seminars, tests, pedagogies and journal clubs are to be allotted to the post graduate based on the intended learning outcomes which make each module unique and different from each other.

This system is well planned and feasibility is checked with a group of post graduates and internal

Figure 1: Comments posted in the “Google site”

Focus Group Discussion - Objectivising Curriculum of Post Graduates in Prosthodontics

INTRODUCTION

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INTRODUCTION

Thank you for accepting to review this objective framework of modular curriculum model.

BACKGROUND

Post Graduate curriculum in Prosthodontics

1. Need for Objectivity in assessment as a part of Internal Assessment
2. Need for Structuring the Curriculum into Modules for ease of assessment.

PROPOSAL

Objective Framework of Assessment in the modular curriculum model of Postgraduates in Prosthodontics.

The curriculum is broken down into 9 modules with time period of 2–3 months each. The pacing of the curriculum is done by the student by choosing the date of completion of exercises. There are four levels in which the postgraduate trainee is walked through and each model is made unique with its own set of intended learning outcomes.

The assessment of the entire academic, preclinical and clinical work is made objective by means of checklists, Likert scales and Rubrics wherever indicated. Each module is assessed separately and immediate feedback would be given. DOPPS and 360 degree evaluation which are the standardized assessment tool which are used internationally for overall performance of the student are incorporated in this framework.

Such assessment can further to play a role in the final examinations.

TERMS OF REFERENCE:

1. Review of the objective framework and modular curricular model for post graduate internal assessment in Prosthodontics.
 - Weightage and Skill sets to be tested as proposed
 - Plan of implementation

Table 1: Structure of the curriculum for the post graduates in prosthodontics

Features	Module-1	A S S E S S M E N T	Module-2	A S S E S S M E N T	Module-3	A S S E S S M E N T	Module-4	A S S E S S M E N T
	Preclinical Module		Basic Prosthodontic Training		Advanced Prosthodontic Training		Master Prosthodontic Training	
Duration	8 months		6 months		9 months		6 months	
Exercises	Preclinical work Removable Dentures,		Removable Dentures in special situations Fixed partial denture And Implants		Multiple Implants and maxillofacial implants, full mouth reconstruction, Overdentures,		Implant – dentures, full mouth reconstruction	
Intended learning	Hand skills on basic procedures		Critical thinking skills, evidence based approach, problem solving and integrated approach					
Academic	All Academic activities like seminars, journal clubs, discussions during the respective module should be centered on the type of cases they encounter in that module.							

trainers belonging to the specialists and educationists, before brainstorming in the focus group discussion. Opinions were asked from the faculty of the department and post graduates on the feasibility and acceptability. The quota prescribed by the Dental Council of India was very elaborate and almost impossible to finish by any post graduate. Maxillofacial cases, Anatomic dentures posed to be a major difficulty in completion. Merging of the types of cases was carried out without disturbing the intended outcomes of the council. All the inputs were incorporated and the model was generated.

2. Focus Group Discussion - Critiquing the model

The methodology to test the relevance, feasibility and level of objectivity of the proposed model is proposed to be a focus group discussion/interview with experts of at least 5 years post graduate training experience after being a professor¹¹. This discussion was planned to conduct online. A “Google site” was created and the subject experts were invited with informed consent to be willing to be part of the focus group discussion. The closed group comments were obtained periodically as and when the expert logs in the forum. The google site was created with a page on introduction of what the study is about and what are the terms and references of the participant, what the participant is supposed to do and how to give in the responses. Clear cut instructions were given and an option of posting the comments to email was also done. Another option of giving comments over phone was also offered. Their comments was posted in the “Google site” for others to view and opine. [Figure 1]

There were twelve participants as subject experts [minimum five years of post Graduate training after Professorship], at the level of Head of the Department of Prosthodontics of various colleges in Puducherry, Tamilnadu, Karnataka, Kerala, New Delhi. Some of them are key members in curriculum committee of the society of Prosthodontics. All the participants consented for the study through email. Of the twelve, there were two drop outs as they could not participate within the time frame given as they were unavailable. Out of the remaining participants two experts gave their opinion through telephonic conversation. All the comments were recorded and compiled in MS excel, question wise for analysis.

RESULTS

1. Result of the model construction: The outcome of the structure of Curriculum and the guidelines are as follows.

The Structure of Curriculum: The post graduate is to be guided through the course by this modular curriculum [Table 1] where the entire curriculum is divided into 4 modules amounting to 30 months, 6 months short of the 36 months course of MDS in Prosthodontics and Crown & Bridge.

There are 4 levels in which the post graduate trainee undertakes

1. Preclinical – Module 1
2. Basic Prosthodontic Training – Module 2
3. Advanced Prosthodontic Training – Module 3
4. Master Prosthodontic Training – Module 4

The post graduate is supposed to complete the Dental Council Recommended Seminars, Journal Clubs, Pedagogies the topics of which are allotted based on the intended learning outcomes outlined in the modules. The division of the topics for each academic task should be such that there is no overlap and there is a wide sampling of learning. The discussion topics should be conducted on issues to be debated, problem to be solved or a decision to be made. The pedagogical exercise should be tailored following the guidelines of a routine microteaching exercise wherein the trainee is trained in skills of teaching. The progress of the dissertation [library and main] is also to be assessed and marks are given based on the improvement of the candidate with the deadline for the dissertations in mind.

Eligibility to Progress

The Post Graduate should have finished 100% of the work allotted in the Pre Clinical and Basic Prosthodontic Training Levels and 90% of the work allotted in Advanced and Refining levels to be eligible for the next module. The Post graduate will be retained in the module if he or she fails to do so.

Extra marks: Encouragement in the form of marks for cocurricular activities and excellence in clinical,

academic or research would motivate the students to complete the assigned work within allotted time.

Areas of Assessment: The post graduate is evaluated in all areas [Preclinical, Clinical, Academic, Discipline, Clinical Skills in decision making, treatment planning and execution with empathy, attendance, discipline, participation in conferences and research] in complete objectivity and ultimate scores are available in numbers of two decimal spaces out of 10. The objectivity is made possible by creating Rubrics/Checklists where indicated. The post graduate and the faculty can develop the Rubrics when the first case is performed which makes it student centered evaluation and enriches the learning experience. A post graduate teacher with minimum of 4-5 years of experience is mandatory to use the checklist and rubrics for assessment.

2. Results of the focus group discussion: With the lead questions all the experts voiced their opinions, which were compiled in excel and thematic analysis was done [Table 2]. The online focus group discussion was planned to be like a chat forum wherein repeated logins was expected of the subject experts. But, only 50% of the subject experts were able to revisit and give a rebuttal and response to other experts' comments. Generally, all the subject experts felt that objective evaluation would be good and some emphatically stated that there is a definitely a need of objective evaluation among post graduates. Although the evaluation system eliminates bias and provides immediate feedback

for the student, it may be a tiresome process and exhaustive for the faculty to implement. It was also reported from experience that apart from seminars and pedagogy, preclinical and clinical procedures were not objectivized. Though rubrics and checklist would reduce the inter-rater variability, in a subject like prosthodontics which is skill-based and artistic strict scores may not define well the learning acquired.

One participant mentioned that the criteria may not vary among experienced examiners as he had the experience of assessing along with other examiners. The felt disadvantages were more towards the faculty acceptance, compliance, difficulty in making the checklists, rubrics and victimization towards students from the head of the department. One other participant commented that it may involve malpractice and bias as the evaluation/assessment is left to teachers. In a developing country like India, prejudice and favoritism is not so uncommon. So a system like this can endanger a student or favour an unworthy student. It was suggested that periodic assessment can be done with an external examiner to avoid victimization. Some other participant felt that the internal periodic assessment can be given 100 % weightage, and it could eliminate the need for a final examination. Some other felt that 50% weightage could be given for the internal assessment. One of them commented that everything is put in "Black and White" and "...it would help the teachers who are challenged with the task of managing uncooperative wards." A minimum of 4-5 years of experience in post graduate training is

Table 2 : Focus group discussion questions

1	Do you feel that there is a need for objective evaluation among the post graduates as a a part of the formative assessment? Please justify.
2	Have you tried/seen implementation of objective evaluation for post graduates? Please give your experience
3	Do you feel the scores obtained at the end of the assessment will be similar between two examiners?
4	What are the advantages or disadvantages of the proposed Objective Framework for assessing the post graduates?
5	Comment on the feasibility of implementing the Objective framework given to you and give your reasons?
6	Comment on the division of modules in the proposed model in their ease of implementation
7	Do you think the assessment can be done by any observer if given the criteria? Justify your answer.
8	Comment on usability of the assessment scores as an eligibility criteria for sending for exams?
9	What weightage should be given to internal assessment.
10	Comment on the level in which the model fits into the norms and guidelines by the Dental Council of India Regulations?
11	What would be the acceptability of this model and assessment instrument among faculty and students?
12	Is there anything you would like to comment as to why this objective framework should not be implemented?

needed to assess the work in an unbiased manner. They need to be sensitized about the assessment criteria. One of the expert commented that “what the mind does not know the eyes don’t see”. The syllabus by the dental council has the flexibility to include recent advancements during training. One other participant mentioned that after a trial run real difficulties can be identified. One other person felt that once the wheel starts rolling then it becomes the routine.

It was also suggested that “the curriculum with its assessment should be made enjoyable by the student, less of student teacher barrier, practicality of work allotment, relevance and should be of less theoretical and didactic part.”

DISCUSSION

The outcome of the focus group discussion was overwhelming with outcomes that are more than what we envisaged. Focus group discussions in education and curriculum can elicit results which are valuable inputs for any further thought, leading to reforms.^{12,13}

Continuous analysis and reforms for the betterment is a step to quality improvement. The senior fraternity of the specialty felt that there is a dire need of such objectivisation for internal assessment in postgraduation. In India the examination system is entirely dependent on the decision of two to four examiners in two to three days. In higher education, objective assessment was never the rule for the trainee. The performance of a student on the day of examination is not to his full potential. The performance is affected by his mental state, his circumstances and so many other discussions which make the results highly unreliable. It is quite an irony and the credibility of the post graduate examination, always has been ridiculed because of many reasons thereof in the Indian System.^{4,5} Nowhere, there is a mention of the use of assessment tool of rubrics, systematic assessment in various domains, assessment of professionalism, guidelines for assessment in the existing curriculum. However, we do note that the Dental Council of India has suggested the assessment of seminars and teaching practice by using checklist and scoring and objective assessment of practical examinations for undergraduates through Objective Structured Clinical Examination.

There is a basic level of competency which is required by a post graduate.^{9,10} With the world moving towards outcome and competency based curriculum, it is high

time that the facilitators take the issue seriously and work towards it. The theory of mastery learning is more closely related to post graduate training. Morrison in 1930 have described the model of learning wherein the student undergoes “Pretest, teach, test the result, adapt procedure, teach and test again to the point of actual learning.” Mastery learning assumes that all students can master the materials presented in the lesson. In post graduation, it is possible to achieve a desirable level of competency in any skill by the trainee, as he repeatedly performs similar procedures with no time constraints. However higher skills cannot be achieved with Mastery learning according to Saelter. With constant feedbacks and corrective suggestions, one could achieve the desired level.

An objective evaluation with a scoring system would solve the problem, as there is scope of realization of the mistakes and corrective suggestions are periodic which would actually enhance the performance of a student in an incremental manner. There are many procedures which include vital must know skills that are not assessed in final examination. The continuous nature of such assessments can ensure steering of the direction in which the trainee is going through so that desired learning is achieved over time. Some students could use this and grow exponentially as they are basically motivated and find these practices more relevant. The post graduates are assessed actually in the work place when they perform procedures and are assessed by multiple observers and multiple settings.^{14,15}

The use of Rubrics and Checklist with scoring criteria is an excellent method as opposed to global assessment.⁶ However with experience and exposure to repeated assessment, the inter assessors rating on global and with checklist may not be much different. The objective assessment framework can be used by any specialty teacher, with moderate experience to assess a trainee. This ensures uniformity to avoid bias, inter rater variability and inter personal conflict in assessment standards. The student also knows what is expected of the teacher and it is a reminder every time to incorporate all the qualities he or she should express during the performance of skill sets. However, if one completes all the allotted exercises to a satisfactory level, very minimal discussion would be needed for sending the postgraduate for examination. Multisource feedback or 360 degree evaluation can be incorporated at the end of each level/module and feedback given so that, it ensures building of professionalism and change of attitude by the post graduate.

Each module is unique and each level has a set of goals and intended learning outcomes. This makes the division not just a division for time but for the content which is more valid.¹⁶ The uniqueness of the module can delineate the assessment tools and content for assessment. The preclinical module need not be exclusively dedicated for preclinical section, though it is called so. The post graduate can perform clinical cases to the skill level which he is already trained in the undergraduate training or elsewhere.

The focus group discussion/interview online was chosen to capture the opinions of the senior experts. The guidelines were adapted from the conventional guidelines for conducting Focus Group Discussion. In this study an online focus group discussion is performed in Google site. The intention was to include the subject experts, for their suggestions, comments, exchange of ideas at their comfort and available time. Most of them are busy academicians, leading prosthodontists and members in national bodies and societies. A live focus group discussion would have non verbal cues and body language which can be noted. Moreover, the availability of the subject experts in person was a limitation. However, 50% of the senior experts revisited for additional comments, rebuttals to other experts' comment and exchange of ideas.

One of the subject expert commented on the use of periodic evaluation at the end of each level as a final assessment. He recommended the conduct of the evaluation without any malpractice by involving an external. Academic dishonesty is found to be very prevalent according to a report by Gitanjali B.⁴ The involvement of external examiner with documentation of the proceedings would avoid other issues concerning the authenticity of the evaluation. So the assessment will seem like a semester evaluation and the post graduate is assessed four times and eligibility is given for each level. Another member of the experts of FGD commented that the contents of what the trainees are taught need to be revised as obsolete procedures are still present and our institutions impose lot of academic in the form of seminars, journal clubs and pedagogies to compensate for less number of clinical cases in the institutions. Such activities may not benefit the post graduate and he may not be competent to perform the required type of cases that he is supposed to master.

The outcome of the discussion also proves its validity as the assessment was over a wide range of topics,

reliable as the assessment was performed with various assessment tools in different settings with different observers and objective as evaluation criteria need to be used to assign scores for a particular work.¹⁶ The model was also found to be feasible and acceptable among the post graduate teachers and students as it guides the users through the curriculum in a progressive manner with periodic inputs in the form of feedbacks about the students performance both to the teachers and students themselves. Thus the education is more certain and focused.

Another comprehensive evaluation of the progress of the candidate during the training programme would be the use of portfolio which provides complete details of the postgraduate with reflections after self assessment along with the comments by the guiding person or a mentor. The portfolio which is updated every day helps the postgraduate to assess himself and stay focused on his goal and philosophy statement during his learning. Implementing this is not far-fetched when objectivisation and use of other criteria based assessment tools are possible.

The online focus group discussion can be sought as an approach to obtain valuable opinions and viewpoints from senior experts. It is highly impractical to get together senior fraternity of a specialty under one roof for a focus group discussion. However, the study has its own limitations. Detailed capture of individual views, rebuttal, body language and subtle expressions of refusal or acceptance cannot be recorded in this methodology, which would be possible otherwise. Although the model appears comprehensive and objective, the extent to which it can be implemented to the real world situation is questionable. The study was carried out in a single institute but the online platform provided an opportunity to elicit the views and opinions across the country, so that the study findings can be generalized to national level.

From our study we realize that, it is possible to work out a feasible objective framework from the inputs of experts and stakeholders. However, further studies are required to assess the implementation and to identify potential hurdles in the implementation. An appropriate faculty development programme is necessary to support any curriculum implementation. The Dental Education Units in institutions can play an important role in sensitizing and training of the faculty for effective implementation.

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Newer generation of insulin analog drugs did not have substantially better outcomes than less costly human insulin in Type II diabetic patients

Objective: This study investigated the rates of hypoglycemia-related emergency department (ED) visits or hospital admissions and changes in levels of glycemic control after initiation of long-acting insulin analogs (glargine or detemir) compared with human neutral protamine Hagedorn (NPH) insulin among patients with type 2 diabetes in clinical practice.

Findings: In this retrospective observational study of 25 489 patients with type 2 diabetes, initiation of basal insulin analogs compared with NPH insulin was not associated with a significant difference in hypoglycemia-related ED visits or hospital admissions among a propensity-score matched cohort of 4428 patients (hazard ratio, 1.16).

Meaning: Among patients with type 2 diabetes, the use of basal insulin analogs compared with NPH insulin was not associated with a reduced risk of hypoglycemia-related ED visits or hospital admissions.

Source: Lipska KJ *et al.* *JAMA* 2018; doi:10.1001/jama.2018.7993