

Integrated modular teaching in dermatology for undergraduate students: A novel approach

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ABSTRACT

Context: Undergraduate teaching in dermatology comprises didactic lectures and clinical classes. Integrated modular teaching is a novel approach, which integrates basic sciences with dermatology in the form of a module. Further the module also incorporates various teaching modalities, which facilitate active participation from students and promotes learning. The pre- and post-test values showed the effectiveness of the integrated module. The students feedback was encouraging. **Aims:** The aim of this study was to determine the acceptance and opinion of undergraduate students regarding integrated modular teaching as a new teaching aid in dermatology. **Settings and Design:** This was a descriptive study. Varied teaching methodologies involving multiple disciplines were undertaken in six major undergraduate topics in dermatology for seventh and eighth semester students. **Materials and Methods:** A total of six modules were conducted over a period of 12 months for students of seventh and eighth semesters. The topics for the various modules were sexually transmitted diseases, acquired immunodeficiency syndrome, oral ulcers, leprosy, connective tissue disorders and psoriasis. Faculty members from different disciplines participated. Pre- and post-test were conducted before and after the modules respectively to gauge the effectiveness of the modules. **Results:** It was found that almost every student had a better score on the posttest as compared to the pretest. General feedback obtained from the students showed that all of them felt that modular teaching was a more interesting and useful teaching learning experience than conventional teaching. **Conclusions:** Integrated modular teaching can be an effective adjunct in imparting theoretical and practical knowledge to the students. Further, various teaching methodologies can be used in integrated modules effectively with active student participation. Thus integrated modular teaching addresses two important issues in medical education, namely integration and active student participation.

Key words: Dermatology, integrated modular teaching, undergraduate

INTRODUCTION

Dermatology is one of the essential subjects in the undergraduate curriculum not only in India, but also throughout the world. All over the world, a significant proportion of patients in general practice have skin problems^[1] and a large number of them are seen by non-dermatologists.^[2-4]

It is felt that undergraduate students lack adequate exposure to dermatology.^[5-7] Students also do not show too much of enthusiasm for self-learning in dermatology. This could be due to the less weightage given in the university examinations for dermatology cases. According to Hellier, some form of evaluation is essential to make the students work.^[1] In the current undergraduate syllabus in most universities in India, only one dermatology case is allotted as a

part of the general medicine practical examination and carries less weightage with regard to marks compared to other cases.

However, the importance of acquisition of clinical skills in the subject cannot be overemphasized from a practical standpoint. It is thus imperative that an undergraduate medical student receive adequate training in the diagnosis and management of skin disorders.

Keeping the above factors in mind, an integrated modular approach to teaching clinically important topics was conceived in order to stimulate the students' interest in the subject and also to provide a comprehensive view of these skin topics by involving other related departments. The teaching methodology for various topics was also different in order to provide a varied learning experience.

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CONCEPT OF INTEGRATED MODULAR TEACHING

Modular teaching is not a new concept. It has been applied in various subjects with success.^[8-10] Based on the successful experience in conducting leprosy modules,^[11] we introduced this idea of integrated modular approach to cover important topics in dermatology at the undergraduate level. Integrated modular teaching envisages the idea of providing wholesome knowledge with adequate stress on fundamentals through a wide variety of learning activities.

This was not a replacement for conventional teaching, which took place side by side. The highlight of the modules was the varied teaching methodologies that were used. It has been shown that didactic lectures are a poor form of teaching. However some concepts are best conveyed by this method. In our modular teaching experience, varied teaching methodologies like group discussions, photo demonstration, open discussion, quiz, video demonstration, panel discussion, panel forum and role play were utilized in addition to didactic lectures. Role play was used in counseling to understand the affective domain of learning. It was found to be very popular with students because it provided entertainment in addition to the educational value. These methods not only required active participation of the students, but also broke the monotony of conventional lectures. The effectiveness of the sessions was assessed by conducting pre- and posttests.

PLANNING OF THE MODULE

Planning of the module was performed under the supervision of the medical education unit. It was decided to conduct modules in six major topics of clinical relevance, keeping in mind the needs of the undergraduate students as suggested by Pareek and Rao.^[12] After formulating the objectives of the module, the component topics for each module were proposed by the dermatology department and finalized with the other participating departments. Individual speakers were also identified among the senior faculty who volunteered for the same. A moderator was identified in the department who coordinated the various aspects of and ensured the smooth conduct of the module. The blue print of the module was prepared beforehand and the individual topics in each module were discussed among the speakers with inputs from the moderators. The purpose of having a discussion with all the speakers was for them to have an overall idea of the module so that each speaker limited oneself to the general idea meant to be conveyed, without going into an exhaustive elucidation of one's own individual topic.

The module was conducted in the afternoons between 2.30 pm and 4.30 pm. About three to four sessions were held each day. Each session lasted for less than 30 min. A total of 20 faculty were involved and 125 students participated in this study.

EXECUTION OF THE MODULE

Each module was initiated by a faculty member from the Department of Dermatology with a suitable introduction. This was followed by discussion on individual topics. Pre- and post-test were conducted at the beginning and end of the first three modules to assess the impact of the module.

MODULES

A total of six modules were conducted over a period of 12 months. The topics for the various modules were sexually transmitted diseases (STDs), acquired immunodeficiency syndrome (AIDS), oral ulcers, leprosy, connective tissue disorders and psoriasis. The various modules and the individual topics in the modules along with the teaching methodologies are given in Tables 1-6. The various teaching methodologies are explained in Table 7.

RESULTS

It was found that almost every student had a better score on the posttest when compared to the pretest. The average pretest and posttest scores of the first three modules are given in Table 8.

Table 1: Module on sexually transmitted diseases-topics and teaching methodologies

Sexually transmitted diseases	Teaching methodology
Introduction	Short talk
Microbiology of STDs	Lectures
Lab diagnosis of STDs	Lecture
STDs in males	Lectures
STDs in females	Lectures
Effect of STDs in pregnancy	Clinical quiz
Counselling in STDs	Role play
Syndromic approach to STDs	Lectures
Panel forum on STDs	Panel forum

STDs: Sexually transmitted diseases

Table 2: Module on acquired immunodeficiency syndrome-topics and teaching methodologies

AIDS	Teaching methodology
Introduction and global scenario	Short talk
Lab diagnosis of AIDS	Lecture
Opportunistic infections in AIDS	Lecture
Dermatological manifestations of AIDS	Photo demonstration
AIDS and tuberculosis	Open discussion
Antiretroviral therapy	Group discussion
pre- and post-exposure prophylaxis	Lecture
Counselling in AIDS	Role play
Panel discussion	Panel discussion

AIDS: Acquired immunodeficiency syndrome

Table 3: Module on oral ulcers-topics and teaching methodologies

Oral ulcers	Teaching methodology
Introduction and classification of oral ulcers	Short talk
Recurrent aphthous stomatitis	Lecture
Oral ulcers in dermatological disorders	Photo demonstration
Oro-genital ulcer syndromes	Group discussion
Malignant oral ulcers	Lecture
Approach to oral ulcers	Open discussion
Treatment of oral ulcers	Lecture

Table 4: Module on leprosy-topics and teaching methodologies

Leprosy	Teaching methodology
Introduction	Short talk
Microbiology and lab diagnosis	Lecture
Slit skin smear-demonstration	Demonstration
Clinical spectrum of leprosy	Photo demonstration
Reactions in leprosy	Lecture
Complications of leprosy-group discussion	Group discussion
Counseling in leprosy	Role play
Treatment of leprosy	Lecture

Table 5: Module on connective tissue disorders-topics and teaching methodologies

Connective tissue disorders	Teaching methodology
Introduction	Short talk
Dermatological manifestations of connective tissue disorders	Photo demonstration
Systemic manifestations of lupus	Lecture
Scleroderma	Lecture
Dermatomyositis	Lecture
Clinical quiz	Quiz
Panel forum	Panel forum
Management of connective tissue disorders	Open discussion

General feedback obtained from the students showed that all of them felt that modular teaching was more interesting and useful teaching learning experience than conventional teaching.

DISCUSSION

The concept of modular teaching in dermatology is not totally new. Kaliyadan *et al.*^[5] conducted modules using the internet as a medium. Others have also utilized the internet to form modules.^[13,14] Internet modules require self-learning by students. It was our experience that our students were typically not motivated enough to undertake self-study. Hence it was felt

Table 6: Module on psoriasis-topics and teaching methodologies

Psoriasis	Teaching methodology
Introduction and pathogenesis	Short talk
Clinical features of psoriasis	Photo demonstration
Psoriatic arthritis	Lecture
Types of psoriasis	Group discussion
Topical therapy of psoriasis	Open discussion
Systemic therapy of psoriasis	Lecture
Clinical problems	Group discussion

Table 7: Various teaching modalities

Teaching modality	Description
Short talk	Brief introduction to sensitize and familiarize the student with certain concepts
Photo demonstration	A series of images of various manifestations of the disease were projected. The students have to describe what they see and try to explain the correlation with the clinical condition
Video demonstration	Video demonstration of all the steps of a procedure
Open discussion	A lively interactive session in which the speaker throws clinical scenarios and challenges to the entire audience. Answers, theories, arguments and debating are facilitated
Group discussion	Class is divided into groups. Each group is given a different clinical problem to analyze. At the end of the prescribed period, one representative from each group discusses the interpretation and management of the problem given to the respective group
Quiz	Four teams of three students each participate in a quiz that assesses cognitive and analytical skills of the students
Panel discussion	A panel of 4-6 members on the stage discusses issues of major importance in front of the audience. A moderator asks questions in turn to the various members who then discuss the issue. There is no audience participation
Panel forum	A panel discussion where questions are taken from the audience
Role play	A couple of students are given a scenario to enact out, usually wherein counseling a patient is done

that a module during regular teaching hours where attendance is monitored would be a better way to reach out to the students. In addition, the modules designed by Kaliyadan require a great deal of computer skills.

Most modules are designed to be self-learning modules, wherein students study at their own pace and time.^[12] However, in our setup, this type of self-learning is not a viable option as it depends on the level of motivation among our students,

Table 8: Average Pre- and post-test scores

Module	Pretest (20) (average %)	Posttest (20) (average %)
STD	5.03	15.72
AIDS	7.23	17.05
Oral ulcers	7.97	13.08

STD: Sexually transmitted diseases, AIDS: Acquired immunodeficiency syndrome

which may vary. In this context, we introduced the method of integrated modular teaching.

When designing modules, goals of the module have to be kept in mind. This can be easily achieved by first outlining the target group, the requirements from an academic standpoint and the practical requirements from a realistic point of view. Each of the topics was chosen based on three important factors, namely, importance in the undergraduate curriculum, practical application and its importance in the university examination. The modules were designed in an integrated fashion to suit the needs of the students.

The main advantage of the modular approach to learning is the interest it generates in students. The various teaching modalities are shown in Table 8. Photo demonstration was a new concept, wherein instead of the speaker talking about the various manifestations, the students were asked to describe the lesions. This was very useful in reinforcing definitions of various kinds of lesions and their correlation with the clinical condition.

Open discussion was a very popular modality, which was quite enjoyed by many of the students. A clinical challenge was given to the audience, the discussion of which was initiated by a volunteer. The others were then encouraged to question and debate the various issues.

Group discussion was used to discuss certain clinical scenarios. It was found that students who were otherwise passive listeners also participated and contributed to the discussion.

A panel discussion for the AIDS module and panel forum for connective tissue disorders and STD modules were held to discuss different scenarios and to clarify doubts on certain common issues. The questions were prepared in advance keeping in mind frequently asked questions and examination related topics. A clinical quiz was held in the connective tissue disorder module and STD modules to assess understanding of the types and manifestations of the disorders. The questions were so designed as to assess recall as well as analytical skills to test higher order cognitive domain.

All the 125 students felt that this was a better method of teaching.

ADVANTAGES AND DISADVANTAGES OF MODULAR TEACHING IN DERMATOLOGY

Unlike that of didactic lectures, teaching is not a one-way process and the responsibility for learning is shared by both teacher and student. This is mainly because of the varied teaching modalities employed such as group discussion, role play, quiz and open discussion, which require active student participation.

Further, active student participation leads to increased enthusiasm and promotes analytical thinking, attributes that are suppressed in more traditional modes of teaching. Due to involvement of basic sciences as well, the students have an opportunity to correlate the various aspects of a disease thus leading to an easy understanding of the subject. Since modular teaching aims at a learning experience with practical orientation, it is more reality oriented. In modular teaching, the instructor is more of a facilitator and resource person rather than a mere conduit for passive transfer of knowledge.

The Pretest and posttest also gave immediate feedback regarding the effectiveness of the session both to the instructor as well as to the participants. This was used for better planning of subsequent modules. Another advantage of the Pretest is that the students are already sensitized to the questions and so take extra interest in the session so as to be able to answer the same question in the posttest. This could theoretically lead to a selective interest in the topics related to the questions that are asked in the Pretest; the way around this is to ensure that adequate representation of all the topics is done when designing the Pretest.

Modules are structured with respect to a particular topic. Presentation of content is also different when compared to didactic lectures. Here, the presentation aims to encourage greater student participation. In didactic lectures, students often feel inhibited to clear their doubts in front of a large audience.

In modular teaching, definite learning objectives are clearly stated, but in didactic lectures, objectives are not clearly stated and very often students do not get a clear picture of the key points in a lecture. As the teachers here interact with each other and are usually present during the presentation of each other's topics, there is a greater pressure to perform and this leads to greater care while conducting the session. In contrast, in didactic lectures a teacher can get away with a "substandard" performance^[15] as there is no "peer pressure." Furthermore, the premodule meeting of involved faculty ensures that each session is in line with the objectives of the module.

There are however some drawbacks as well. Modular teaching requires elaborate planning and is very labor intensive. Since more than one department is involved, issues of

coordination, time management, scheduling, communication and interpersonal relationships play a significant role in the conduct and ultimate success of the module.

CONCLUSION

Based on the above study it can be concluded that integrated modular teaching can be an effective adjunct in imparting theoretical and practical knowledge to the students. Further, various teaching methodologies can be used in integrated modules effectively with active student participation and thus integrated modular teaching addresses two important issues in medical education namely, integration and active student participation.

REFERENCES

- Hellier FF. The teaching of dermatology to undergraduates. *Br Med J* 1957;2:561-2.
- Stern RS, Nelson C. The diminishing role of the dermatologist in the office-based care of cutaneous diseases. *J Am Acad Dermatol* 1993;29:773-7.
- Farrimond H, Dornan TL, Cockcroft A, Rhodes LE. Development and evaluation of an e-learning package for teaching skin examination. Action research. *Br J Dermatol* 2006;155:592-9.
- Schappert SM. National Ambulatory Medical Care Survey: 1991 summary. *Vital Health Stat* 13 1994;13:1-110.
- Kaliyadan F, Manoj J, Dharmaratnam AD, Sreekanth G. Self-learning digital modules in dermatology: A pilot study. *J Eur Acad Dermatol Venereol* 2010;24:655-60.
- McCleskey PE, Gilson RT, DeVillez RL. Medical student core curriculum in dermatology survey. *J Am Acad Dermatol* 2009;61:30-5.
- Davies E, Burge S. Audit of dermatological content of U.K. undergraduate curricula. *Br J Dermatol* 2009;160:999-1005.
- Shafi R, Quadri KH, Ahmed W, Mahmud SN, Iqbal M. Experience with a theme-based integrated renal module for a second-year MBBS class. *Adv Physiol Educ* 2010;34:15-9.
- Vyas R, Jacob M, Faith M, Isaac B, Rabi S, Sathishkumar S, *et al.* An effective integrated learning programme in the first year of the medical course. *Natl Med J India* 2008;21:21-6.
- Gahutu JB. Physiology teaching and learning experience in a new modular curriculum at the National University of Rwanda. *Adv Physiol Educ* 2010;34:11-4.
- Karthikeyan K, Thappa DM. Modular teaching programme on leprosy. *Indian J Lepr* 2003;75:317-25.
- Pareek U, Rao TV. Distance training. In: Handbook for trainers in educational management with special reference to countries in Asia and the Pacific. Bangkok: UNESCO Regional Office for Education in Asia and the Pacific; 1981. p. 253-285.
- Hong CH, McLean D, Shapiro J, Lui H. Using the internet to assess and teach medical students in dermatology. *J Cutan Med Surg* 2002;6:315-9.
- Viswanath V, Torsekar RG, Nair SR. An innovative educational module: Digital lecture series in dermatology. *South-East Asian J Med Educ* 2010;4:65-6.
- Goetze T. Didactic Injustice: A New Species of Epistemic Injustice. Available from: http://www.academia.edu/3212527/Didactic_Injustice_A_New_Species_of_Epistemic_Injustice. [Last accessed on 2013 Sep 15].

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