

## **AN OVERVIEW OF INTEGRATED MEDICAL AND DENTAL UNDERGRADUATE PRE-CLINICAL CURRICULA AT B. P. KOIRALA INSTITUTE OF HEALTH SCIENCES, NEPAL: A MULTIPROFESSIONAL APPROACH**

Naga Rani M A<sup>1</sup>, Bhattacharya S<sup>2</sup>, Das B P<sup>3</sup>, Koirala S<sup>4</sup>

### **ABSTRACT**

Curricular innovations such as multiprofessional education (MPE) sensitise health professionals towards the role of other health professionals and inculcate team spirit. This is a preliminary report on MPE in practice in the preclinical phase of dental and medical undergraduate courses at B.P. Koirala Institute of Health Sciences, Nepal. The preclinical curriculum of the undergraduate course is integrated, organ system based and partially problem based. There is an emphasis on early exposure of students to patients and to community. The undergraduate course in medicine started in 1994 and in dental surgery in 1999 based on the core curriculum developed at various workshops. The course duration and structure is similar in both the courses. Mapping of common areas in basic sciences between dental and medical undergraduate courses paved the way for multiprofessional teaching-learning sessions. The details of the curriculum, the pattern of assessment and implementation of MPE with a few examples are discussed. A shift from class room teaching to clinic and field is also discussed. In future, MPE will be expanded to other health sciences courses such as nursing and will be reviewed periodically. It is challenging to introduce an innovative curriculum with multiprofessional approach. For successful implementation of MPE, care should be taken to avoid organisational pitfalls and a high degree of commitment is required at all levels of practice.

*Key Words: Undergraduate, Curriculum, Medical, Dental, Multiprofessional, Integrated curriculum.*

1. Professor of Pharmacology & Coordinator Phase 1 BDS & MBBS, BPKIHS.
2. Associate Professor of Anatomy & Deputy Coordinator of Phase 1, BPKIHS.
3. Associate Professor of Pharmacology & Deputy Coordinator of Phase 1, BPKIHS.
4. Professor of Medicine & Vice-Chancellor, BPKIHS.

**Address for correspondence :** Prof. M. A. Naga Rani, Professor & HOD of Pharmacology  
B. P. Koirala Institute of Health Sciences, Dharan, Nepal.  
Email: nagarani2000@yahoo.com

## INTRODUCTION

Curricular innovations are the order of the day in reforming medical education for optimising the health care delivery. Awareness of the roles of other health professionals and recognition of others contribution to health care delivery will promote the ability to work harmoniously and facilitate interprofessional cooperation. Interaction between health professions during the formative educational years is more likely to encourage students to develop team spirit and the ability to share knowledge. This is the basis of the multiprofessional education. 'Multiprofessional Education' (MPE) is defined as the process by which a group of students or workers from health related occupations with different educational backgrounds learn together during certain periods of their education, with interaction as important goal in order to collaborate in providing promotive, preventive, curative, rehabilitative and other health-related services (WHO Technical Report Series No. 769)<sup>1</sup> In a very interesting and detailed discussion on the various steps in MPE (Harden, 1998),<sup>2</sup> it was pointed out that an increasing interaction between various professions tilts the scale from uniprofessional isolation towards multiprofessional education. A shift in the location from class room to clinical and community setting whenever feasible will enhance the extent of interaction. At what stage the MPE introduction produces optimal benefit to the participants is a topic of debate among educationists. Introduction at an early stage may prevent development of negativism towards other health professions while implementation at a later stage may permit the students to acquire mastery in their own profession and facilitate confident interaction with other professions. A continual, repetitive interaction between students from different professions will reinforce the spirit of MPE. It may be worthwhile to develop a module where students from different

professions interact repeatedly at various stages of their education.

Like any novel activity, MPE also requires commitment among administrators, teachers and students during planning and implementation. There have been several studies citing the benefits and organisational difficulties of multiprofessional shared learning programs mainly between undergraduate students of medical and nursing courses.<sup>3-5</sup> In a brief one day interprofessional program between final year medical and nursing undergraduates, the participants rated the program positively as it increased their perception of the other professionals role.<sup>3</sup> Such shared learning programs were shown to have produced a significant change in the attitudes of participants about the role of health professionals. This article is an attempt to communicate the curricular innovations being implemented in Nepal, a developing country. MPE involving medical and dental undergraduates is in practice in basic medical sciences at B.P. Koirala Institute of Health Sciences, Nepal.

## THE BEGINNING

B. P. Koirala Institute of Health Sciences (BPKIHS) is an autonomous university with a tertiary care hospital situated in eastern Nepal.<sup>6</sup> The university has adopted the curriculum<sup>7</sup> formulated at the curriculum development workshops held in 1994 (Pre-clinical phase) and 1995 (Clinical phase). The curriculum for the pre-clinical phase (first 2 years) of the undergraduate course is integrated (sequenced), organ system based and partially problem based. There is an emphasis on early exposure of students to patients and to community from their pre-clinical years. A substantial contribution to the organ systems in preclinical phase is made by the clinical disciplines such as pediatrics, anaesthesia and behavioral sciences.

The curriculum for the clinical phase is discipline-wise, though it is integrated during implementation. The medical undergraduate course started in 1994 based on the core curriculum. The first two years are the pre-clinical years (phase I), the next two and half years are the clinical years (phase II), followed by one year compulsory, rotatory internship period. The present number of admissions to medical undergraduate course is 55. Undergraduate course in dental surgery was introduced in July 1999 based on the core curriculum<sup>8</sup> developed at a workshop in March 1999 and the number of admissions is 40. The course duration and structure of dental undergraduate course is similar to that of undergraduate medical education (five and half years including a year of internship). The integrated, organ system based curriculum for the preclinical phase of dental surgery undergraduate course was formulated with an optimal balance between basic medical sciences and dental sciences. In each organ system, mapping of the common areas between the preclinical curricula of dental and medical undergraduate courses paved the way for multiprofessional teaching-learning sessions. Common teaching-learning sessions are held wherever feasible. Students attend structured interactive sessions (SIS) in basic sciences together. Depending on the in-depth study of a topic required for both groups of students, the students attend the sessions either together or separately. The laboratory exercises are held separately. A few examples will be provided following the discussion on organ system arrangement of the curriculum.

The scope and objectives of both clinical and community based field postings are well defined. All students attend clinical postings of 3 hour duration in the afternoon, once a week in the first year and twice a week in the second year in the tertiary care teaching hospital situated in the college campus. Medical and dental students together

attend Surgery and Medicine inpatient wards where common sessions are held for both groups. Medical students alone attend Pediatrics and Obstetrics and Gynecology inpatient wards while dental students alone attend dental out-patient and inpatient departments. Field postings are scheduled once a month to provide early exposure to the community. Though field postings to the community are identical for both medical and dental undergraduates, at present they are held separately due to logistic problems. But, a combined residential 2 weeks field program is being developed for medical, dental and nursing undergraduates (105 students) soon after their admission into the course before they develop any fixed attitudes towards other professions. A move from the class room to clinical and community setting is expected to provide an environment for interaction through group discussions to encourage understanding of other health professions.

“Teaching Program Implementation Committee” consisting of senior faculty from basic medical

**Table I : Organisation of basic medical sciences in organ systems in the pre-clinical phase of undergraduate curriculum**

UNITS	CONTENT
<b>First year</b>	
Unit `0'	Basic Concepts
Unit 1	Genetics, Growth & Development, Blood & Immunology
Unit 2	Cardiovascular System, Respiratory System & Environment
<b>Second Year</b>	
Unit 3	Gastrointestinal system, Hepatobiliary System & Nutrition & Metabolism
Unit 4	Endocrines & Reproduction, Kidney & Fluid Balance, Integuments
Unit 5	Musculo-skeletal System, Central nervous system, Special Senses

sciences and dental coordinator meets regularly and facilitates the Teaching-Learning activities.

In phase I, the organ system based curriculum of basic sciences is organised into three units in each year and is given in table I. Table II gives the

**Table II : Organisation of dental sciences in the pre-clinical phase of undergraduate curriculum**

<b>First year</b>
<u>Dental Materials</u> , Basic Prosthodontics, Oral Biology, Community Dentistry, Forensic Odontology
<b>Second Year</b>
<u>Oral Biology</u> , <u>Preclinical Prosthodontics</u> , <u>Preclinical Conservative Dentistry</u> , Community Dentistry, Basic Orthodontics
<i>Note: the underlined subjects are evaluated in the annual assessment.</i>

organisation of dental sciences during the preclinical phase. The basic sciences content for medical undergraduates is revised to meet the objectives of the dental undergraduate course. Some of the topics are deleted, some are introduced at an early stage in the course while some are condensed. For example, the dental students are taught a brief anatomy of the head and neck when medical students are learning about limbs. This provides them with the basic knowledge required before undertaking a course in dental materials. Similarly, in the organ system on blood and immunology (unit 1), topics on protozoal diseases are deleted for dental students and topics on dental sciences are included. While going through parallel teaching – learning sessions, undergraduates of both batches learn in a need based manner. Based on the same logic, at the beginning of the second year, the dental undergraduates learn the head and neck Anatomy in musculoskeletal system (unit 5) to prepare them for oral biology sessions. Hence, a suitable reorganisation of the sequence of the organ systems has been done to suit the needs of the dental students. As a result, since the medical students follow a different organ system sequence, the multidisciplinary approach in second year is confined mainly to the clinical postings.

**Table III : Curricular content of medical and dental undergraduate courses**

	Medical undergraduate course		Dental undergraduate course	
	SIS	LABEX	SIS	LABEX
<b>1<sup>st</sup> Year</b>				
Basic Medical Sciences	389	105	287	60
Dental Sciences	-	-	30	40
<b>Total</b>	<b>389</b>	<b>105</b>	<b>317</b>	<b>100</b>
<b>2<sup>nd</sup> Year</b>				
Basic Medical Sciences	393	103	178	49
Dental Sciences	-	-	225	70
<b>Total</b>	<b>393</b>	<b>103</b>	<b>404</b>	<b>119</b>
<b>Total for both 1<sup>st</sup> &amp; 2<sup>nd</sup> year</b>	<b>782</b>	<b>208</b>	<b>721</b>	<b>219</b>

SIS: Structured Interactive Session (usual duration-one hour)

LABEX: Laboratory exercises (usual duration-three hours)

Table III provides the distribution of hours of teaching between basic sciences and dental sciences. Students are evaluated at the end of each unit (internal assessment) and at the end of the year (annual assessment). The pattern of assessment is provided in table IV and it is similar

**Table IV : Assessment Pattern**

Nature of assessment	Method of assessment
Theory	Short Answer Questions Multiple Choice Questions
Practical	Objective Structured Practical Examination Long practical exercises (dental sciences only)
Oral	Oral Stations

during both internal and annual assessment. Assessment is organ system based and performance in the annual assessment determines the entry into the following year of study program. Theoretical knowledge is assessed by multiple choice questions & short answer questions while practical examination is in the form of objective structured practical examination (OSPE) with OSPE stations.<sup>9</sup> One oral station (with structured questions) per discipline is organised along with practicals by all the basic science disciplines and dental sciences. The student is allowed 5 minutes at each OSPE and oral station. The number of OSPE stations per discipline is determined by the number of laboratory exercises conducted by the respective disciplines.

Internal assessments contribute to 30% of the summative assessments conducted at the end of the year. In the 1<sup>st</sup> year, half way through the first unit (Unit '0' – Basic concepts), a model examination known as “Mock” examination is conducted to familiarise the students with the assessment pattern. In the second year of dental surgery course, additional practical examinations are held in preclinical prosthodontics and conservative dentistry in the form of long dental exercises.

The Rector is in-charge of the program and implements the program with the help of the respective coordinators. In view of the large basic sciences component of the phase 1 of dental surgery undergraduate course, the coordinator of the medical undergraduate program is given the charge of the overall program while teaching-learning activities in the dental sciences are organised by the dental coordinator.

Some of the problems that are likely to be encountered during implementation of MPE may be avoided by prior skillful planning of the program. Some of the likely obstacles are lack of acceptance of the concept of MPE by faculty and students due to nonparticipation during planning stages, existence of significant difference in curricular content, requirement of adequate physical facilities with regard to class rooms, laboratories, instruments etc. Assessment pattern in MPE should take into consideration the difference in curricular content and activities of each group of students and patterned accordingly so to avoid difficulty for the students. This would avoid student dissatisfaction with the system.

## THE FUTURE

The MPE program will be assessed at the end of one year for its impact on the attitudes of the undergraduates in medical and dental course. It is

economical with respect to faculty time as repetition of teaching-learning activities could be avoided, leaving more time to the faculty for service and academic activities. Faculty opinion and suggestions for improvement also will be sought. Mires et al (1999)<sup>3</sup> found a shift in the attitude of medical and midwifery students towards a greater midwifery role following the multiprofessional course on ‘*care of women in labour*’. In their descriptive study on shared learning, Chris Roberts et al (2000)<sup>4</sup> stated that the shared learning program has enabled the students of both nursing and medical course to get an insight into roles and perspective of other health professionals. Similar observations have been made by Carpenter, 1995. We have started with MPE in a small way and intend to gradually move from uniprofessional to multiprofessional and from class room teaching to field work (Harden, 1998). A gradual increase in interaction based on the earlier experiences is likely to be more successful as is more likely to be associated with adaptation to the MPE.

The program needs to be reviewed periodically till it is reasonably established. It is challenging to introduce an undergraduate course in medicine and dental surgery with an integrated, organ system based, community oriented, community based curriculum with multiprofessional approach. In future, MPE will be expanded to include where appropriate other health science courses such as nursing undergraduate course. The implementation of MPE at BPKIHS became possible only due to the encouragement provided by the management, dedication of the staff and the advisory role played by the WHO consultant. This is a preliminary report and further follow up of the program shall be done.

In conclusion, for the successful implementation of the *multiprofessional education*, care should be taken to avoid organisational pitfalls and a high degree of commitment is required at all levels of practice.

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