

Research Paper

Education



Teaching Pharmacology to Dental students

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ABSTRACT

The goal of teaching Pharmacology to dental students is to inculcate rational and scientific basis of therapeutics amongst them. Whether these objectives are met with present curriculum and teaching practices is open to debate. With experience of teaching to dental students for years it was thought prudent to reassess these practices from point of view of dental teachers .Objectives: To see how the dental teachers rate teaching of Pharmacology in their undergraduate years. Whether they think knowledge gained then proves useful or not when exposed to professional responsibilities?

Materials and methods: A comprehensive questionnaire comprising of 15 questions was given to seventy-seven dental teachers from Sinhgad Dental College & Hospital Vadgaon(Bk), Pune. The questionnaire was divided in two parts. One included questions about objectives laid down by Dental Council of India about teaching of Pharmacology. The second part consisted of questions regarding scope and methods of teaching Pharmacology to dental students. .The answers were then compiled, tabulated and analyzed.

Results: The salient features were that the participants were almost unanimously of the opinion that dental pharmacology should be given more weightage. They preferred that the teachers should be M D (Pharmacology) and subject should be taught in second and third year. Pharmacy exercises be continued in practical and multiple approaches should used to teach the subject.

Conclusion: The opinions expressed by participants are noteworthy but these represent only small percentage of dental graduates so those should be tested in large population of dentists. Such study can be taken under aspis of Dental Council of India

Keywords : Survey Teaching Pharmacology Dental students

Introduction : It is generally believed that dentists do not use drugs often, instead they depend more on skills for the treatment of their patients. But this is only partly true. Dentists mostly prescribe drugs for infections, nutrition and blood, ear nose and oropharynx, musculoskeletal and joint disorders, central nervous system.¹ Even historically it were dentists who first used drugs like nitrous oxide. Further it is not to be forgotten that dentists are not treating teeth of patient but they are treating a patient with teeth. Even if dentist has not prescribed any drug, patient may be taking drug/s for another ailment. Hence a thorough knowledge of commonly used drugs is essential for dentists. Indeed it has been long recognized that Pharmacology forms an integral part of dental education.² This has aptly reflected in objectives laid down by Dental Council of India for teaching of Pharmacology to Dental students.³ But do dentists gain such knowledge in their undergraduate years and how much they retain of this? Reviewing literature about this, it was found that this aspect has not been studied for dental students as far as pharmacology is concerned. There are three studies, all in US and Canada but they are mostly pertaining to organizational and administrative aspects.^{4,5,6.}

Keeping this in view and based on experience of teaching pharmacology to dental students it was thought prudent to ascertain how the dentists view teaching of pharmacology in

their undergraduate years and how helpful they consider it in their professional career.

Materials and Methods: A comprehensive questionnaire was prepared comprising of nineteen questions. The questionnaire consisted of questions related to objectives laid down by Dental Council of India, prevalent methods of teaching Pharmacology and examination pattern of the subject. The questionnaire was divided into two parts depending on the nature of questions. The part I consisting of six questions pertaining to the objectives laid down by the Dental council of India for teaching Pharmacology to dental students.

The responses were from 'Very important' to 'Unimportant' and were graded on Likert scale. The part II included Nine questions related to methods of teaching . The questionnaire was issued to seventy-seven dental teachers attached to the Sinhgad Dental College and Hospital, Vadgaon (Budruk), Pune. The group was heterogeneous. Sixty-four of them having postgraduate qualifications, others only graduate.

The professional experience ranged from 3 years to 35 years, average being 9.75 years. with median and mode both seven years. Out of the seventy seven dental teachers to whom the questionnaire was issued, seventy-four returned it in stipulated time (albeit with few reminders). Although only one re-

sponse was expected for all questions, some participants gave more than one response After some considerations these were also taken in account. The results are tabulated in Tables.

All seventy four participants responded to the following questions related to the objectives laid down by Dental Council of India. The objectives are as follows.

1. Describe pharmacokinetics and pharmacodynamics of essential and commonly used drugs in general and in dentistry particularly
2. List indications, contraindications, interactions and adverse reactions of commonly used drugs with reasons.
3. Tailor use of appropriate drugs in disease with consideration to its cost, efficacy and safety to individual and mass therapy needs.
4. Indicate special care in prescribing common and essential drugs in special medical situations such as pregnancy, lactation, old age, renal/ hepatic damage and immunocompromised patients.
5. Integrate the rational drug therapy in clinical pharmacology.
6. Indicate the principles underlying the concepts of 'essential drugs'.The responses were categorized on graded Likert scale, 'Not important' as 0 ranging to 'Very important' as 4.

**Results:
Part I**

Sr. No of question	Response					Total
	Very important	Important	Moderately important	Little important	Not important	
1	46 (63%)	23 (31.5%)	3 (4.1%)	1 (1.4%)	Nil	73
2	61 (82.4%)	12 (16.2%)	1 (1.4%)	Nil	nil	74
3	44 (60.3%)	23 (31.5%)	3 (4.1%)	3 (4.1%)	Nil	73
4	63 (85.1%)	11 (14.9%)	Nil	Nil	nil	74
5	31 (42.5%)	34 (46.8%)	8 (4.1%)	Nil	nil	73
6	39 (52.7%)	24 (32.4%)	10 (13.5%)	1 (1.4%)	nil	74

It is evident from above that objectives 1, 2,3,4,6 are considered 'Very important' by more than 50% of participants where as only 42.5% have considered No 5 as 'Very important'. This probably indicates that due importance of rational drug therapy is not realized by the practicing dentists (Have the teachers not stressed it?)

Similarly only 52.4 % of participants consider Essential Drugs as 'Very important' therefore it is felt that the concept of essential drugs must be stressed at undergraduate levels keeping in view growing importance of dentists in community health care system.

Part II

1 How do you assess the current syllabus of Pharmacology?

- i) Complete 16 (22.54 %)
- ii) Inadequate 3 (4.23 %)
- iii) Adequate 36 (50.7 %)
- iv) More than necessary 16 (22.54%)
- Total 71 (100%)

2. Should dental Pharmacology be given more weightage?

- i) Yes - 61 (82.43 %) ii) No - 11 (14.86 %) iii) Undecided - 2 (2.7 %)

3. How much time should be given to teaching of Dental pharmacology?

- i) 35 hrs ----- 32 (53.33%)
- ii) 20 hrs ----- 4 (6.67%)
- iii) 10 hrs ----- 22 (36.67%)

- iv) 5 hrs - ----- 2 (3.33%)

4. Do you think pharmacy exercises are relevant in present era?

- I) Yes - 47.(63.51%) II) No - 27 (36.49%)

5. Out of those following particular pharmacy exercises were opined to be included in the syllabus.

- i) Alkaline saline mouthwash 24 ii) Antiseptic mouthwash 39
- iii) Gum paint 38 iv) Obtundent 24
- v) Tooth powder 24 vi) Tooth paste 24
- vii) Povidone lotion 23 viii) Calamine lotion 11

6. Do you think visit to pharma manufacturing units would be

- i) Useful 37 (57.81%) ii) of doubtful value 26 (40.63%) iii) of no use 1 (1.56%)

In medical colleges such visits form regular mode of exposure to pharma industry. In our survey just 57.81 % of participants liked the idea of such visits.

7. What should be the academic qualifications of teachers in Pharmacology?

- i) MD (Pharmacology) 49 (70 %)
- ii) MBBS 2 (2.86 %)
- iii) MDS Nil
- iv) M Sc (Pharmacology) 2 (2.86 %)
- v) MD & MBBS 1 (1.43 %)
- vi) MD,MBBS & MDS 4 (5.71 %)
- vii) MD & M Sc 9 (12.86 %)
- viii) MD & MDS 2 (2.86 %)
- ix) MD, MBBS, MDS & M Sc 1 (1.43 %)
- x) Nil 4 (5.71 %)

8. To correlate the subject of Pharmacology to clinical subjects, in which year it should be taught?

- i) Second BDS - 42 (57.53 %) ii) Second & Third BDS - 5 (6.85 %)
- iii) Third BDS - 18 (24.66 %) iv) Third & Fourth BDS - 8 (10.96 %)

9. To make subject of Pharmacology interesting which of the following methods should be employed in addition to conventional methods? (viz. lectures, practical, tutorials, demonstrations)

- i) Case based teaching 26 (35.14 %)
- ii) Presentation by students 3 (4.05 %)
- iii) Group discussion 16 (21.62 %)
- iv) Any other method Nil

Case based study is favored by 35.14% of participants, followed by Group discussion by 21.62% of participants

Discussion:

It is evident that 73.24 % think that syllabus is satisfying the needs of dental students properly. However 22.54 % consider it more than adequate. This needs further evaluation as to which topics they consider not important for dental students.

Out of 74 participants, 61 (82.43 %) feel that there is need to give more weightage to dental pharmacology..At present dental pharmacology is dealt in 2 or 3 lectures like dentifrices, mouthwashes. This is probably is due to fact that the teachers in Pharmacology are not coming from dental background, hence they prefer to play in their home ground! It might be also due to misconception on part of participants who do not consider topics such as antimicrobials, hemostatics as part of dental pharmacology.

We had thought that pharmacy exercises have lost their importance since dispensing practise has been stopped years before.. Further in medical colleges the students do not perform pharmacy exercises..But contrary to our assumptions 63.87 % participants were of opinion that current practice of pharmacy exercises should continue.

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It has been debatable whether nonclinical teachers should teach medical subjects to medical/ students.⁷ In our study 24.29 % participants opted for more than one choice. We had thought that almost all would prefer MD teachers to teach Pharmacology. But only 70 % opted for this.. Only 2.86 % wished that pharmacology can be taught either by MBBS or M Sc Pharmacology. Conversely 12.86 % of them have recommended MD & M Sc. None has opted for MDS teacher.. We had thought that the clinical orientation that the MBBS teachers have, will be preferred by dentists. But here again only 2.86 % participants opted for MBBS teachers. It seems that this is related to the fact that most of the participants have been taught by MD or M Sc (Pharmacology) teachers during their graduation. Only recently the Dental Council of India has permitted MBBS teachers in Medical subjects.⁸

In United states and Canada, Pharmacology is taught to dental students in second and third year along with other streams like medicine, nursing, pharmacy.⁶ But in India medical stream students are taught separately. Currently in India the subject is taught in preclinical year i.e. in Second BDS. In our study 57.53 % of participants opted for second year and 24.66 % for third year. More importantly 6.85 % believed that it should be spread over two years i.e. second and third year. And 10.96 % opined that it should be taught in third and fourth year.

Pharmacology is a paraclinical subject. It is intimately related to treatment of diseases. We as teachers feel that in second year of BDS, students have disadvantage compared to medical students as they are not exposed to clinical scenario. Even common signs and symptoms like pallor, tenderness, ulcer are not seen by these students. This hampers their understanding of the subject. Hence we feel that either their clinical posting of Medicine/Surgery be started in second year or Pharmacology should be taught in third year of BDS. Another alternative could be to spread the teaching of Pharmacology over second and third year as suggested by some participants.

Case based study is favored by 35.14% of participants, followed by Group discussion by 21.62% of participants. A modification of case based study is included in curriculum of Maharashtra University of Health Sciences, Nashik as Drug of Choice (Single Drug Prescription). Group discussion can also be incorporated in these. Problem based learning (PBL) is extensively used in dental schools in US and Canada. Few pharmacology courses exclusively for dental students provide much more time for group discussion, clinical presentation, problem based learning.⁹ Twenty-two years of research shows that PBL does not impact knowledge acquisition; evidence for other outcomes does not provide unequivocal support for enhanced learning. Work is needed to determine the most appropriate outcome measures.¹⁰

Conclusions:

Such study about teaching of Pharmacology has not been documented in Indian context/scenario. It was found in American literature that several studies in this respect have been carried. In 1996 a comprehensive survey of US Dental schools was conducted. In all of the above studies the focus was mainly on the organization of course, the delivery of curriculum etc. However in none of above studies opinion of the beneficiaries i.e. the dental students was sought. We feel that this should be the most important aspect of any activity. Whether the recipients find it useful or not is the most important question that the organizers should ask themselves. We as teachers of Pharmacology have tried to seek answers from practicing dentists based on their experience during their undergraduate studies. As can be seen from answers from dentists, almost all of them strongly feel that more importance should be given to Dental Pharmacology both in respect of teaching as well as evaluation. The second important finding was majority of them still believe that Pharmacy exercises should be included in practical teaching. Another important observation is that most of them feel that they should be taught by MD (Pharmacology) teachers. We feel that these findings along with the finding that the objective No 5 laid down by DCI (The student should be able to integrate the rational drug in clinical pharmacology) is considered important by only 31 out of 74 participants (43%) demand attention by policy makers. It will be more significant if these are tested on larger population of beneficiaries' i.e. dental students.

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