

# Medical students' task based learning of P-drug concept – A study to know its effectiveness and participant feedback

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## Abstract

**Objectives:** To study the effectiveness of task based learning of P-drug concept among 2<sup>nd</sup> year medical students in southern India.

**Methods:** This was an interventional study carried out among two groups of 41 medical students each. P-drug concept was introduced to both the groups as a power point aided lecture class. Later, students from group B were assigned a task of preparing a list of P drugs for commonly diagnosed illness in our hospital. Six months after the intervention, knowledge and skills regarding P drug selection was assessed. The results were expressed as counts and percentages. Statistical analysis was done using chi-square test. Student feedback was also taken.

**Results:** Group B showed statistically significant better understanding of P drug concept when compared to group A ( $p < 0.05$ ). Among group B students 59% were able to rearrange the steps for selecting P drugs in correct order which was significant ( $p < 0.05$ ), compared to 37% from group A. For determining suitability of drug, 75.6% students from group A and 49% from group B gave importance to patient related factors. Drug related factors were considered important by 19% students from group A and 37% from group B. Group B students (29%) showed statistically significant ( $p < 0.05$ ) better understanding of the concept of essential medicines when compared to 10% students from group A.

**Conclusion:** Feedback from interventional group was positive and encouraging. Performing a task provided them to learn better about P drug concept.

**Keywords:** P-drug, medical students, task based learning, problem based learning, prescribing

## 1. Introduction

Irrational prescribing occurs when the medicine prescribed is incorrect, inappropriate, excessive, unnecessary or inadequate. Various studies have documented that the problem of irrational prescribing exists widely[1]. Changing the existing bad prescribing habits is a difficult task, so appropriate training is required before these habits develop. Medical doctors who are not trained adequately in terms of rational prescribing are likely to be more vulnerable to influences that lead to irrational prescribing. It has been reported that rational pharmacotherapy education via interactive teaching methods such as problem-based learning might be effective at preventing irrational prescribing habits[2]. Problem-based learning (PBL) of pharmacotherapy and the P-drug concept have been introduced in various medical institutions the world over[3]. As a practical tool for the training of the students on “how to prescribe” rather than “what to prescribe,” PBL holds a distinct advantage over the traditional didactic lecture where students learn passively through rote method[4].

The drugs which one prescribes regularly and with which one becomes familiar are called P(ersonal)-drugs. They differ from country to country and between doctors. By developing one's own set of P-drugs, one can learn to handle pharmacological concepts and drug-related data in an effective and confident manner and by compiling one's own set of P-drugs, one can prescribe alternatives when the same P-drug cannot be used[5]. A WHO student manual on this subject was made available in 1994, known as Guide to Good Prescribing (GGP) which can help students, learn a logical deductive process for selecting medicines according to efficacy, safety, convenience and cost[6]. This model of problem based pharmacotherapy teaching based on GGP has been introduced and tested in several institutions in both developed and developing countries and has shown significant improvement in the ability of medical students to choose the drug rationally[7].

Education is the cornerstone, given the extensive evidence that education of both doctors and medical students

can improve prescribing[8]. PBL has been gaining ground in medical education and an increasing number of medical institutions worldwide are also using Task based learning (TBL) which is a continuation of PBL as one of their educational tools[9]. Task-based learning was introduced by us for the teaching of P drug concept to undergraduate medical students, where the students were given a task to complete.

Incorporating P-drug concept in an undergraduate clinical pharmacology curriculum can assist the students to learn principles of rational evaluation of available therapeutic options and form a well informed and rational decision concerning drug treatment for an individual patient.

The present study was undertaken to evaluate the effectiveness of task-based pharmacotherapy teaching in improving the learning of the 'P' drug concept when compared to the traditional lecture method, among undergraduate medical students in Southern India and to obtain the participants' feedback and suggestions regarding the new educational intervention for the sake of further improvement.

## 2. Materials and Methods

This was an interventional study carried out in 2010 at a medical college in southern India, among second year medical students who were divided into two different groups, A and B, consisting of forty one students each. After obtaining consent from the students for their participation in the study, P-drug concept was introduced to both the groups in the form of a lecture. In addition to the lecture, Group B, the interventional group was assigned a task of preparing a list of P drugs for common illnesses diagnosed during the previous year at the Medical College hospital which the students, themselves had enlisted with the assistance of Hospital Medical Records Department. From this list each student was randomly allotted a disease condition, for which he/she had to prepare a list of P-drugs. The group B students were instructed regarding the WHO Guide to Good Prescribing's sequential approach for selecting their personal set of drugs for the treatment of the given disease. The students were also briefed about the concept of essential medicines and were encouraged to refer to the national list of essential medicines for selecting their P drugs.

The students were asked to work individually on the given task, they were asked to refer to the various sources of drug information available in the library as well as the internet. They were also allowed to consult their clinical teachers for any queries and advice. The students were given a month's time to complete the task and submit their work in the form of a neatly typed, stapled or filed booklet consisting of 8-12 pages.

The students were asked to include brief information about the given disease condition followed by a list of drugs for the given disease. For each disease, a chosen standard P-drug/drugs and non-drug treatment was to be included and described elaborately. Practical information for prescribing the drugs like dosage form, strength, frequency of administration, generic and trade name(s), therapeutic class, mechanism of action, cost of treatment, limitations for use, contraindications, drug interactions, adverse effects, precautions, the drugs' suitability for special population like women of child bearing age, children, elderly and in patients with hepatic and renal dysfunction was to be included as well. Information about monitoring the drug treatment and patient instructions regarding drug treatment was to be entered.

Six months after the intervention, students belonging to both the groups were assessed for their knowledge and skills regarding the selection of P-drugs. Student feedback regarding the new educational intervention was taken.

### 2.1 Statistical Methods

The results were expressed as counts and percentages and statistical analysis was done using Chi-square test.  $p < 0.05$  being considered as statistical significant.

## 3. Results

Group B showed statistically significant better understanding of P drug concept when compared to group A ( $p < 0.05$ ). Among group B students, 24(59%) were able to rearrange the steps for selecting P drugs in correct order which was significant ( $p < 0.05$ ) compared to 15(37%) from group A. For determining suitability of a drug for a patient, 20(49%) from group B and 31(76%) students from group A gave importance to patient related factors. Drug related factors were considered important by 15(37%) students from group B and 8(19.5%) students from group A. Presence of concomitant diseases, patient affordability and drug allergy were considered as the important patient related factors while cost of the drug and ease of administration were considered as important drug related factors by both the groups. Drug-Drug interaction was considered as an important factor for determining suitability by 21(51%) students from group B and 9(22%) from group A. Among the benefits of P drug concept, decreased patient cost and increased prescriber confidence were considered important by 29(71%) and 16(39%) of group B students whereas better patient compliance and increased drug efficacy were considered as important benefits by 28(68%) and 20(49%) of group A students respectively. Among the group B students, 12(29%) showed better understanding of the concept of essential medicines when compared to 04(10%)

from group A which was statistically significant ( $p < 0.05$ ).

The feedback of the students regarding the new educational intervention was also encouraging, please refer to table 1.

**Table1. Student Feedback regarding P-drug selection task based learning**

Questions addressed to the students	Response	N (%)
<b>1. Was the P drug project interesting to You?</b>	Yes	37 ( 90.2 )
<b>2. Was it beneficial to You?</b>	Yes	37 ( 90.2 )
<b>3. How did you collect the information regarding the drugs?</b>		
-Text books		36 (87.8)
-Internet		33 (80.5)
-Drug Formularies (Drug Index, CIMS)		22 (53.7)
-Clinical Teachers		09 (22.0)
<b>4. How did the P drug project benefit You? (Select one)</b>		
Imparted knowledge about essential drugs	Yes	18 (44.0)
Imparted skills required to select safe and cost effective drugs	Yes	11 (27.0)
Taught us to how to prescribe for a given clinical condition	Yes	11 (27.0)
<b>All the above</b>	Yes	35 (85.4)
<b>5. Did the P drug project benefit You in the following ways</b>		
In knowing the common illness reported to our hospital	Yes	33 (80.5)
In knowing the different sources of drug information	Yes	37 (90.2)
Awareness about giving the right patient education	Yes	28 (68.3)
<b>6. What do You think about this concept of P drug, task based learning?</b>		
A welcome change in the routine curriculum	Yes	37 (90.2)
A waste of time, effort and money	No	41(100)
<b>7. Are You Willing to undertake such tasks in future?</b>	Yes	31 (75.6)

N-Number of responses, (%) - percentage of responses

#### 4. Discussion

In the present study, students who attended the lecture and completed the task of P-drug selection for commonly diagnosed diseases showed better understanding of P-drug and essential medicines concept when compared to those students who attended the lecture alone. Most of the students belonging to the interventional group B, were also able to rearrange the steps for the selection of P drugs in correct order. Earlier studies have also demonstrated the improvement in the learning with PBL[4][10]. PBL course is said to be associated with greater student motivation and enjoyment[10]. In our study 37(90%) students who undertook the task felt it was interesting to them and 31(76%) students expressed their willingness to undertake similar tasks in future as well.

It has rightly been noted by Aronson that the writing of the prescription is a late event in the prescribing process and it is preceded by first making an accurate diagnosis followed by assessing the balance of benefit to harm, choosing the right drug among a range of alternatives and the right dose regimen, and discussing with the patient about the proposed treatment and potential beneficial and adverse effects. Hence more focus should be placed on teaching these principles which applies to any drug being prescribed[11][12]. Teaching the students how to prescribe rather than what to prescribe is the basic motive of P drug concept which is the goal of WHO[13]. The students who were taught P-drug concept were found to prescribe drugs more rationally and correctly than graduates who had followed the traditional curriculum, such training was also found to increase the competence of medical students in rational prescribing[14]. Selection of P-drugs is one's own affair without the involvement of others, but medical teachers having gained expertise from long standing practice may provide vital information to the students about the use of existing drugs and this will help them a lot in selecting their own P-drugs[15]. Hence the students in our study were asked to consult their clinical teachers for any queries and advice.

The suggestions provided by the students were practical and deserving of consideration. The most common suggestions were to allow submission of the completed task as soft copies in the form of a compact disc, to allot the assignment as a group task rather than an individual student task, to allow the students to select the topic/illness of their choice to work upon and finally to compile and arrange the work of each student and get it bound in the form of a book

(Formulary) for future reference.

In our study, the students reported that it took an average of 22 days for them to complete the task of 'P' drug selection. TBL(PBL) is commonly known to be resource intensive, the amount of time and effort required is said to be the major drawback. But the outcomes in the form of improved learning and facilitating the students self-directed learning skills and active-learning justifies the use of TBL as an educational tool. Another important drawback of our study is that we measured only the knowledge but not the prescribing ability of the students because knowledge on rational drug use may not always translate into rational prescribing hence writing a prescription and evaluating participants' prescribing ability may be the preferred measurement. Since, our study group size was small, extrapolation of our results to a larger student population may not be reliable. However based on the results of our study, it can be concluded that PBL in the form of task based learning improved the learning of P-drug concept among undergraduate medical students when compared to the traditional lecture based learning.

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