

Concept of clinical pharmacology and therapeutics sensitization and training for interns

Rohit Dixit¹, K. P. Joshi^{2*}

¹Department of Pharmacology,

²Department of Community Medicine, SVS Medical College, Mahbubnagar, Telangana, India

Received: 28 October 2019

Revised: 13 November 2019

Accepted: 14 November 2019

***Correspondence to:**

Dr. K. P. Joshi,

Email: drkpjoshi76@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Rational prescribing of the medicines is an essential skill required by all the doctors. Interns are not prepared or confident in rational prescription either because of inadequate training or knowledge is not retained by the time they come to internship or due to fast change in the concepts or protocols in pharmacology. The objectives of the study were to introduce and assess a short sensitization and training for interns regarding clinical pharmacology and therapeutics (CPT).

Methods: It was a quasi-experimental type of interventional study done on 30 pediatrics interns. A short sensitization and training was given regarding CPT using flipped classroom model. Pre-test and post-test was conducted to know the effectiveness of the sensitization/training. Students' opinion was also taken regarding the training and incorporation of similar training in other departments.

Results: The mean percentage scores of the objective type questions in the pretest was 40.6 ± 3.25 which increased significantly ($p < 0.05$) to 74 ± 2.95 in post-test. The mean percentage scores of the problem solving type questions in the pretest was 30.78 ± 5.25 which increased significantly ($p < 0.05$) to 65.21 ± 4.65 in post-test.

Conclusions: The sensitization and training was effective and there was overall satisfaction of conduct of such training among pediatrics interns. Further detailed research has to be conducted in different departments and faculties' opinion regarding incorporation of CPT training and feasibility has to be considered before we recommend such training during internship.

Keywords: Flipped classroom, Pharmacotherapeutics, Medicines, WHO, House-surgeons, MBBS

INTRODUCTION

Medicines are integral part of patient care in health system.¹ Rational prescribing of the medicines is an essential skill required by all the doctors. So, the sound knowledge of pharmacology remains very important during the internship. At the start of clinical training during internship, it is found that most students don't have a clear idea of how to prescribe a drug for the given patients. Many studies in the past also had concluded that current pharmacology training doesn't give enough knowledge about rational pharmacotherapeutics among interns.² This is usually because their earlier pharmacology training has concentrated more on theory than on practice. The current pharmacology training is limited to second year which is almost theoretical and

limited to lecture based and few practical exercises like experimental pharmacology. They study everything about drug (drug-centred), like indications and side effects of different drugs. But in clinical practice the approach is from the diagnosis to the drug.³ The treatment choice also is dependent on patients' age, gender, size and socio-cultural characteristics. To address this issue, Medical Council of India (MCI) has recently introduced as across all the colleges. Some changes has been proposed in the current pharmacology teaching like more emphasis has been put on problem based teaching, case scenarios or clinical case discussion, and rational pharmacotherapeutics, prescription writing or auditing, adverse drug reactions and pharmacovigilance, p drug concept and skill lab. But, by the time they come to internship significant amount of knowledge drain will occur. One

study concludes that, the theoretical clinical pharmacology and therapeutics (CPT) teaching transfers knowledge to undergraduates; however, it is not retained in internship and does not adequately prepare interns to prescribe safe and rational drugs.⁴ According to one more study, factors such as clinical orientation, interactivity and re-enforcement of important points helped students to learn better.⁵ Pharmacology is also a fast changing science, many of the concepts or guideline or treatment protocols in pharmacology get updated by the time MBBS students enter internship. So, to address this issue some researchers who conducted a study in New Delhi, India showed that 80.46% students and 87.50% teachers were in favor of bedside teaching of clinical pharmacology.⁶ But in India, MCI as such has not mentioned about any such formal training on pharmacotherapeutics either during final year or during internship in their curriculum. Considering these points, there remains a scope for some sort of sensitization of interns regarding need based pharmacotherapy training at the start of their internship.

So, we had planned a pilot study to sensitize or train the pediatrics interns regarding rational pharmacotherapeutics in pediatrics department based on our feasibility. The objectives were to assess the effectiveness of pharmacotherapy sensitization or training among pediatrics interns and to know the opinion of interns regarding incorporation of pharmacotherapeutics training during internship.

METHODS

It was a quasi-experimental type of interventional study. The study was conducted on 30 interns attending pediatrics postings at SVS Medical College, Mahabubnagar from 1st July to 31st August 2019. Institutional ethics committee approval and informed consent from the interns was taken before the study.

A pre-tested and pre-validated questionnaire containing questions from pediatrics pharmacology was administered before the start of the study to get the knowledge scores. The questions included in were objective type and problem solving type as described in Figure 1. The training was given using flipped classroom model where all the resource material was given

beforehand to all the interns and an interactive discussion was taken after 3 days.⁷ A post test was conducted immediately after the training to get the knowledge scores. The pre-test and post-test was taken online using Google form sent to their respective e-mails.

Comparison of pre-test and post-test scores was done using paired t test to know the learning outcome or the effectiveness of the training programme. P<0.05 was considered significant. Opinion of interns regarding incorporation of similar pharmacotherapeutics training in all other departments during internship was taken using a pretested questionnaire survey on a Likert scale of 1-5 using Google forms.

RESULTS

A total of 30 interns of pediatrics department were enrolled and all of them completed the study. The knowledge scores of pre-test and post-test were converted to percentage for better understanding. The mean percentage scores of the objective type questions in the pretest was 40.6±3.25 which increased to 74±2.95 in post-test (p<0.05). The Mean percentage scores of the problem solving type questions in the pretest was 30.78±5.25 which increased to 65.21±4.65 in post-test (p<0.05) as shown in Figure 2. Interns’ opinion regarding CPT training was collected and the responses are as shown in Table 1.

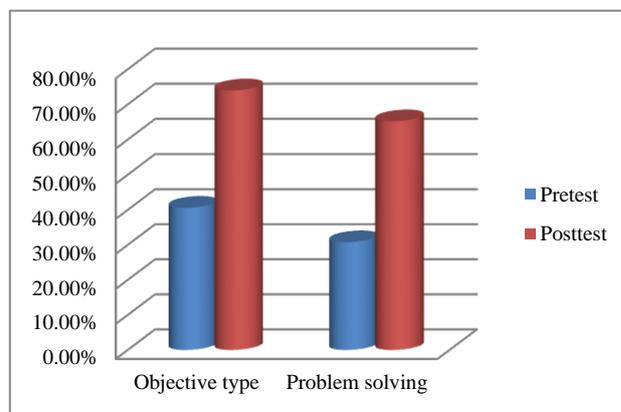


Figure 1: Mean percentage of knowledge scores about CPT among pediatrics interns before and after the training programme.

Table 1: Opinion of pediatrics interns regarding CPT training.

S. No.	Statement	Likert scale				
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	Content was relevant to the common diseases in the area	-	-	-	24	6
2	The learning materials provided was clear and relevant to questions asked in pretest	-	-	5	21	4
3	The content provided and the discussion was appropriate and adequate to understand the concepts	-	2	4	6	18
4	Sufficient scope was given to clarify the doubts	-	4	2	16	8

Continued.

S. No.	Statement	Likert scale				
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
5	Overall satisfaction of the sensitization or training programme	-	02	05	17	06
6	Introduction of such course frequently would help in various departments during internship	-	5	08	12	5

DISCUSSION

Knowledge acquisition in all the basic sciences is a prerequisite during the internship training and also for effective clinical practice in the future. The knowledge of CPT in particular plays a pivotal role. In our study, we found that the knowledge of pharmacology among pediatrics interns was very poor. Also majority of them feel the current pharmacology training is not sufficient to take rational therapeutic decisions. Previous studies also show that almost 43% and 45% of respondents considered they were not capable of rational prescription during internship.^{2,8} In the above study, 74% of respondents faced some problems while prescribing. This clearly shows that the current pharmacology training might not be adequate for producing competent doctors. Even Islam et al has a similar finding in his research.⁹ A radical change has to be made in the way we teach pharmacology. This was also felt by other researcher.¹⁰ Further, knowledge about drugs keeps changing as time passes. More insights about the side effects of a drug become available and so the newer uses of the existing drugs and their combinations. So, it is essential to keep updated always. How WHO suggests making all these information readily available to everyone involved in the clinical care via drug compendiums, essential medicines list, formularies, bulletins etc.³ But, merely making available doesn't solve the problem universally. So, a need based sensitization/training can be thought of to address this issue. Many other studies also are in favor of introduction of similar bed side training of clinical pharmacology during internship.^{11,12} This can be done by either a separate need based sensitization or training or collaborated bedside discussion such as m case based learning.³ A workshop in rational pharmacotherapy for interns produced a significant improvement in rational prescribing in a study conducted by Mustafa et al.¹³ Another study showed that introduction of group discussion of WHO or good prescribing method improved the fourth-year medical students' performance in rational pharmacotherapy skills.¹⁴

Limitations

Limitations in the study were inclusion of only one batch of interns from pediatrics department. Further detailed research has to be conducted in different departments and faculties' opinion regarding incorporation of CPT training and feasibility has to be considered before we recommend such training during internship.

CONCLUSION

The sensitization or training was effective and there was overall satisfaction of conduct of such training among pediatrics interns. Further detailed research has to be conducted in different departments and faculties' opinion regarding incorporation of CPT training and feasibility has to be considered before we recommend such training during internship.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

- Kar SS, Pradhan HS, Mohanta GP. Concept of essential medicines and rational use in public health. *Indian J Community Med.* 2010;35:10-3.
- Nitya S, Mangaiarkkarasi A, Meher Ali R, Sawadkar MS. Intern's knowledge of clinical pharmacology and therapeutics at Puducherry: a cross-sectional study. *Intl J Basic Clin Pharmacol.* 2013;2(5):622-8.
- Who.int. World health organisation, 2019. Available at: <https://apps.who.int/medicinedocs/pdf/whozip23e/whozip23e.pdf>. Accessed on 25 September 2019.
- Desai MK, Panchal J, Shah S, Iyer G. Evaluation of impact of teaching clinical pharmacology and rational therapeutics to medical undergraduates and interns. *Int J Appl Basic Med Res.* 2016;6:205-10.
- Gupta K, Arora S, Kaushal S. Modified case based learning: our experience with a new module for pharmacology undergraduate teaching. *Int J Appl Basic Med Res.* 2014;4:90-4.
- Kela AK, Mehta VL. Impact of inclusion of clinical projects in undergraduate teaching. *Indian J Pharmacol.* 1993;25:249-50.
- Critz CM, Knight D. Using the flipped classroom in graduate nursing education. *Nurse Educator.* 2013;38(5):210-3.
- Gavimath NT, Chavan VR, Dixit R. Intern's perception towards Pharmacology during clinical postings at RIMS, Raichur, India. *Int J Basic Clin Pharmacol.* 2019;8:425-30.
- Islam Z, Rahman F, Mossaddek AS, Rozario RJ, Iftexhar H, Akhter S, et al. Assessment of Bangladeshi interns' knowledge of pharmacology and therapeutics for prescribing. *J Appl Pharm Sci.* 2014;4(04):43-51.
- Vasundara K, Kanchan P, Pundarikaksha HP, Girish K, Prassana S, Jyothi R. An imperative need to

- change pharmacology curriculum: A pilot survey. *Indian J Pharmacol*. 2010;42:420.
11. Kela AK, Mehta VL. Impacts of inclusion of clinical projects in undergraduate teaching. *Indian J Pharmacol*. 1993;25:249–50.
 12. Han WH, Maxwell SRJ. Are medical students adequately trained to prescribe at the point of graduation? Views of first year foundation doctors. *Scottish Med J*. 2006;51:27–32.
 13. Dikici MF, Yaris F, Artiran Igde F, Yazar F, Altuntas O, Gurz A. Effect of a workshop in rational pharmacotherapy for interns during family medicine clerkship in Samsun-Turkey. *Pak J Med Sci*. 2014;30(2):305–9.
 14. Gelal A, Gumustekin M, Arici MA, Gidener S. Rational pharmacotherapy training for fourth-year medical students. *Indian J Pharmacol*. 2013;45:4–8.

Cite this article as: Dixit R, Joshi KP. Concept of clinical pharmacology and therapeutics sensitization and training for interns. *Int J Basic Clin Pharmacol* 2019;8:2665-8.