

Pilot Research Projects/Observational Studies

Case-based learning method to enable rational decision-making in posology in the 1st year MD (Hom) students: A pilot study

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ABSTRACT

Introduction: Knowledge of posology though essential to treat the patient judiciously and rationally is difficult to teach. Case-based learning (CBL) may provide an opportunity for homoeopathic students to develop rational thinking and learn from clinical experiences to benefit patient care. A pilot study involving 14 Part I homoeopathic postgraduate students using CBL method for learning concepts of posology was conducted with objectives of demonstrating application of CBL in developing rational thinking in posology using the tool of "Planning and Programming" of the standardized case record (SCR[®]).

Aim: This study aims to evaluate the utility of CBL method to enhance rational decision-making skills in posology for the 1st year M.D (Hom) students.

Objectives: The objectives of the study were as follows: (1) Demonstrating application of CBL in developing rational decision-making skills in posology in homoeopathic postgraduates to improve patient care. (2) Enabling students to establish correlation in theory and clinical practice from principles, concepts in Organon. (3) Motivating students to use planning and programming tool in SCR for deriving posology in the OPD and IPD.

Materials and Methods: Fourteen students from MD (Hom) Part I participated in a case-based module of three successfully homeopathically treated cases of rheumatologic disorders with suitable objectives and directives in guided group discussion sessions were conducted and the results evaluated through performance in problem-solving and decision-making, through specially designed formats as per the section of planning and programming to formulate the posology used in SCR[®]. Changes in the perception were evaluated by taking feedbacks. Performance and evaluation of perception were compared.

Results: The collective evaluation showed that students could share and received answers to their difficulties and experience guide as a facilitator. The results revealed that there was a change in performance evaluation, from case 1 (15.57) to 2 (19) but a significant change in case 3 (35.86). Analysis using SPSS was performed and Friedman test was statistically significant ($P < 0.05$). The forecast line indicates that continued practice is needed to show long-term effects in learning, attitudes, and practice.

Conclusions: The findings of the project show that this process has helped the participants to enhance their skills, rational thinking, develop discipline to learn from structured cases, and bedside experiences. CBL can be extended to all areas of homoeopathic medical education.

Keywords: Posology, Case-based Learning, Postgraduate training, Clinical skill, Standardized case record

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INTRODUCTION

Aphorism 3 of the Organon of Medicine clearly states that after the choice of indicated remedy, selection of the appropriate dose (potency and period of repetition), i.e., knowledge of posology is essential for the homoeopathic physician to treat the patient judiciously and rationally so that restoration of health is permanent. Posology is one of the most important concepts in homoeopathy, but its application is ambiguous in practice. The parameters of selection of potency in a given case are guided by the fundamental principles stated in the Organon. The approaches in analysis and evaluation of a case adopted by clinicians are individualistic and change with every case. Therefore, the case becomes the basis for training of the physician in the art and science of posology. Case-based learning (CBL) in a structured way that helps to evolve clinical skill, attitude, and knowledge is necessary in rational decision-making. This method may provide an appropriate opportunity for homoeopathic students in developing structured thinking and decision-making as well as evolving problem-solving abilities that will benefit patient care. In this manuscript, we present a pilot study using the CBL method for learning the concepts of posology.

Dr. Hahnemann, while developing principle of similarity, theory of chronic diseases, demonstrated the process of rational decision-making. This involves taking a series of steps: Making unbiased observations, appropriately analyzing the facts, and arriving to the conclusion that enables the necessary action.

One of the important concepts of Hahnemann is the concept of posology. Posology is not dictated by any rule of the thumb. To be accurate, the physician must have proper understanding of the dynamic concepts of disease, make an accurate assessment of patient susceptibility, and develop the ability to analyze the remedy response.^[1] This is a dynamic process, wherein homoeopaths constantly add their own experiences and refine their understanding of posology. Homoeopathic students should be trained to develop rational thinking and learn the process of updating themselves from their own clinical experiences; necessitate training to be able to process real-life situational problems.

To achieve this, several educational methods are available, one of which is CBL designed by identifying the problem in a case.^[2] The cases are generally written as problems that provide the student with the background of a patient's clinical situation. The students can make certain assumptions and, on that basis, take action. They can subsequently test the action-result complex and incorporate the lessons in their learning. This process will help the students in inculcating the scientific approach and not work on an *ad hoc* basis. It allows them to perform vertical and horizontal integration of the concepts from their syllabus that is useful

for practice and incorporate their previous learning while taking practice-based decisions.^[3] Therefore, methods like CBL, which are based on adult learning principles, are useful. This method allows medical students to identify the exact problem in a given case and analyze the facts before taking rational decisions.

In the Indian context, a pre-post single-blinded, experimental study was conducted in Bharati Vidyapeeth Dental College and Hospital, Sangli, with the aim to know the effectiveness of CBL in enhancing the knowledge of dental interns related to hyperplastic tissue in patients with complete dentures.^[4]

Objectives of this study were as follows

1. Demonstrating the application of CBL in developing rational thinking in posology in homoeopathic postgraduates to improve patient care.
2. Enabling students to establish correlation between theory and clinical practice from the principles and concepts of Organon.
3. Developing appreciation of the value of the tool of "Planning and Programming" of the standardized case record (SCR®) for deriving posology in the OPD and IPD.

Endpoints

At the end of the module, students should demonstrate through cases the following:

1. Formulate the clinical diagnosis and stage of disease
2. Identify and evaluate parameters of sensitivity of mind and nerves in health and disease
3. Evaluate susceptibility quantitatively – low, moderate, and high
4. Evaluate the miasmatic load
5. Recognize suppression and its impact on susceptibility
6. Assess the level of correspondence of the selected similimum
7. Recognizes the variations in phases of disease and vitality
8. Enable students to establish correlation in theory and clinical practice from the principles and concepts in Organon
9. Motivate students to use the tool of "Planning and Programming" in SCR® for deriving posology in the OPD and IPD

MATERIALS AND METHODS

An experimental study involving 14 Part 1 homoeopathic postgraduate students using CBL was conducted from March 29, 2017, to April 19, 2017, at Dr. M. L. Dhawale Memorial Homoeopathic Institute, Palghar.

Methodology

A study of literature on CBL was undertaken to understand the basic concepts and methodology in CBL to refine the project. Case-based modules on three successfully homeopathically treated cases of rheumatologic disorders with different clinical states were prepared formulating suitable objectives and directives.

An orientation session was conducted explaining the concept of CBL for all participating volunteer students having similar exposure to homoeopathic learning.

The module consisted of three guided group discussion sessions of 2 hours each at weekly intervals based on three chronic cases. A test was conducted on each case to understand their application in posology based on structured directives. The students learning was evaluated in a specially designed format as per the section of planning and programming to formulate the posology used in SCR[®].^[5] This evaluation format comprised 10 parameters to be considered in a case to decide posology. To enable quantitative evaluation of the thinking process, marks were given for each parameter in identification, analysis, and evaluation of each of the parameters and in the choice of potency and repetition (3 marks for correct answer, 2 for partially correct, 1 mark for attempt but error, and 0 for no attempt).

The final outcome of the project through evaluation of the three cases worked out by each student was assessed. The total marks secured out of 50 in each case formed the basis of performance evaluation.

At the end of each session, all participants wrote a session evaluation report to understand the extent and depth of objectives achieved, comprehensiveness, and quality of case study material, preparation, and functioning of the guide, methodology followed, and its relevance to the stated objectives. Participants stated the learning achieved, difficulties experienced, and gave suggestions for improvement. This helped plan how to conduct subsequent sessions.

Perception evaluation was done through the student feedback form and was compared with performance evaluation in all three cases. Feedback was obtained from the students at the end of the project through a post-module questionnaire that comprised stating improvement in knowledges, skills, and judgment in clinical diagnosis, identifying stage of disease, assessment of susceptibility in health and disease, miasmatic load, suppression, and the selection of potency and repetition schedule. Marks were allotted for each section as stated above: Improved – (2), partly improved – (1), and not improved – (0). The total score was out of 25 marks.

RESULTS

Fourteen students participated in the project and worked on three cases. The observations in terms of the marks evaluated from their work submitted before each CBL session over three sessions a week apart and completion of evaluation form at the end of the module are provided in Table 1.

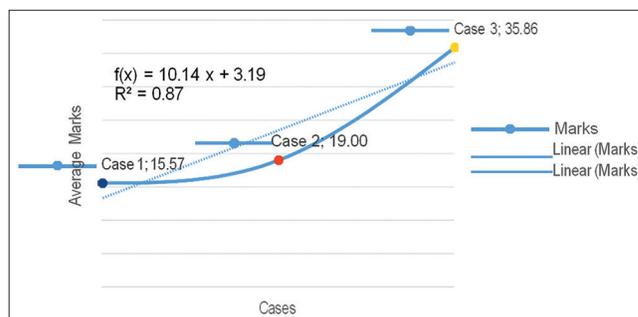
Analysis

A total of 14 students participated in the study, among whom 7 students could not complete all the cases. Finally, the analysis was performed using the data obtained from the seven students who had completed the entire module, as shown in Graph 1. The analysis was performed SPSS version 24.0.

The Friedman test was applied (significant if $P < 0.05$) as the data were quantitative and non-parametric; serial test scores were taken. The results are statistically significant. The scores in case 3 show a significant improvement over case 1. The forecast line indicates that continuous practice of the process can be more beneficial.

Correlations

Case 3 marks		Perception analysis marks (25)		
Spearman's rho	Case 3 marks	Correlation coefficient	1.000	-0.450
		Sig. (two tailed)	.	0.310
		<i>n</i>	7	7
Perception Analysis marks (25)		Correlation coefficient	-0.450	1.000
		Sig. (two tailed)	0.310	.
		<i>n</i>	7	7



Graph 1: Linear representation compared with the linear forecast of average marks of cases Average marks of all the participants who were a part of the complete module were plotted and analysis of the marks obtained shows marginally significant change from case 1 (15.57) to 2 (19) but a significant change in case 3 (35.86).

The above analysis in Graph 2 suggests that there is no correlation between gain in marks and self-perception about improvement. This may be due to fewer samples or probably due to less sample size as well as less opportunity for developing self-awareness of one's progress.

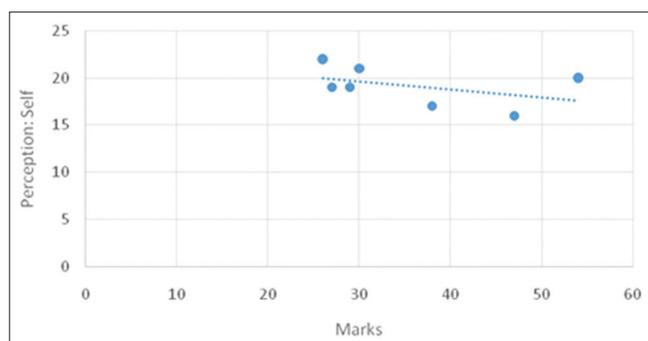
DISCUSSION

CBL method for homoeopathic postgraduates

Homoeopaths should incorporate their own experiences while dealing with their patients. Posology being a complex phenomenon, learning the steps to integrate various factors, and then finally taking action is very crucial. CBL is a useful method as it demands the learner to state the problem and then analyze the facts before arriving at a rational decision. The collective evaluation of all the three cases showed that the group appreciated

Table 1: Final mark list of performance analysis of three cases and perception analysis marks.

Serial number	Case 1 (50)	Case 2 (50)	Case 3 (50)	Perception evaluation (25)
1	10	11	Abs	17
2	6	17	29	19
3	18	15	34	20
4	6	abs	abs	Abs
5	8	21	27	19
6	30	33	30	21
7	15	17	Abs	9 ½
8	15	17	47	16
9	15	18	38	17
10	17	12	26	22
11	7	abs	Abs	21
12	Abs	abs	18	Abs
13	Abs	abs	16	17 ½
14	Abs	abs	32	19 ½



Graph 2: Scatter plot graph representing the correlation between marks and self-perception.

the CBL method in enhancing their knowledge and its application in practice of posology. They could experience the role of guide as a facilitator, could share their difficulties in the group, and get answers to their queries. Change was observed in skills and knowledge in terms of identification of all the parameters of susceptibility and sensitivity. The results indicate that the change in the students started gradually and showed a significant change after the third case. This change is the resultant of the students incorporating their previous learning from the initial two cases and applying it in the third case. This highlights the importance of CBL in teaching complex phenomena like posology.

Duration of the CBL method for teaching posology

The results revealed that as the module progressed, there was a significant change in the ability of the students to identify, analyze, and evaluate clinical states; correlate examination findings and interpret laboratory investigations; and correlate homoeopathic symptomatology and apply knowledge of susceptibility in deriving posology, as was evident in the performance evaluation. However, when the perception evaluation form was compared with the performance evaluation, the results were inconclusive. Individual students experienced that their confidence improved in arriving at the posology, although the change was statistically insignificant. This may be due to a smaller sample size as well as less opportunity for developing self-awareness of one's progress. It also indicates that the benefit may recede with time if the CBL method is not regularly practiced. The forecast line indicates that continued practice is needed to show long-term effects in learning, attitudes, and practice. This means that the CBL method with just three cases may not be sufficient for learning posology.

The findings of this project show that this process has helped the participants to enhance their rational thinking and to develop discipline to learn from structured cases and bedside experiences. The process has clearly indicated that the learning and enhancement of skills are possible through CBL.

CONCLUSIONS

- The CBL method is useful for learning complex phenomena like posology.
- The CBL method should be used for a sufficient duration enabling students to incorporate it as a lifelong process.
- CBL with appropriate duration and method will enhance the confidence of homoeopathic students to learn complex phenomena of homoeopathy and start working on a scientific basis.

- Medical education is a lifelong learning that requires an enabling attitude and discipline to learn through one's clinical experiences. This process has helped the participants to enhance their rational thinking, develop discipline to learn from structured cases, and from bedside experiences.
- The CBL method can be extended to all areas of homoeopathic medical education.

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Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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