Evaluation of skill-based training program on rational drug treatment for medical interns

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ABSTRACT

Context: A module-based training program for medical interns using World Health Organization guide for good prescription along with the individual feedback on their prescription was developed and implemented. Objective: The objective of the study was to obtain the medical interns' reactions to newly developed skill-based training program on rational treatment. Study Setting: This study was conducted at the Department of Community Medicine. Participants: A total of 96 medical interns were included in the study. Study Design: A cross-sectional study consisting of retro-prefeedback and open-ended questions about self-assessment of perceived skill on rational treatment. Analysis: Collected data were entered in Epi Info (3.5.4) and analyzed. Results: After training, there was a significant increase in self-perceived posttest scores of setting up the therapeutic objective for the treatment (2.9–4.9), ability to select the correct drug (2.8–5.1), ability to select right dose, schedule, and duration of drugs (2.5–4.9), and overall prescription skill (2.9–4.9). There is a significant decrease in self-perceived scores in the skill of practicing polypharmacy (4.1–2.5). Conclusions: Overall, the training program was taken well and interns perceived their skill on rational treatment was improved as shown by the feedback.

Keywords: Interns, medication errors, polypharmacy, prescriptions, training

Introduction

The irrational use of medicines is a problem worldwide, and the World Health Organization (WHO) estimates that more than half of the medicines prescribed, dispensed, or sold inappropriately.¹ Irrational prescription of drugs is responsible for the delay in relief, more adverse effects, prolonged hospitalization, increased morbidity and mortality, the emergence of microbial resistance, financial loss to patient and community, and perpetuation of public health problem.² WHO and Medical Council of India emphasize on problem-based pharmacotherapy training in undergraduate curriculum and continuing in-service medical education on rational drug prescription of medicines.³

In the undergraduate medical curriculum, traditionally pharmacology is usually taught in 2nd year, which is having a more drug-centered approach and when they come as medical interns, which is more disease centered making difficult for the students for learning.⁴ The medical internship is the period, in which consolidation of undergraduate medical education through continued learning and skill acquisition under direct supervision and guidance from teachers. Studies in India also have indicated that the irrational prescribing practices are common in medical interns.⁵,⁶ Medical interns prescribe by observing their clinical teachers, seniors, and colleagues which may lead to faulty practices without proper feedback on prescription. Rational prescription writing is a skill and it should be learned at the earliest since studies have shown that despite gains in clinical experience, prescribing skills will not improve after graduation.⁷ They should develop a good attitude of prescription writing and rational drug as they constitute the future generation of doctors.⁸ Literature shows that the available studies focus on improving the rational

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drug treatment during early years of MBBS, of which most of the interventions were knowledge focused with little follow-up to develop it as a skill. Hence, an intervention is needed among interns, which focuses skill development of rational treatment and also at the time it will be most beneficial for their learning.

Hence, the present study was done to evaluate the newly developed skill-based training program for medical interns on rational drug treatment.

**Material and Methods**

**Study setting**

The present evaluation of the educational project was undertaken among the interns posted in the Department of Community Medicine of a Medical college from Puducherry. This study was undertaken in the Rural Health Training Centre (RHTC) which is having field practicing areas of 34 villages with a patient load of 200/day and Urban Health Training Centre, (UHTC) which covers a population of 22,000 with an average patient load of 70/day.

**Sample**

Ninety-six medical interns posted in the Department of Community Medicine.

**Study duration**

One year with each batch of interns posted in the department for 2 months and a total of six batches were included from February 2016 to January 2017.

**Study design**

Cross-sectional study, which included post-then-pre rating feedback and response to open-ended questions from the interns exposed to this program. Evaluation of the training program was done at Kirkpatrick level-1 (learner's reaction).[8]

**Training program**

A training program was started using STEPS approach which is a 5-step technique including setting the foundation for prior learning, tutor demonstration without commentary, an explanation with repeat demonstration, practice under supervision with feedback, and subsequent deliberate practice was encouraged.[9] The objectives of the program are to improve the knowledge and skills of interns on rational treatment and reducing medication errors among them. As a part of the training program, a self-learning module on rational treatment was developed using the WHO guide for a good prescription.[10] The module covers the six steps in rational treatment such as defining in patient's problem, setting up the therapeutic objective, verifying the suitability of your P-treatment, starting the treatment, giving information, instructions, and warnings, and monitoring the treatment. On consensus with faculty, postgraduates, and interns, case scenarios of locally prevalent health conditions pertaining to our field practising areas such as malaria, typhoid, worm infestation, scabies, impetigo, diabetes, hypertension, iron deficiency anemia, osteoarthritis, acute respiratory infections, and acute diarrheal disease were included in the module.

Medical interns joining the Community Medicine department were exposed to 1 day skill-based workshop on rational treatment using the module which was conducted by the faculty of the department. After that, interns were given assignments to selection of personal treatment for different clinical conditions. Faculties and postgraduates were oriented and trained on rational treatment and how to give feedback. Interns posted in the RHTC and UHTC observed rational prescribing practices from four different faculties and explanation on their prescriptions were given. Following this, interns were encouraged to write prescriptions and their prescriptions were observed and individual feedback was given by faculties using Pendleton's framework which includes clarification of information and feelings from learner, good points first, areas to improve, and a constructive summary.[10]

**Data collection**

The present questionnaire was prepared from the steps of rational treatment from the WHO guide for good prescription which is a validated tool for training medical students. The final version of the questionnaire was discussed with the faculty in Community Medicine who were sensitized in rational drug prescription. A Retro-prefeedback on self-assessment of intern's rational treatment skill using a 6-point Likert type scale and open-ended feedback addressing the questions (1) what was good about the program and (2) how it can be improved, were collected at the end of 2 months of the training program.

**Data analysis**

The collected data were entered and analyzed using Epi-Info (Version 3.5.4. CDC, Atlanta, USA). Quantitative analysis was done for retro-prefeedback on self-perceived skill on rational treatment for evaluation for Kirkpatrick's Level 1. Frequencies, mean, and standard deviation were calculated. Paired t-test was used as a test of significance. Manual content analysis of the open-ended questions was done.

**Ethical issues**

Permissions from Sri Manakula Vinayagar Medical College and Hospital's Research Committee and Institutional Ethics Committee were obtained (IEC No-62/2015).

**Results**

So far, the training program was conducted among 96 interns for a period of 1 year with the age distribution of them varies between 21 and 25 years. Among them, 46 (48%) of them were males and 50 (52%) were females.

Retro-prefeedback of self-assessment of intern’s rational treatment skill shows that, after training program, there is a
significant increase in the scores of ability to define patient’s problem (4.95), setting up the therapeutic objective for the treatment (4.9), ability to select correct drug for achievement of therapeutic objective (5.1), ability to select right dose, schedule, and duration of drugs (4.93), ability to give clear instructions about the treatment (5.1), and overall prescription skill (4.93). There is a significant decrease in self-perceived scores in the skill of practicing polypharmacy (2.52) [Table 1].

Table 2 summarizes that interns perceive the training program which has provided an opportunity to learn and correct mistakes about rational treatment. It also gave them confidence in prescribing and providing better quality services for the patient. The training program helped them to learn about therapeutic objective and to practice it. It helped them in reducing polypharmacy, used more of generic drugs, and promoted self-learning.

**Table 1: Retro-prefeedback of self-assessment of rational treatment skill (n=96)**

| Questions | Mean±SD Pre | Mean±SD Post* |
|-----------|-------------|---------------|
| I can define patient’s problem for the treatment | 3.08±0.9 | 4.95±0.5 |
| I can specify therapeutic objective for the treatment | 2.92±1.2 | 4.9±0.6 |
| I can select correct drug for the treatment to achieve the therapeutic objective | 2.85±0.8 | 5.12±0.6 |
| I can select right dosage, schedule, and duration of drugs for the treatment | 2.55±1 | 4.93±0.6 |
| I can give clear instructions and warnings about the treatment | 3.02±1.1 | 5.11±0.6 |
| I practice polypharmacy | 4.15±1 | 2.52±1.1 |
| Overall, My prescription skill has improved | 2.89±0.8 | 4.93±0.5 |

Table 2: Content analysis of open-ended responses about the training program (n=96)

**Themes** | Intern’s statements (number of intern’s making the statements)
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Prescription writing | We learned about how to write prescription in a correct way (35)
I have corrected my mistakes after the program on rational treatment (26)
It gave me confidence in prescribing drugs for the patient (10)
Improved my legibility of my prescription (8)
Therapeutic objective | Usually, we don’t think about therapeutic objective now we are setting therapeutic objective for every patient (32)
Rational treatment | Prescribing antibiotics rationally and also prescribing drugs which are necessary because of the program (24)
It helped me in reducing polypharmacy (10)
Learned about need for prescribing generic drugs (5)
Self-learning | Assignment helped us to learn about drugs, dosages, and adverse drug reactions (16)
I am developing own personal drugs for each condition based on the training (15)
Suggestions for the improvement of the program | Should be done at the start of the internship (46)
Increase the content of module for more disease conditions (5)

**Discussion**

The present study was a skill-building approach for interns on rational treatment and prescription writing using STEPS approach. A training program was developed using STEPS approach including module-based workshop, faculty demonstration, giving feedback on prescription, and the encouragement of subsequent deliberate practice. The training program was conducted for 96 interns and learner’s reaction to the training program (Kirkpatrick Level 1) was obtained.

Overall, the training program has improved the intern’s perceived skill in rational treatment specifically focusing on ability in setting up a therapeutic objective, selecting personal drugs for conditions, writing correct drugs, doses, and schedule, and legible writing of a prescription. It also promoted self-learning about treatment for different clinical conditions. It also improved their perception of avoiding the unnecessary prescription of drugs. This in future will help in improving the intern’s rationality of the treatment and will also reduce out-of-pocket expenditure for the patient.

Learner’s reactions to the training program show that it has improved their perceived skill in rational treatment which was evident from the pre-post scores and content analysis of qualitative data. Following training program, their ability to focus on the therapeutic objective helped them in reducing the polypharmacy. Feedback from faculties on their prescription helped them to correct their errors and improved their confidence to prescribe rationally. Even though national guidelines are available for different clinical conditions, interns need to know that so that they should have their own personal drugs for their practice. Assignments on different clinical scenarios promoted self-directed learning which has encouraged them to develop their own P-drugs. A prospective study in Gujarat shows that clinical pharmacology and rational therapeutic training improves the knowledge of undergraduates, it's not retained in internship and does not adequately prepare interns to prescribe safe and rational drugs. In a study conducted in Turkey using WHO guide for a good prescription, they found a significant improvement in objective structured clinical examination scores following the training program. A Nigerian study also showed reduction in prescription errors among doctors provided with feedback and prescription education.

**Strengths and limitations of the study**

The strengths of the study are that it is being done during internship including a module-based training program, assignments for the case-based scenarios for the development of P-drugs, and immediate feedback on prescriptions for interns from the faculties. The limitations of the study are that the effectiveness of the program was measured in the short term (within 2 months). Another limitation of the study is that it is based on self-perceived rating about knowledge by the students and no comparison group was used to measure the effectiveness of the program. Hence, more objective measurement of its effect on the rational
drug prescription through a comparison group is required for future studies.

Conclusions

Overall, the training program was taken well and it provided an opportunity to faculty to observe and give feedback to intern’s prescription. The perceived skill of interns on rational treatment was improved shown by feedback. This training program bridges the gap between learning on rational treatment between pharmacology training during 2nd year and internship. Since it was perceived self-rating of the skill of interns, in future, it requires more objective evaluation of the program in the form of prescription audit. A training program at the beginning of internship will act as a bridge between 2nd year pharmacology learning and internship to develop the most necessary skill as becoming a doctor.

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Conflicts of interest

There are no conflicts of interest.

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