A study of effect of education in rational use of medicine among general practitioners

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Abstract
Background: Lack of access to medicines and inappropriate doses result in serious morbidity and mortality and result in significant patient harm in terms of poor patient outcomes and adverse drug reactions. Therefore WHO recommended rational use of medicines for all practitioners. **Aim and objective:** To study the effect of education in rational use of medicine among general practitioners **Methodology:** Present study is a cross‑sectional, questionnaire‑based study conducted among general practitioners. Total 40 general practitioners were studied. Pre test was conducted. A workshop was conducted regarding rational use of medicine. Post test was conducted. Response of participants were given score. Data was analysed with appropriate statistical tests. **Results and discussion:** The average score in pre test for all participants was 77.72 and 83.57 in post test. This difference was statistically significant ($p<0.05$). The average score in pre test for all participants was 77.72 and 83.57 in post test. This difference was statistically significant ($p<0.05$).

Introduction: The Alma-Ata declaration during the International Conference on Primary Health Care in 1978 reaffirms that health is a fundamental human right and the attainment of the highest possible level of health is a most important worldwide social goal. [1] The Alma Ata declaration has outlined the eight essential components of primary health care and provision of essential medicines is one of them.[1]

The rational use of Medicines (RUM) is defined as "Patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community."[2]

Irrational use occurs when one or more of these conditions are not met. Some of the common irrational use of medicine are 1. Use of too many medicines per patients 2. Inappropriate use of antimicrobials, often in inadequate dosage, for non-bacterial infections 3. Over use of injections 4.Prescriptions not in accordance with STG

The inappropriate use of medicines is widespread. It increases cost of the treatment. It is extremely harmful both to the individual and the population as a whole specially in paediatric

age group, pregnant females and lactational mothers. Chronic diseases like hypertension, diabetes, epilepsy, and mental disorder are highly prevalent in populations so irrational use of medicine in these group will affect major population.[3] Increased incidence of adverse drug events and resistance is another serious issue.

There is 3 M concept in Rational Use of Medicines (RUM): Medicines Mean Money. Thus, RUM means less profit and income for those dealing with medicines; prescribers, and sellers. This conflict of interest is particularly relevant in our country where just only 3-5% of population are covered under any form of health insurance.[4]

The medical practitioners have wide scope and responsibility too in promoting rational use of medicines for better health care. Educational strategies to health care practitioners and consumers have been proved successful model for promoting RUM. One of the educational strategies is to train the medical students of different levels on RUM. The concept and usefulness of RUM need to be the part of the curriculum. A WHO manual "Guide to Good Prescribing: a Practical Manual" is a useful publication for under graduate and post graduate students is a welcome step in this endeavor.[5]

The medical practitioners need to keep themselves updated through attending seminars, conferences, and other continuing professional development programmes. These programmes should not be supported by pharmaceutical industries, as often there is conflict of interest. They should look for independent publications or drug information centres for drug-related information, but not from the medical representatives. The hospital formulary is a good source of information. The essential medicines should be the first choice during medical practice. Finally, they should take care of their clients, the patients, by spending some time with them explaining the appropriate use of prescribed medicines. The patients should be accepted as the partner in drug therapy prescribing.

We need to change our attitude and start the process of prescription audit in government and private sector and the importance of essential drug list and RUM should be emphasized in every possible forum.

Continuing in-service medical education (CME) is a requirement for licensure of health professionals in many industrialized countries. In many developing countries opportunities for CME are limited and there is also no incentive since it is not required for continued licensure. CME is likely to be more effective if it is problem-based, targeted, involves professional societies, universities and the ministry of health, and is face-to-face.

Homeopathic doctors prescribe allopathy medicine. In India population is more so doctor patient ratio is not fulfilled. Majority of the patients visit doctors who are accessible to them. It includes homeopathy practitioners also. So, Some of the developing countries like India have courses of pharmacology for non allopathy doctors to continue their medical practice.

Aim & objective: To study the effect of education in rational use of medicine among general practitioners

Material and Methods

The present study is a cross‑ sectional, questionnaire‑ based study conducted among general practitioners. Total 40 general practitioners were studied.

Study was approved by ethical committee of the institute. A valid written consent was taken from participants after explaining study to them.

Data was collected with pretested questionnaire. The validity of the final version of questionnaire was checked by calculating Cronbach's alpha value (Cronbach's alpha coefficient = 0.92). Questionnaire consisted of 24 questions. First section was general questions regarding use of medicine. It consisted of 8 questions. Second section was based on 5 questions related to pregnancy, lactation and paediatric population and rational use of drugs. Third section consisted of 6 questions related to use of antimicrobials. Fourth section

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consisted of 8 questions and rational use of drugs in chronic illnesses. Last section consisted of 5 questions related to steroids, antiepileptics and ayurvedic medicines. Details of questions is mentioned in table 1.

A workshop was conducted on rational use of medicine. It comprised sessions on concept of rational use of medicine, rational use of antimicrobials, case study and Group discussion. Sessions were conducted

At the start of workshop pre test questionnaire was circulated among participants. GP's were asked to respond to the statements. After the work shop post test questionnaire were given to the participants and all responses recorded by them. The responses are of Likert type with three response options as "disagree," "do not know," and "agree." With a score of 1,2and 3 respectively. The incomplete questionnaires were excluded from the study.

All responses received were cross tabulated. They were given score and all scores were noted. Data were analyzed using the statistical package SPSS version 24 (IBM Corporation, Armonk, New York, USA)

Results

Total 40 general practitioners were studied. Among these practitioners 31 (77.5%) majority were practising in rural areas. Out of 40, 22.5% (9) were practising in urban area. (fig 1) Figure 2 shows distribution of homeopathy practitioners according to years of practice. In our study, majority of the practitioners 19(47.5%) have experience of 11 to 15 years followed by 5 to 10 years practice (30%). 6 (15%) practitioners had practice of 16- 20 years. 7.5% practitioners were practising for more than 20 years.

Pre and post tests were taken from them. Table 2 showed scores attended by no of patients in pre test and post test. We considered incorrect response as score 1, don't know as score 2 and correct response as score 3. In the first section we had general questions regarding use of medicine. In pre test 50% of the participants know that physician should have his personalised drug list. Post test results showed that 92.5% participants agreed for personalised drug list.

Doctors should always prescribe drugs in brand name form was agreed by 37.5% participants in pre test while 82.5% disagreed in post test. Regarding the quality of generic drugs and brand name drug initially 52.5% participants were not agree that both have equal quality but after work shop 82.5% participants were agree for equal quality of both the drugs. 62.5% participants know that Essential Drug list not made by the physician in pre test this score improved to 77.5% after workshop.

Majority of the participants (pre test -87.5% and post test-90% disagree that administering multiple drugs for single cause give better results. Regarding intravenous administration of drugs, 62.5% participants were disagree that IV preparations give better results than oral preparations. In post test 67.5% participants were agree for the statement. Regarding combined use of allopathy , aayurvedic and Homeopathic drugs 50% participants were agree and this score improved to 95% after the workshop. 77.5% participants believed that information given by the Medical Representative is always reliable and but after the workshop 97.5% participants disagree with the statement.

Second section was for rational use of drugs in pregnancy, lactation and paediatric age group. Out of 40 participants 36 (pre test) and 37(post test) know that drugs should be used cautiously in pregnancy and lactation. Similarly most of the drugs are not safe in pregnancy is known by 92.5% and 95% participants in pre and post-test respectively. Self-medication is safe is believed by 38 participants in pre test but 3 of them refused for self medication in post test. Half or one fourth dose of adult is safe in children is agreed by 34 participants and in post test 36 participants agree on the same statement. Internet is reliable source for dose in children according to 95% participants in pre test and 92.5% participants in post test.

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In use of antimicrobials, 97.5% of participants know that entire course of antibiotic should be completed. Course of antimicrobials should be stopped if illness is not responding is known by 40% of participants in pre test and 55% participants disagreed on the same after post test. One participant didn't know the answer. 90% participants believed that antibiotics should be used for common cold in pre test. In post test 97.5% disagreed the same. Antibiotics should be used for all diarrhoea was believed by 85% participants in pre test and 85% participants disagreed for the statement in post test. 97.5% participants in pre test think that antibiotics should be available without prescription but 97.5% participants said that antibiotics should be available with prescription only. If antibiotics are used frequently bacteria may not respond was known to 92.5% participants in pre test and 87.5% participants in post test.

Fourth section of our questionnaire was regarding rational use of medicine in chronic diseases. The treatment of hypertension is life long is known to 77.5% participants and this score improved to 97.5% participants in post test. There are standard treatment guidelines for hypertension was known by 95% participants in both pre test and post test.75% participants in pre test know that patient should not consult many doctors at a time and 82.5% participants in post test believed the same. The treatment of diabetes Mellitus is life long is known by 82.5% participants and this percentage improved to 95% participants in post test. 35 % participants in pre test said that dose of insulin or anti diabetic drug should be adjusted by the patients depending on the meal and in post test majority of them (72.5%) disagreed on the statement. In pre test 67.5% participants know that the dose of medication should be increased in renal or hepatic dysfunction and 87.18% participants in post test believed that dose should be decreased. Fruits are safe in patients of renal dysfunction was believed by 45% participants and 37.% participants in pre test and post test respectively. Most of the drugs are not safe in renal or hepatic dysfunction was known to 92.5% participants and 87.5% participants in pre test and post test respectively.

Last section was regarding use of steroids, antiepileptics and ayurvedic medicines. In any inflammation and Pain steroids are good choice was believed by 90% participants in both pre test and post test. Steroids can be stopped abruptly was believed by 90% participants in pre test and 87.5% participants in post test. 75% participants know that there are chances of drug interaction in epileptic patients in pre pest and this knowledge was increased in 97.5% participants after the workshop. 70% of participants in pre test know that Ayurvedic medicines have no side effects and this knowledge was improved to 82.5% participants who thought that Ayurvedic medicines have the side effects. When we asked about any two sources of drug information in pre test 19 participants wrote one source and 15 participants wrote 2 sources of drug information. In post test 9 participants wrote one source and 27 participants wrote 2 sources of drug information .

The average score in pre test for all participants was 77.72 and 83.57 in post test. This difference was statistically significant (p<0.05).so we can say that workshop intervention was effective for rational use of drugs in homeopathic general practitioners.

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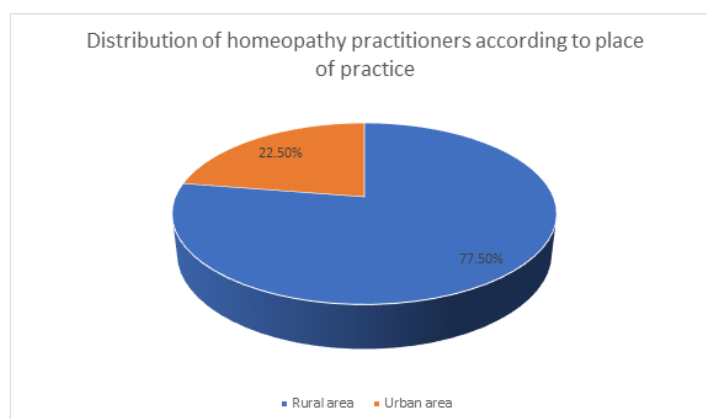
Figure 1: Distribution of homeopathy practitioners according to place of practice
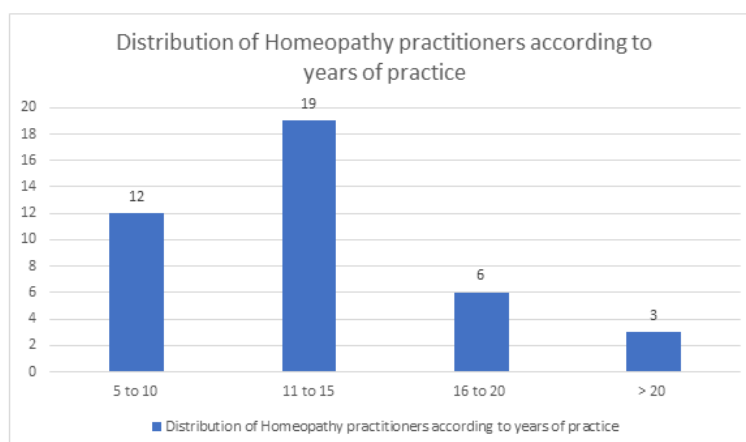
Figure 2: Distribution of Homeopathy practitioners according to years of practice

Table 1: Statements included in questionnaire

Sr no	Sections
1	General questions for use of drug
2	Use of drug in Pregnancy, lactation & Paediatric group
3	Use of Antimicrobials
4	Use of medicine in Chronic diseases
5	Others (steroids, Ayurvedic medication, drug information)

Table 2: Distribution of scores achieved by no of patients in pre and post test.

Sr no	Question number	Pre test scores				Post test score			
		1	2	3	No response	1	2	3	No response
1	A1	19	01	20	00	01	01	37	01
2	A2	23	02	15	00	06	00	33	01
3	A3	21	07	12	00	03	03	33	01
4	A4	25	10	05	00	31	03	05	01
5	A5	04	01	35	00	01	02	36	01
6	A6	25	01	14	00	12	00	27	01
7	A7	14	06	20	00	01	00	38	01
8	A8	04	05	31	00	00	00	39	01
9	B1	01	03	36	00	01	01	37	01

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10	B2	01	02	37	00	01	00	38	01
11	B3	00	02	38	00	04	00	35	01
12	B4	05	01	34	00	03	00	36	01
13	B5	00	02	38	00	02	00	37	01
14	C1	00	01	39	00	00	00	39	01
15	C2	18	06	16	00	16	01	22	01
16	C3	02	02	36	00	00	00	39	01
17	C4	03	03	34	00	03	02	34	01
18	C5	01	00	39	00	00	00	39	01
19	C6	02	01	37	00	04	00	35	01
20	D1	07	02	31	00	00	00	39	01
21	D2	01	01	38	00	00	01	38	01
22	D3	06	04	30	00	06	00	33	01
23	D4	05	02	33	00	01	00	38	01
24	D5	24	02	14	00	29	01	09	01
25	D6	05	07	27	00	02	03	34	01
26	D7	11	10	18	00	19	05	15	01
27	D8	02	01	37	00	01	03	35	01
28	E1	03	01	36	00	03	00	36	01
29	E2	03	01	36	00	03	00	36	01
30	E3	02	07	30	01	00	00	39	01
31	E4	07	05	28	00	04	02	33	01
32	E5	19	06	15	00	09	03	27	01

Score 1: Incorrect 2: don't know 3: correct

Discussion

Section 1 of the questionnaire had questions for general use of medicines. All participants had increased their knowledge after workshop. Regarding the quality of generic drugs and brand name drug initially 52.5% participants were not agree that both have equal quality but after work shop 82.5% participants were agree for equal quality of both the drugs. Various studies have revealed that prescribing medicines by brand name has become a routine practice.[6,7] Recently Medical Council of India has notified that prescribing drugs should be with generic names and also ensure that there is rational prescribing.[8]

Half or one fourth dose of adult is safe in children is agreed by 34 participants and in post test 36 participants agree on the same statement. Paediatric drug dose concept need to be revised in our study.

Regarding use of antibiotics general awareness is improved after workshop. But their concepts for use of antibiotics in common cold, all diarrhoea need to be revised. 97.5% participants in pre test think that antibiotics should be available without prescription but post test 97.5% participants disagree.

In our study, Knowledge of use of medicines in chronic diseases was poor in practitioners, but it was improved after workshop. Use of fruits in chronic diseases needs to be more conceptualised among practitioners. Knowledge of practitioners regarding use of steroids was poor and it doesn't improved after the workshop. So we have decided a special lecture for use of steroids in our workshop. Last question was writing two sources of drug information, in pre test 19 participants wrote one source and 15 participants wrote 2 sources of drug information. In post test 9 participants wrote one source and 27 participants wrote 2 sources of drug information.

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The average score in pre test for all participants was 77.72 and 83.57 in post test. This difference was statistically significant (p<0.05).so we can say that workshop intervention was effective for rational use of drugs in homeopathic general practitioners.

Various studies were carried out for rational use of medicine among the doctors. Study population was different.

Rajiv Mahajan *et al.* [9] carried out a cross-sectional study was carried out in and around the teaching hospitals attached to Medical Colleges, enrolling 504 clinicians from six centers across North India to fill-up a questionnaire containing 25 questions. They found Only one-fourth of the participants claimed that they always prescribed Essential Medicine; no one could correctly count the number of drugs / drug combinations in the Indian Essential Drug list; only 15.1% of the clinicians wrote the generic names of drugs on the prescription slip; about one-third of clinicians were not fully aware about the adverse effects, drug interactions, and contraindications of the drugs they prescribed; about 83% of physicians admitted to relying on information from Medical Representatives.

A study by Hooli Tanuja *et al.*[10] was a cross-sectional, questionnaire based study conducted among JRs at a tertiary care hospital in South India in June 2015. They found the knowledge related to essential medicines list (EML), P drugs and schedule H drugs was limited. Most of the JRs frequently prescribed drugs from EML. Trade name and newer drugs were prescribed around 50%. The prescription of FDCs from EML was very low (6%).

A multicentric, cross‑ sectional, and questionnaire‑ based study was conducted among 308 FMGs during the internship orientation program. They observed, Nearly 31% of FMGs did not know that the generic drugs are equally efficacious as branded drugs whereas 53% were in support of pregnant female should not consume any drug. Nearly 58% of FMGs were confused about deciding the dose in children and 18% were in favor of using antibiotics in common cold. Almost 55% of FMGs were disagree for adjusting the dose of antidiabetic drugs by patient depending on the meal taken whereas 12% were not aware of the importance of compliance of antihypertensive drugs and 40% were supporting the safety of fruits in chronic renal disease.[11]

A Study was carried out by Chaitali S. *et al.* [12] in 100 respondents including faculty members and junior residents (JRs) in a tertiary-care teaching hospital. They found Nearly 87% respondents were aware about RUM, but only 83% practice it. Though 30% respondents practiced P-drug concept only 1% were aware about STEP criteria. Practicing P‑ drug concept was significantly more in JRs compared to faculty members (P < 0.0001). None of the respondents were aware about the number of drugs in National List of EMs of India.

Conclusion

There was improvement in knowledge of general practitioners regarding rational use of medicine after the workshop. Some of the areas like use of antibiotic in common cold, use of steroids and drug doses in children needs to be revised.

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