

RESEARCH ARTICLE

Assignment-based learning of essential medicine list concepts among undergraduate medical students

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ABSTRACT

Background: The concepts of essential medicines and rational drug therapy are necessary to be understood undergraduate students. **Aims and Objectives:** (i) To make the second MBBS students aware regarding essential medicine lists (EMLs) through “student assignment.” (ii) To find out differences between 18th and 19th World Health Organization EMLs. **Materials and Methods:** The assignment-based activity was conducted in pharmacology theory lectures of the fifth semester MBBS batch at Pramukhswami Medical College, Gujarat. A total of 98 undergraduate and four postgraduate students participated in the activity. Students were divided into 19 groups and assigned different categories of EMLs. All the groups were asked to study the assigned categories and prepare the information regarding the 18th and 19th EMLs for presentation in the next session. Descriptive statistics were used to analyze the data. **Results:** Of 19 groups, four groups submitted the answers through WhatsApp on the same day of assignment. However, only one among the four groups submitted complete and correct answers. Among all groups, presentation of five groups was either incomplete or incorrect. There are total 30 categories in both 18th and 19th EMLs. There are total 409 drugs including 27 fixed-dose combinations (FDCs) in the 19th EML as compared to 377 drugs including 24 FDCs in the 18th EML. However, three new subcategories were added in the 19th EML. **Conclusion:** This EML-based activity needs to be implemented and repeatedly practiced for the undergraduate MBBS students to make them understand P-drug concept, rational use of medicines now during the student life and also in future during their professional life.

KEY WORDS: Essential Medicine List; Undergraduate Activity; Rational Drug Therapy


INTRODUCTION

The essential medicines are those that satisfy the priority healthcare needs of the population. They are available within context of functioning health system at all time, in adequate amount, in appropriate dosage form, with assured quality, adequate information, and affordable price. They are selected

to fulfill the real need of the majority of the population in diagnostic, prophylactic, therapeutic, and rehabilitative services using criteria of risk-benefit ratio, cost-effectiveness, quality, practical administration, as well as patient compliance and acceptance.^[1]

The concept of essential medicines was pioneered by the World Health Organization (WHO) in 1977 with the introduction of the first essential medicines list (EML). The list has been revised every 2 years since then.^[2] The 18th EML was introduced in April 2013. Recently, the 19th EML was introduced in April 2015.^[3]

As per the Medical Council of India regulations on “Graduate Medical Education,” the undergraduate must demonstrate

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following competencies in the subject of pharmacology.^[4]

- Knowledge about essential drug concept and list, commonly used drugs and an understanding of the pharmacologic basis of therapeutics.
- Ability to select and prescribe medicines based on clinical condition and the pharmacologic properties, efficacy, safety, suitability, and cost of medicines for common clinical conditions of national importance.

Therefore, it is necessary to understand the concept of essential medicines and rational drug therapy for undergraduate students. These concepts should be included in pharmacology teaching.

This article presents one method of imparting knowledge to the second MBBS students about the concept of EML.

Objective

- To make the second MBBS students aware regarding EMLs through “student assignment.”
- To find out differences between 18th and 19th WHO EMLs.

MATERIALS AND METHODS

The permission of the institutional ethics committee was taken. The assignment-based activity was conducted in pharmacology theory lectures of the fifth semester MBBS batch during September 2015 at Pramukhswami Medical College, Karamsad, Gujarat. Ninety eight students participated in the activity. Four postgraduate students worked as facilitators.

In the First Session of Activity

Introduction to the WHO EMLs was given through didactic lecture. Students were told about importance of the WHO EML. All the students were divided into 19 groups (comprising 4–8 students per group) for the assignment. The groups were assigned different categories of EMLs. We tried to allot equal number of drugs per student of the group and everyone was given equal opportunity to participate in the exercise. All the groups were asked to study the assigned categories and prepare the following information regarding the 18th and 19th EMLs for presentation in the next session.

- Total number of drugs in assigned category.
- Any addition or deletion of drug/subcategory/category in the 19th EML compared to the 18th EML.

One week was given to complete this task. Groups were supposed to present the answers in next session and submit the written copy to the department. Students were encouraged to submit the answers on the same day through WhatsApp also. The suitable reward was announced for the group who

submit the correct answers through the WhatsApp on the first rank. During 1 week, postgraduate students also prepared and compiled all the answers.

In the 2nd Session of Activity

The group representatives presented and submitted the answers in the presence of postgraduate students and faculty. The answers given by the undergraduate students were cross-checked by postgraduate students. Participation and involvement of each undergraduate student was ensured by postgraduate students during the 2nd session at the time of presentation and submission of exercise.

Descriptive statistics were used to analyze the data. For convenience, the drugs which come under multiple categories were counted separately in each category to see any difference between the two EMLs. However, for the total number, those drugs were counted once only.

RESULTS

A total of 19 groups were formed, each comprising 4–8 students. Of 19 groups, four groups submitted the answers through WhatsApp on the same day of assignment. However, only one among the four groups submitted complete and correct answers. During the second session, all the groups presented the answers. Among these, presentation of five groups was either incomplete or incorrect.

There are total 30 categories in both 18th and 19th EMLs. None of the categories was added or deleted in the 19th EML. There are total 409 drugs including 27 fixed-dose combinations (FDCs) in the 19th EML as compared to 377 drugs including 24 FDCs in the 18th EML. However, three new subcategories were added in the 19th EML [Table 1].

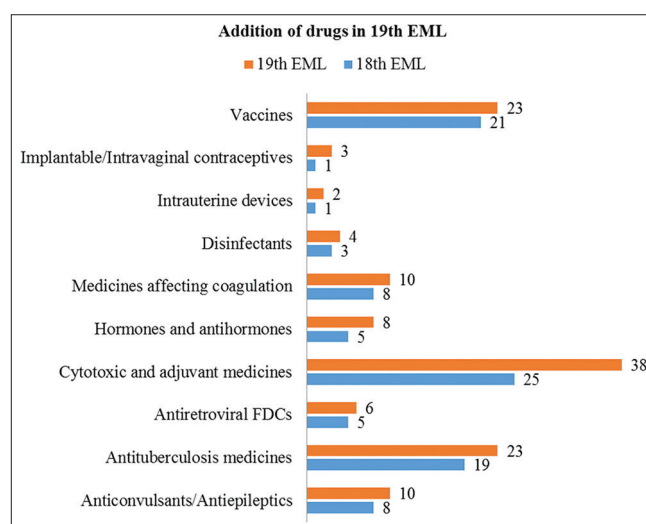


Figure 1: Number of drugs added in the 19th essential medicine lists

Various new drugs were added in the 19th EML in existing categories [Figure 1 and Table 2].

Few drugs were deleted from the 18th EML [Table 2].

Total three FDCs were added in the 19th EML:

- Abacavir + Lamivudine in subcategory 6.4.2.3 - Protease inhibitors.
- Ledipasvir + Sofosbuvir in subcategory 6.4.4.2.5 - Other antiviral.
- Ombitasvir + Paritaprevir + Ritonavir in subcategory 6.4.4.2.5 - Other antiviral.

Drugs mentioned below were already present in the 18th EML, but their additional formulations were added in the 19th EML.

Drugs with Additional Formulations in the 19th EML

- Efavirenz tablet - 200 mg (scored) in category 6.4.2.2.
- Ferrous salt + folic acid tablet - 60 mg elemental iron + 2.8 mg folic acid in category 10.1.
- Folic acid tablet - 400 microgram in category 27.
- Levonorgestrel-releasing intrauterine system dosage: 52 mg of levonorgestrel is contained in reservoir of intrauterine system in category 18.3.3.
- Nevirapine tablet - 50 mg (dispersible) in category 6.4.2.2.
- Omeprazole powder for injection - 40 mg in vial in category 17.1.
- Valproic acid INJECTION (solution for injection) - 100 mg/ml in category 5.

Three drugs which were already present in the 18th EML, but their new indications were added in the 19th EML. In category 8.1 (immunosuppressive medicines), azathioprine was added in complementary list for the treatment of multiple sclerosis.

Table 1: New subcategories added in the 19th EML

New subcategories added in 19 th EML		
6.4.4. Antihepatitis medicines		
6.4.4.1. Medicines for hepatitis B		
6.4.4.1.1. Nucleoside/nucleotide reverse transcriptase inhibitors	Entecavir	TDF
6.4.4.2. Medicines for hepatitis C		
6.4.4.2.1. Nucleotide polymerase inhibitors	Sofosbuvir	
6.4.4.2.2. Protease inhibitors	Simeprevir	
6.4.4.2.3. NS5A inhibitors	Daclatasvir	
6.4.4.2.4. Non-nucleoside polymerase inhibitors	Dasabuvir	
12.5.1 Antiplatelet medicines	Acetylsalicylic acid	Clopidogrel
12.5.2 Thrombolytic medicines	Streptokinase	

EML: Essential medicine lists, TDF: Tenofovir disoproxil fumarate

In category 5 (anticonvulsants/antiepileptics), new indication of midazolam was for buccal administration when solution for oromucosal administration is not available. Misoprostol was indicated for the treatment of postpartum hemorrhage, in category 22.1 (oxytocics).

Table 2: Name of drugs added and deleted in the 19th EML

Category number	Addition	Deletion
5	Midazolam Complementary: Valproic acid	
6.2.4	Rifapentine Complementary: Bedaquiline Delamanid Linezolid	
6.4.2.1		Didanosine Emtricitabine
6.4.3	Valganciclovir	Pegylated interferon alfa (2a/2b)
8.2	All-trans retinoic acid Bendamustine Capecitabine Cisplatin Fludarabine Filgrastim Gemcitabine Imatinib Irinotecan Oxaliplatin Rituximab Trastuzumab Vinorelbine	
8.3	Complementary: Anastrozole Bicalutamide Leuprorelin	
10.2	Enoxaparin Complementary: Desmopressin	
15.2	Alcohol-based hand rub	
18.3.3	LNG-IUS	
18.3.5	Etonogestrel-releasing implant Progesterone vaginal ring	
19.2		Anti-D immunoglobulin Antirabies immunoglobulin Antitetanus immunoglobulin
19.3	HPV vaccine Tick-borne encephalitis vaccine	

EML: Essential medicine lists, LNG-IUS: Levonorgestrel-releasing intrauterine system

DISCUSSION

The essential medicine concept serves as the basis for the WHO medicines strategy in operation today. Evidence-based list within the WHO will help to the countries in making their own list. It has become a global concept used by governments and healthcare providers worldwide.^[1] The latest, the 19th EML was introduced in April 2015. Availability of essential medicines will undoubtedly lead to more rational use of medicines in clinical practice.

The core list presents a list of minimum medicine needs for a basic healthcare system, listing the most efficacious, safe, and cost-effective medicines for priority conditions. A total of 15 drugs were added to core list of the 19th EML.^[3]

The complementary list presents essential medicines for priority diseases, for which specialized diagnostic or monitoring facilities, specialist medical care, and specialist training are needed. A total of 21 drugs were added to complimentary list of the 19th EML.^[3]

Although lecture-based learning has its own advantages, it was perceived as lacking context and there was little engagement with the material. It was difficult to engage students and measures the extent to which the learning outcomes were achieved.^[5]

On the contrary, activity-based learning is a learning method in which students are engaged in the learning processes in which students actively participate in the learning experience rather than sit as passive listeners. These activities may help in developing skills such as teamwork, communication, leadership, problem-solving, and making them lifelong learners. Hence, this module was designed to allow students to appreciate the importance of EML. It can help students to apply the same in their future clinical practice.

Majority of the undergraduate students had participated in this EML-based activity actively and enthusiastically. They had provided the verbal feedback that this type of activity is interesting and informative.

CONCLUSION

This EML-based activity needs to be implemented and repeatedly practiced for the undergraduate MBBS students to make them understand P-drug concept, rational use of medicines now during the student life and also in future during their professional life. This type of study indicated further need of emphasis on EML-related teaching and training. This type of studies can be at the best sentinel surveillance.

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