AN EVALUATION OF PRESCRIPTION WRITING AND RATIONAL PRESCRIBING IN THIRD-YEAR MEDICAL STUDENTS, FACULTY OF MEDICINE, CHULALONGKORN UNIVERSITY

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ABSTRACT

The main objective of this research is to study prescription writing and rational prescribing by third-year medical students, Faculty of Medicine, Chulalongkorn University. This study was designed as a cross-sectional descriptive study. Five case scenarios were presented to 174 third-year medical students who had to prescribe a rational drug for each patient. Prescription forms were marked, then the knowledge scores were recorded and analyzed using descriptive statistical method. Most subjects' knowledge scores could be classified at the level of 'fair'. Only one quarter of all subjects acquired 'high knowledge' scores. The issue is to consider how to enhance their competencies in prescription writing and rational prescribing. Further detailed research study is recommended in assessment in the clinical years of students' competency in prescribing for each group of drugs.

Key words: prescription writing, rational prescribing, knowledge score, medical student, competency

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การประเมินการเขียนใบสั่งยาและการสั่งใช้ยาอย่างสมเหตุสมผล ในกลุ่มนิสิตแพทย์ชั้นปีที่ 3 คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

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บทคัดย่อ

วัตถุประสงค์หลักของการศึกษานี้เพื่อศึกษาการเขียนใบสั่งยาและการสั่งใช้ยาอย่างสมเหตุสมผลโดยนิสิตแพทย์ชั้นปีที่ 3 คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย โดยได้ดำเนินการวิจัยแบบการศึกษาเชิงพรรณนาแบบตัดขวาง โดยได้กำหนดให้นิสิตแพทย์ชั้นปีที่ 3 จำนวน 174 คนสั่งยาอย่างสมเหตุสมผลให้กับ 5 กรณีศึกษา นำใบสั่งยามาตรวจให้คะแนน บันทึกและวิเคราะห์แต้มประเมินความรู้ด้วยวิธีทางสถิติเชิงพรรณนา ผลการศึกษาพบว่าแต้มประเมินความรู้ของนิสิตแพทย์ส่วนใหญ่สามารถจำแนกอยู่ในเกณฑ์ปานกลาง มีเพียง 1 ใน 4 ของนิสิตแพทย์ที่มีแต้มประเมินความรู้อยู่ในเกณฑ์ดี ประเด็นสำคัญที่จะต้องพิจารณาคือจะพัฒนาความสามารถของนิสิตแพทย์ในการเขียนใบสั่งยาและการสั่งใช้ยาอย่างสมเหตุสมผลได้อย่างไร ทั้งนี้ควรมีการศึกษาในรายละเอียดเกี่ยวกับการสั่งใช้ยาแต่ละกลุ่มของนิสิตแพทย์ในชั้นคลินิกต่อไป

คำสำคัญ: การเขียนใบสั่งยา, การสั่งใช้ยาอย่างสมเหตุสมผล, แต้มประเมินความรู้, นิสิตแพทย์, ความสามารถ

INTRODUCTOIN

A prescription is a written instruction which is issued by a doctor, and which enables a pharmacist to prepare medicines for patients[1]. Accurate communication with the pharmacist is essential if the patient is to receive the prescribed medicinal drugs[2]. Although a prescription can be considered as a letter with many important messages, there are still possibilities for errors, which frequently occur as a result of illegible handwriting[1]. However, the doctor who, although prescribing drugs in legible handwriting and not causing any errors in prescription writing, may still be considered as an irrational prescriber. There are three dimensions in which basic knowledge is needed for rational prescribing: the disease, the patient and the drug[3]. Pisonthi[4] has proposed 11 steps for promoting a rational use of drugs. These are: consideration for indication, efficacy, risk, cost, prescription writing, patient compliance, patient education, patient acceptance, appointment for follow up, result of treatment and conclusion of treatment.

Irrational prescribing is a global problem. In teaching hospitals, which are expected to be role models for students, there are a lot of studies showing the inappropriate use of antibiotics[5]. Moreover, there are a number of reports about irrational prescribing. These include polypharmacy, unnecessarily expensive medication and the use of drugs that are not related to the diagnosis[5].

Since medical students in the Faculty of Medicine of Chulalongkorn University have been taught how to write prescriptions with minimum errors and how to prescribe drug rationally when they were third-year medical students, an evaluation of prescription writing and rational prescribing was done to ensure their competencies after completing the subject of pharmacology at the end of third year.

MATERIALS AND METHOD

A cross-sectional descriptive study was designed for this pilot test. The sample included all 174 third-year medical students of the 1998 class. Respondents were surveyed at the end of Block Degeneration and Diseases of Aging 1998. This was the last session of teaching and learning in the subject of pharmacology in that academic year.

As a part of the summative evaluation, 5 short case scenarios (diagram 1A) with a drug list (diagram 1C) were presented to the subjects. Each subject had to choose the most appropriate drug for each scenario and prescribe it correctly using a standard prescription form. The prescription forms were then marked and double-checked using answer keys which had been provided (diagram 1B). Knowledge scores were recorded and analyzed using descriptive statistical method.

RESULTS

There were 91 female and 83 male subjects. The males' average score was 24.58 of 35 (SD = 5.65) and females' score was 23.28 of 35 (SD = 5.76). The scores were classified by modified criteria of the Ministry of Education (0-49 %: Low; 50-79 %: Fair; and 80 % upwards: high). The classification revealed that knowledge scores of 59.77 % of total subjects could obtain the level of 'fair': 59.04 % for male and 60.44 % for female. 25.29 % of total subjects had a high level of knowledge: 21.67 % for male and 28.57 % for female. Then, there were 14.94 % of total subjects had a low level of knowledge: 19.28 % for male and 10.99 % for female (see Table 1).

From 870 items of prescription (174 medical students and 5 case scenarios each), it was found that only 35.86% of total items were considered as 'rational prescribing without any prescription errors'. Almost one-fourth of all prescription (24.48%) was classified as 'irrational drug selection' while 23.79% were marked as 'inappropriate dose prescribing'. The other irrational prescribing and prescription errors detected were: incomplete prescription writing, incorrect spelling, incorrect word order, inappropriate use of trade name, problems with specifying drug strength and drug prescribing - before/after meal and inappropriate frequency (see Table 2).

DIAGRAM 1. EVALUATION GUIDELINE IN THIS STUDY.

A. Case scenarios
1. A 15 year old female (40 kg) with history of fever, flushing and headache for 1 day. Her body temperature was 38.3 degree Celsius. Other physical examinations were within normal limit. She was diagnosed as acute febrile illness R/O Dengue hemorrhagic fever.
2. A 20 kilogram child who cannot take any oral pills with indication for antipyretic drug.
3. A 58 year old female with indication for daily baby aspirin.
4. A 35 year old male with indication of NSAIDs use. He stated that he would like to take medicine only once a day.
5. A 25 year old female whose illness was diagnosed as peptic ulcer.

B. Checking criteria
1. 7 marks for each case scenario
2. –1 mark for each prescription error and irrational prescribing
3. Irrational drug selection was set as 0 mark

C. Drug list

GENERIC NAME	TRADE NAME	List	Dosage form	Strength / Size	Price (Baht)
Acetaminophen	PARACETAMOL	1	Tab	500 mg	0.5
	CETAMOL	1	Tab	325 mg	0.5
	PARACETAMOL	1	Syr	120 mg/5 ml, 60 ml	10
Acetylsalicylic acid	ASPIRIN	1	Tab	81, 300 mg	0.2, 0.3
	ASPENT M	2	Tab	60 mg	0.4
Amoxycillin	AMOXYCILLIN	1	Cap	250, 500 mg	1.7, 3
Atorvastatin	LIPIDTOR	$1R_2$	Tab	10 mg	43.5
Chlorpheniramine	CHLORPHENIRAMINE	1	Tab	4 mg	0.3
Cholestyramine	QUESTRAN	2	Pdr	4 g	30
Dicloxacillin	DIXOCILLIN	1	Cap	250 mg	2.5
Furosemide	FURETIC	1	Tab	40 mg	0.4
	LASIX	2	Tab	40, 500 mg	3.6, 31
Gemfibrozil	HIDIL	$1R_1$	Cap	300, 600 mg	3.3, 4.5
Hydroxyzine	HIZIN	1	Tab	10 mg	0.8
Ibuprofen	BRUFEN	1	Tab	200 mg ; 400 mg	1, 2
Indomethacin	INDOCID	1	Cap	25 mg	1.7
Loperamide	IMODIUM	2	Cap	2 mg	6.1
	LOMIDE	1	Cap	2 mg	1
Loratadine	LORSEDIN	1	Tab	10 mg	3.2
Norfloxacin	NORXACIN	1	Tab	200, 400 mg	3, 5
Piroxicam	FELDENE	2	Cap	10 mg	10.2
Ranitidine	RANITIDINE	1	Tab	150 mg, 300 mg	2.5, 5.9
Salbutamol	VENTOLIN	2	Tab	2 mg	1.8
	VENTOLIN	1	Nebule	2.5 mg/2.5 ml	20
Theophylline, sustained release	THEO-DUR	1	Tab	200 mg	3.2

Table 1 Number of subjects classified by their knowledge scores using modified criteria of the Ministry of Education

Levels	Male	Female	Total
High (80 – 100%)	18 (21.67%)	26 (28.57%)	44 (25.29%)
Fair (50 – 79%)	49 (59.04%)	55 (60.44%)	104 (59.77%)
Low (0 – 49%)	16 (19.28%)	10 (10.99%)	26 (14.94%)

Table 2 Percentage of each type of irrational prescribing and prescription error

Details	Percentages*
• Irrational drug selection	24.48%
• Inappropriate dose prescribing	23.79%
• Incomplete prescription writing	9.08%
• Incorrect spelling	4.14%
• Problems with word order in prescription	2.53%
• Inappropriate use of trade name	2.41%
• Problems with specifying drug strength	2.07%
• Problems with drug prescribing: before/after meal	1.95%
• Inappropriate frequency of drug prescribing	1.38%

* Some prescriptions contained more than one prescription error.

DISCUSSION

As they had just completed their studies in pharmacology, it was expected that the group of third-year medical students would be proficient in prescription writing and rational prescribing. However, this study demonstrated that most of them obtained scores showing only a fair level of knowledge. Only one quarter of all subjects acquired high knowledge scores. Although, five case scenarios could not be considered representative of pharmacology as a whole, this unpleasant performance was still a considerable problem.

The main issue was to identify whether it would be possible to enhance their competencies in prescription writing and rational prescribing. It can be considered that a medical school has many roles in promoting rational prescribing. In particular, it can give both knowledge and protection to medical students against the disturbing influences they will be exposed to in their professional life. This can be done by setting a curriculum stressing critical thinking; by giving a correct role model in prescribing and by arranging enough teaching experience in rational use of drugs. In many teaching hospitals, most time is spent emphasizing the need to make a correct diagnosis with much less time spent on discussion of the rational treatment. Thus, the students' rational thinking does not occur.

Further detailed research study should be conducted to examine the students' knowledge in clinical years of prescription writing and rational prescribing for each drug group. Now, it is time to reconsider whether graduates from our medical school have enough proficiency in prescription writing and rational prescribing.

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