UKM Teaching and Learning Congress 2011

Evaluation of case write-up: Assessment of prescription writing skills of fifth year medical students at UKM Medical Centre

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Abstract

Prescription writing is a core competency of a newly qualified doctor. Many authors found that medical students were unprepared to prescribe drugs. This study was aimed to identify the level of competency in prescription writing skills among fifth year UKM medical students. Case write-ups from several rotations were evaluated. The data were divided into patient detail errors and medication errors. The study showed lack of competency in prescription writing skills. Non-standardized prescription template and lack of feedback have also been identified as weakness in this exercise. Improvement of case write-up exercise and introduction to prescription writing are needed for improvement.

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Keywords: Clinical pharmacology and therapeutics; medical errors; medication errors; prescription errors; prescription writing skills

1. Introduction

Prescription writing is a core competency of newly qualified doctors. It is defined as an instruction from a prescriber to a dispenser. Each prescriber must be able to prescribe drugs safely and effectively to the designated patients in order to prevent medical errors. Prescribing is a complex and challenging duty that requires diagnostic skills, knowledge of medicines, communication skills and understanding of the principles of clinical pharmacology, appreciation of the risk, uncertainty and experience (Likic et al, 2009).

Medical error is defined as preventable adverse reaction towards patients which include errors in diagnosing, prescribing, dispensing or administration of treatment plans. Medical errors have been major issues lately since Aronson (2006) highlighted the cause of medical errors. These preventable medical errors are one of the leading causes of death around the world. Studies conducted in the United States of America, Australia, Netherlands and United Kingdom stated that medication prescribing errors were common and could cause harm to patients.

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Studies by Florida Health Care Coalition (2004) concluded that 500,000 medication prescribing errors occur daily in the USA and contributed to 10% of all hospital admissions.

Aronson et al., (2009) defined prescription as “a written order which includes detailed instructions of what medicine should be given, to whom, in what formulation and dose, by what route, when, how frequently, and for how long”. Therefore, they defined prescription error as “a failure in the prescription writing process that results in a wrong instruction about one or more of the normal features of a prescription”. They further elaborated that the “normal features” are listed as identity of the patient, name of drug, the formulation and dose, the route of administration, timing, frequency and duration of the treatment.

Prescription errors can be classified as physician errors, system failures and education errors. In physician errors component, Kuan et al., (2002) stated that the attitude of the physician could be the cause of prescription errors. The physician seemed to be in a hurry and unwilling to spend extra time writing clear and safe prescription to the patients.

Secondly for system failure, Aronson et al., (2006) found out that every National Health Service (NHS) Trusts has its own in-patient prescribing sheet and suggested that it should be a single standardized prescribing sheet for all NHS Trusts. With different prescribing sheets, new doctors will need some time to familiarize with the prescribing sheet. Nowadays more mistakes were made due to drugs are becoming complex, new side effects of new drugs, complex drug-to-drug interaction, higher patient population of multi-diseased patients and high waiting list of patients especially in outpatient clinics (Keller et al, 2004).

Education errors have also been highlighted. Aronson (2006) has identified that one of the reasons why the junior doctors made many prescribing errors were due to unpreparedness among the students in term of clinical pharmacology and therapeutics. Warholak et al., (2011) has highlighted in University of Arizona, medical students received approximately 115 hours of lecture-based pharmacology and therapeutics instructions compared to pharmacy students which received 250 hours. In a study conducted by Heaton et al., (2008), they concluded that most of the medical students stated mode of learning as ‘opportunistic learning during clinical attachments’. Majority of the medical students considered the amount of teaching in clinical pharmacology and therapeutics was ‘too little’ or ‘far too little’ and more than half disagreed that their assessment ‘thoroughly tested knowledge and skills’.

Thus, this study is looking at the prescription writing skills of medical students during fifth year. Prescription writing skills is currently not integrated into the UKM medical degree curriculum. We will be looking at the physician (in this case the medical students) error and education error which is highlighted by the lack of teaching specifically on prescribing medications. Evaluation of prescription writing skills of UKM medical students is needed in order to recognize and identify the problems and to suggest methods to overcome the situation.

2. Methodology

Fifth year medical students of Faculty of Medicine, Universiti Kebangsaan Malaysia attending academic session 2010-2011 consisted of 225 students with 79 male students and 146 female students. All students underwent five major postings during their fifth year, namely medicine, surgery, paediatrics, obstetrics and gynaecology and family medicine combined with emergency medicine. Each rotation lasts for seven weeks and each student was required to produce case write-ups as their continuous assessment.

Case write-up is a report on a patient’s progress from admission until the patient was being discharged. The students were advised to review uncomplicated case for their case write-up. The case write-up has its own format which is divided into two components, core clinical component and professional component. The core clinical component consist of history, physical examination, investigation, diagnosis and differential diagnoses, patient’s problem, management and progress, preventive and community health, discharge summary, referral letter, prescription and references. In the professional component, it consists of lifelong learning, professional judgment, communication issues, ethical, spiritual, traditional and alternative medicine issues and critical appraisal chapters. All students were required to submit one or two case write-ups in order to complete their rotation requirements.

For this study, case write-ups which contain chapter on mock prescription within the core clinical component were collected and evaluated. The postings were surgery, paediatrics, and obstetrics and gynaecology. This study is a cross-sectional, descriptive and comparative using purposive sampling method to collect the students’ case write-ups and was conducted from November 2010 to April 2011.
The inclusion criteria for this study were (1) fifth year medical students of Faculty of Medicine, Universiti Kebangsaan Malaysia session 2010/2011; (2) students who agreed to submit their case write ups and; (3) case write-ups which contained a chapter on prescription. The exclusion criteria were (1) students who did not consent to this study and; (2) students who refused to submit their case write-ups.

The data collected in this study will be recorded into a research checklist based on WHO and BNF guidelines. Data collected were divided into two main categories, patient’s detail error and medication error. Patient’s detail errors consist of patient’s name, age, registration number, date of prescription, prescriber’s name, prescriber’s signature and clinic/department/ward. Medication errors consist of drug name, route of administration/dosage form (e.g. tablet, capsule, intramuscular injection and subcutaneous injection), dosage, frequency and duration. Data was analysed by using SPSS Version 19.0. Data with \( p \) value of \(<0.05\) was taken as significant.

3. Results

3.1 Patient detail errors

Out of 225 medical students of Faculty of Medicine, UKM, 72 case write-ups were collected. For posting categories, 27 case write-ups were from surgery posting, 33 case write-ups from paediatrics posting and 12 from obstetrics and gynaecology posting.

| Domain                  | Frequency | Percentage (%) |
|-------------------------|-----------|----------------|
| Patient’s name          | 4         | 5.6            |
| Age                     | 42        | 58.3           |
| Registration Number     | 6         | 8.3            |
| Date of Prescription    | 8         | 11.1           |
| Prescriber’s Name       | 20        | 27.8           |
| Prescriber’s Signature  | 16        | 22.2           |
| Clinic/Department/Ward  | 24        | 33.3           |

Table 2. Frequency and percentages of patient detail error between postings surgery, paediatrics, and obstetrics and gynaecology

| Domain                  | Surgery (n=27) | Paediatrics (n=33) | Obs & Gynae (n=12) | \( P \) value (<0.05) |
|-------------------------|----------------|--------------------|--------------------|------------------------|
| F                       | %              | F                  | %                  |                        |
| Patient’s name          | 2              | 7.4                | 0                  | 0.085                  |
| Age                     | 3              | 11.1               | 32                 | 0.000                  |
| Registration Number     | 2              | 7.4                | 1                  | 25.0                   |
| Date of Prescription    | 2              | 7.4                | 0                  | 50.0                   |
| Prescriber’s Name       | 4              | 14.8               | 11                 | 41.7                   |
| Prescriber’s Signature  | 11             | 40.7               | 0                  | 41.7                   |
| Clinic/Department/Ward  | 2              | 7.4                | 19                 | 57.6                   |

3.2 Medication Errors

In this study, one medication is equated to one prescription. There were 209 prescriptions written in 72 case write-ups by the students. For each posting, surgery consisted of 91 prescriptions followed by paediatrics with 69 prescriptions and lastly 49 prescriptions in obstetrics and gynaecology postings.

| Domain         | Frequency | Percentage (%) |
|----------------|-----------|----------------|
| Drug Name      | 8         | 3.8            |
| Route/form     | 23        | 11.0           |
| Dosage         | 19        | 9.1            |
4. Discussion

This study has shown that the UKM fifth year medical students have low overall level of competency in prescription writing skills. It was shown that the students made the highest mistakes in patients’ age (58.3%) while the least error was patient’s name (5.6%) in the patient detail error section (see Table 1). In the patient detail error section, there were significant differences seen in age ($p<0.000$), date of prescription ($p<0.000$), prescriber’s signature ($p<0.000$) and clinic/department/ward ($p<0.000$) between postings of surgery, paediatrics, and obstetrics and gynaecology (see Table 2). In medication error section, duration is the highest (27.8%) (see Table 3). For other components, which were patient’s name, registration number and prescriber’s name, no significant difference was seen from the three postings. For medication error section, there were significant differences for route of administration/dosage form ($p=0.012$) and duration ($p=0.018$) errors in the postings of surgery, paediatrics, and obstetrics and gynaecology. For components of drug name, dosage and frequency, no significant difference was seen between these postings (see Table 4).

This study has highlighted multiple reasons for the above results. Firstly, each posting has its own prescription template in the case write-up. In surgical posting, the template is based on real prescription sheet used by UKM Medical Centre. The prescription sheet contain patient’s name, age, registration number, date of prescription, patient’s location, medication and prescriber’s details. In paediatrics posting, the template used did not allocate for patient’s age and only contain patient’s name, registration number, diagnosis, date of prescription and medication and prescriber’s details. For obstetrics and gynaecology, on the other hand, only provide empty lined space for the students to write their prescription. Hence, the medical students were unable to provide exact information of prescription for the patients in their case write-ups.

Secondly, each case write-up produced by the students need to be submitted to their respective supervisors via the respective department at the end of each postings. The case write-ups were marked and the marks contributed to the end of posting examination marks. After the marking process, the supervisors returned back all case write-ups to the students. Unfortunately, no feedback session was conducted with the students about their performance in their case write-ups. If this was done, the student would know what is right and wrong in their prescription writing exercise.

In the medical curriculum of UKM, there is no specific teaching module on prescription writing skills. Therefore, the study has shown the need of proper teaching module for prescription writing in order to prepare the students when they qualify to be doctors at the end of their final year.

5. Recommendations

One thing that needs to be improved was the standardized prescription template by implementing the usage of actual prescription pad for all wards. This will prevent further confusion when the students progress from one posting to another. Another thing that needs to be improved is the role of supervisors in every posting. It would be more beneficial if the supervisors can give feedback to the students for them to identify the strengths and the weaknesses in their respective case write-up. Inclusion of prescription writing skill module into the medical curriculum will be advantageous to prepare especially the final year students and equip them with knowledge of safe
and effective prescribing. These can be done either introduction of induction or refreshment programmes on yearly basis or to incorporate the prescription writing skill into the postings by qualified doctors with the assistance of the pharmacist.

6. Conclusion

Case write-up by the medical students has been sufficient as an alternative teaching and learning tool for prescription writing skills. Further modification on the implementation of prescribing will further improve students’ level of competency in prescription writing in preparation for them to be safe and effective young doctors.

Acknowledgement

We would like to thank Universiti Kebangsaan Malaysia for providing the research grant UKM-PTS-109-2010.

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