นิพนธ์ต้นฉบับ

Performance in laboratory medicine: a comparative study among 5 medical programs, Faculty of Medicine, Chulalongkorn University

วิโรจน์ ไววานิชกิจ[1]
นารา ผริตโภคี[2]

Abstract:

Performance in laboratory medicine: a comparative study among 5 medical programs, Faculty of Medicine, Chulalongkorn University

Wiwanitkit V, Paritpokee N.

Department of Laboratory Medicine, Faculty of Medicine,

Chulalongkorn University, Bangkok, 10330, Thailand

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Objective: *To evaluate the performance in laboratory medicine of medical students.*

Setting: *Department of Laboratory Medicine, Faculty of Medicine, Chulalongkorn University*

Design: *Comparative study*

Subjects: *All 3rd year medical students in academic year 2002, Faculty of Medicine, Chulalongkorn Univerity.*

Methods: *All students took and passed the same course, clinical pathology, taught by the same staff. All had the same laboratory experience in the same laboratory. The examination scores on knowledge, skill and attitude items of each student were collected then analyzed.*

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[1]M.D., Lecturer, [2]Associated Professor, Department of Laboratory Medicine, Faculty of Medicine, Chulalongkorn University, Bangkok, 10330
รับต้นฉบับวันที่ 5 กรกฎาคม 2545 รับลงตีพิมพ์วันที่ 8 พฤศจิกายน 2545

Results: *There were 201 subjects included in this study. There were 142 students from the conventional program, 17 students from the MESRAP program, 27 students from the CTPB program, 3 from Scientific Olympic program and 12 from the joint program with the Ministry of Public Health. Range of scores of the subjects was 22.87 to 44.38 (mean = 37.78 and SD = 3.92). Significant relations between level of score and sex and program was found.*

Conclusion: *The average total and skill examination scores of the Scientific Olympic program students were significantly higher than those of the other programs, except the conventional program. Background differences may explain this finding.*

Key words: *performance, program, medical student*

บทคัดย่อ:

วัตถุประสงค์: *เพื่อศึกษาระดับคะแนนของนิสิตแพทย์ในด้านอายุรกรรมห้องปฏิบัติการ*

สถานที่ทำการศึกษา: *ภาควิชาเวชศาสตร์ชันสูตร คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย*

รูปแบบการศึกษา: *การศึกษาเปรียบเทียบ*

กลุ่มที่ทำการศึกษา: *นิสิตแพทย์ชั้นปีที่ 3 คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย ทั้งหมด 201 คน ในปีการศึกษา 2545*

วิธีการศึกษา: *นิสิตทุกคนในการศึกษานี้ได้ผ่านการศึกษาและการฝึกปฏิบัติในรายวิชาเดียวกัน คือ รายวิชาพยาธิวิทยาคลินิก ได้ทำการรวบรวมข้อมูลคะแนนสอบภาคทฤษฎี การสอบทักษะ และคะแนนทัศนคติในการปฏิบัติงานที่ได้จากนิสิตแต่ละราย แล้วทำการวิเคราะห์*

ผลการศึกษา: *มีนิสิตจำนวน 201 คน ในการศึกษานี้ เป็นนิสิตในโครงการปกติจำนวน 142 คน เป็นนิสิตในโครงการแพทย์ชนบทจำนวน 17 คน เป็นนิสิตในโครงการผลิตแพทย์แนวใหม่จำนวน 27 คน เป็นนิสิตในโครงการโอลิมปิควิชาการ 3 คน และเป็นนิสิตในโครงการสำหรับผลิตแพทย์เพิ่มจำนวน 12 คน ช่วงของคะแนนของนิสิตอยู่ระหว่าง 22.87 ถึง 44.38 คะแนน ทั้งนี้พบความสัมพันธ์อย่างมีนัยทางสถิติสำหรับระดับคะแนนที่ได้กับเพศหรือโครงการการศึกษาของนิสิตแพทย์*

สรุป: *คะแนนโดยรวมและคะแนนด้านทักษะของนิสิตในโครงการวิทยาศาสตร์โอลิมปิคสูงกว่านิสิตในโครงการอื่น ๆ ยกเว้นโครงการปกติ ความแตกต่างทางพื้นฐานเดิมอาจเป็นเหตุผลสำหรับผลลัพธ์นี้*

คำสำคัญ: *ประสิทธิผล, โครงการ, นิสิตแพทย์*

Introduction

Laboratory medicine is an important subject that all graduate physicians should know and practice correctly. Medical students can develop their cognition and skills in learning laboratory medicine. Because medical students must perform in a real situation in the future, they should practice every laboratory procedure accurately. To evaluate the medical students after they finish the course of medical training is very important[1-2] in order to detect problems and plan for the future improvements.

The Faculty of Medicine, Chulalongkorn University is one of the biggest medical schools in Thailand with many programs for medical student in the faculty. There are many laboratory and medical skills taught in the curriculum of the faculty. Although there have been some reports on evaluation of medical training[3-4] of medical students of the faculty, there has been no specific report about evaluation of laboratory medicine training. Furthermore, the Faculty has a total of five programs and there has been no comparative study on the performance of the students for these different programs. Therefore, this study was undertaken to study the examination scores of medical students in laboratory medicine, to help improve laboratory medicine education for medical students.

Materials and methods

Study setting

This study was designed as a descriptive study aimed to study the examination scores of medical students in laboratory medicine. The subjects in this study were all 3rd year medical students who passed the training course in laboratory medicine in academic year 2002. Five programs of medical students can be categorized-the conventional program, Medical Education for Students in Rural Areas Project (MESRAP) program, Community-targeted Problem-Based (CTPB) program, Scientific Olympics Students program and the new joint program with the Ministry of Public Health to increase the number of physicians.

Subjects

All students took and passed the same course, clinical pathology, taught by the same staff. All had the same laboratory experience in the same laboratory. The details of clinical pathology include basic knowledge and skill in laboratory medicine including basic hematology, urinalysis and basicclinical chemistry. The contents of the subject follow the basic requirement of new graduated physician issued by Thai Medical Council[5]. The students who pass this subject are reported to have the basic knowledge on laboratory medicine and perform simple laboratory diagnostic tests.

Evaluation for the examination scores

The evaluation system of the course (total score = 50 points) consisted of three main items; a) multiple choice questions (MCQ) to evaluate basic knowledge-22 points, b) station questions according to learning objective to evaluate the basic skill-23 points and c) class attendance to evaluate the attitude-5 points, as set by the Department.

For the multiple choice questions, the students were assigned to answer 44 five-choice questions. A half point was given to the student in case that they gave the correct answer according to the key. For station questions, the students were assigned to pass a series of 23 stations of evaluation. At each station, one question on laboratory skill such as microscopic diagnosis, photo diagnosis or laboratory result interpretation was set. One point was given to the student of they gave the correct answer according to the key. For class attendance, the students were assigned to participate in all lecture and laboratory practice hours. One point was given to the students for each attendance of 20% of total study hours.

The score of each student was collected then analyzed. Descriptive statistical analysis was performed where appropriate. Comparison among groups of medical students was carried out using a significance level equal to 0.05. Comparison of average scores among all groups was performed using F-test.

Results

There were 201 subjects included in this study. There were 142 students (52 males and 90 females) from the conventional program, 17 students (9 males and 8 females) from the MESRAP program, 27 students (9 males and 18 females) from the CTPB program, 3 student from the Scientific Olympic Program (2 males and 1 female) and 12 students (7 males and 5 females) from the joint program. Range of score of all subjects was 22.87 (45.74%) to 44.38 (88.76%).

The average total score of conventional program students was 37.78 ± 3.92. The average total score of MESRAP program students was 35.36 ± 3.69, of CTPB program students 35.49 ± 3.57, of Scientific Olympic program students 39.09 ± 3.63, and of joint program students 36.56 ± 3.63. There were score significant differences among the programs ($P < 0.05$) (Table 1). The average total examination score of the Scientific Olympic program students was significantly higher than those of the other programs ($P< 0.05$), except the conventional program ($P > 0.05$). However, the average total examination score of the conventional score did not differ from those of any other programs. There was a significant relation between examination score and sex ($P = 0.01$) and between examination score and program of the students ($P < 0.05$). Female students (38.01 ± 3.46) had a significantly higher examination score than male (36.00 ± 4.31).

Table 1 Scores from examination

Program	Score(mean)		
	Knowledge score (= 23 points)	Skill score (= 22 points)	Total score* (= 50 points)
Conventional program	14.16 ± 2.10	18.62 ± 2.31	37.78 ± 3.92
MESRAP	13.10 ± 3.76	17.26 ± 2.89	35.36 ± 3.69
CTPB	13.27 ± 2.14	17.21 ± 2.08	35.49 ± 3.57
Scientific Olympic program	14.89 ± 2.11	19.20 ± 1.68	39.09 ± 3.63
Joint program	13.20 ± 1.85	18.37 ± 2.22	36.56 ± 3.63
Total	**13.91 ± 2.09**	**18.31 ± 2.37**	**37.78 ± 3.92**

* The total score was calculated by summation of the knowledge, skill and attitude scores. All students attended all classes and got the full 5 points, therefore, the attitude score was not presented in the table.

Concerning the examination scores on the three items (knowledge, skill and attitude), all subjects got full five points for class attendance. There was no significant difference of knowledge examination score among the five programs ($P > 0.05$). The average skill examination score of the Scientific Olympic program students was significant higher than those of the other programs ($P < 0.05$) except the conventional program ($P > 0.05$) (Table 1).

Discussion

Basic laboratory medicine is necessary for all physicians especially in primary heath care centers. Because good laboratory skills can help diagnose many diseases, all medical students should have this skill before their graduation. Due to the present concept that it is the duty of the medical school to produce the best product-the best physician, evaluation on ability of medical students is required.

In Chulalongkorn University, the Faculty of Medicine gives an important role to medical evaluation. Although there have been reports[3-4] about evaluation of medical training, they deal with the last year medical students. Since early detection of problems in education can provide good resolution, evaluation of the early period of education is useful.

In this study, an evaluation was done on pre-clinical year medical students from five different backgrounds, who had passed the same courses. The results can reflect the nature of the students better than results from a study performed on clinical year medical students, who have different experiences due to the differences in ward rotation.

The study revealed that there was significantly higher total and skill examination scores of the Scientific Olympic students compared to the MESRAP, CTPB and joint programs. According to this finding, development of laboratory knowledge in all groups did not differ.

However, limitations because of the backgrounds of the students in the MESRAP (rural background), CTPB (rural background) and joint programs (non medical science background) might be related to their poor skill compared to the Scientific Olympic students. Indeed, the Scientific Olympic students were trained in basic laboratory techniques in the past for scientific contests. This result matches the result of previous study, which stated that there were significant differences among programs of medical students[3-4]. However, since there are only a few students in the Scientific Olympic program, the generalizability of the results is limited.

Another interesting finding is that the female students presented higher scores than the males. This trend could be seen in the previous study as well. Maybe the female students pay more attention to the course than male[3-4]. According to the results of this study, the recommendation to set the more intense teaching such as the supplement are study hours for the MESRAP and CTPB is male.

Both laboratory and medical procedure skills are very important since these skills must be used in real medical practice with patients[5-6]. Good attitude is also important. Both laboratory and procedural skills should be well taught to medical students, and continuous evaluation recommended, concerning not only their knowledge but also their attitude and practical skills.

This study dealing with basic laboratory skills required of all graduate physicians does not consider other complicated laboratory skills for which much experience is required. Every medical procedure and laboratory skill of medical students should be evaluated[7] and corrected when there is a problem before they graduate, because in the present day it is the patient's right to get the best treatment[8]. It is the duty of all medical staff in the faculty to promote rationale and correct medical practice among their students.

Conclusion

A study of the examination scores of 201 medical students from 5 different programs of the Faculty of Medicine, Chulalongkorn University, was performed. The average total and skill examination score of the Scientific Olympic program students was significantly higher than those of the other programs except the conventional program. The importance of evaluation the medical students was discussed and recommendations made.

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