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Toward equity in education: academic performances of medical students in regular, MESRAP and problem-based programs

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Objective : *To compare the outcomes of MCQ and OSCE in the comprehensive examination of 6th year medical students of three academic programs: regular, MESRAP and CTPB.*

Design : *Descriptive study.*

Methods : *Scores of MCQ and OSCE in the comprehensive examination of the Academic Year 2001 were analyzed for the highest and lowest scores, arithmetic mean and standard deviation by Microsoft EXCEL program and tested for statistics difference among the examinees of the three programs by F-test and unpaired t-test.*

Results : *There were 176 sixth year medical students enrolled in the exam. 145 students were in the regular program; 19 in the MESRAP program; and 12 in the CTPB program. The MCQ total score was 299 from 13 clinical subjects, namely: Surgery, Medicine, Anesthesiology, Psychiatry, Forensic Medicine, Rehabilitation Medicine, Obstetrics and Gynecology, Pediatrics, Ophthalmology, Radiology, Orthopedic, Preventive and Social Medicine, and Otolaryngology. The highest MCQ score was 228 (76.00 %) and the lowest was 129 (43.00 %). The arithmetic mean was 183.71 (61.24 %) and the standard deviation was 17.26 (5.75 %). The arithmetic means of the regular, MESRAP*

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and CTPB programs were: 185.59, 175.21 and 174.42, respectively. When compared the mean scores among the three groups, the mean score of the regular program was higher than MESRAP and CTPB programs with the level of significance of 0.01 (p <.01). On average, all students could receive scores higher than 50 % in the 13 subjects, except Radiology in which they received 40.15 % on average. Regarding OSCE, the total score was 220 from 22 clinical stations. The highest score was 197.65 (89.84 %), and the lowest was 135.75 (61.70 %). The arithmetic mean was 169.87 (77.21 %) and the standard deviation was 12.84 (5.84 %). The arithmetic means of scores in the regular, MESRAP and CTPB programs were: 170.76, 168.09 and 161.94, respectively. When compared the mean scores among the three groups, there were no statistical difference.

Conclusion : *To fulfill their medical curriculum, students are required to pass both the MCQ and OSCE tests of the comprehensive examination. This descriptive study is aimed to compare both the MCQ and OSCE tests of the Comprehensive Examination of the Academic Year 2001. As for the 176 sixth year medical students of the Faculty of Medicine of Chulalongkorn University, who enrolled in the exam, 145 belonged to the regular program; 19, the MESRAP program; and 12, the CTPB program. There were 172 students who passed the examination and would obtain their degree., except 4 of them who failed the MCQ test (regular 2; MESRAP 2) and had to take a re-examination in the following 6 months.*

Keywords : *Comprehensive examination, Multiple-choice, MCQ, MESRAP, CTPB, PBL.*

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วัตถุประสงค์ : *เพื่อเปรียบเทียบคะแนนข้อสอบปรนัย และคะแนนสอบปฏิบัติการทางคลินิกแบบปรนัยวิชาเวชศาสตร์ทั่วไป ของนิสิตแพทย์ โครงการปกติ โครงการส่งเสริมการศึกษาแพทย์สำหรับชาวชนบท และโครงการผลิตแพทย์ร่วมระหว่างจุฬาลงกรณ์มหาวิทยาลัยและกองทัพอากาศ ชั้นปีที่ 6 ปีการศึกษา 2544*

รูปแบบการวิจัย : *การศึกษาเชิงพรรณนา*

วิธีการศึกษา : *คะแนนข้อสอบปรนัย และคะแนนสอบปฏิบัติการทางคลินิกแบบปรนัยวิชาเวชศาสตร์ทั่วไป ปีการศึกษา 2544 ถูกนำมาวิเคราะห์หาคะแนนสูงสุด คะแนนต่ำสุด คะแนนเฉลี่ย และค่าเบี่ยงเบนมาตรฐาน ด้วยโปรแกรมไมโครซอฟท์เอ็กเซล และทดสอบหาความแตกต่างทางสถิติระหว่างตัวแปรโดยการทดสอบเอฟ และการทดสอบที*

ผลการศึกษา : *นิสิตแพทย์ ชั้นปีที่ 6 จำนวน 176 คน เป็นนิสิตแพทย์โครงการปกติ จำนวน 145 คน, โครงการส่งเสริมการศึกษาแพทย์สำหรับชาวชนบท จำนวน 19 คน และโครงการผลิตแพทย์ร่วมระหว่างจุฬาลงกรณ์มหาวิทยาลัยและกองทัพอากาศ จำนวน 12 คน ข้อสอบปรนัย วิชาเวชศาสตร์ทั่วไป ประกอบด้วย 13 รายวิชาได้แก่ ศัลยศาสตร์ อายุรศาสตร์ วิสัญญีวิทยา จิตเวชศาสตร์ นิติเวชศาสตร์ เวชศาสตร์ฟื้นฟู สูติศาสตร์-นรีเวชวิทยา กุมารเวชศาสตร์ จักษุวิทยา รังสีวิทยา ออร์โธปิดิกส์ เวชศาสตร์ป้องกันและสังคม และโสต นาสิกส์ ลาริงซ์วิทยา จากคะแนนเต็ม 299 คะแนน คะแนนสูงสุดเท่ากับ 228 คะแนน หรือร้อยละ 76.00 คะแนนต่ำสุดเท่ากับ 129 คะแนนหรือร้อยละ 43.00 คะแนน เฉลี่ยเท่ากับ 183.71 คะแนนหรือร้อยละ 61.24 และค่าเบี่ยงเบนมาตรฐานเท่ากับ 17.26 หรือร้อยละ 5.75 สำหรับคะแนนเฉลี่ยนิสิตโครงการปกติ โครงการส่งเสริมการศึกษาแพทย์สำหรับชาวชนบท และโครงการผลิตแพทย์ร่วมระหว่างจุฬาลงกรณ์มหาวิทยาลัยและกองทัพอากาศ เท่ากับ 185.59, 175.21 และ 174.42 คะแนนตามลำดับ เมื่อเปรียบเทียบคะแนนเฉลี่ยพบว่านิสิตแพทย์โครงการปกติได้คะแนนเฉลี่ยสูงกว่า นิสิตแพทย์อีกสองกลุ่ม อย่างมีนัยสำคัญทางสถิติที่ระดับ 0.01 โดยเฉลี่ยนิสิตแพทย์ทุกคนสามารถทำคะแนน*

ได้มากกว่าร้อยละ 50 ในทุกรายวิชา ยกเว้นวิชารังสีวิทยา นิสิตแพทย์ทำคะแนนโดยเฉลี่ยได้เท่ากับร้อยละ 40.15 สำหรับการสอบปฏิบัติการทางคลินิกแบบปรนัย คะแนนเต็มเท่ากับ 220 จาก 22 สถานี คะแนนสูงสุดเท่ากับ 197.65 คิดเป็นร้อยละ 89.84 และคะแนนต่ำสุดเท่ากับ 135.75 คิดเป็นร้อยละ 61.70 % ค่ามัชฌิมเลขคณิตเท่ากับ 169.87 คิดเป็นร้อยละ 77.21 % และค่าเบี่ยงเบนมาตรฐานเท่ากับ 12.84 คิดเป็นร้อยละ 5.84 คะแนนเฉลี่ยของนิสิตโครงการปกติ โครงการส่งเสริมการศึกษาแพทย์สำหรับชาวชนบท และโครงการผลิตแพทย์ร่วมระหว่างจุฬาลงกรณ์มหาวิทยาลัยและกองทัพอากาศ เท่ากับ 170.76, 168.09 และ 161.94 คะแนนตามลำดับ เมื่อเปรียบเทียบคะแนนเฉลี่ยพบว่านิสิตแพทย์ทั้งสามโครงการ ได้คะแนนไม่แตกต่างกันอย่างมีนัยสำคัญทางสถิติ

สรุป : *ผู้ที่จะจบเป็นแพทย์และได้รับพระราชทานปริญญาบัตร ต้องผ่านการสอบวิชาเวชศาสตร์ทั่วไป ทั้งข้อสอบปรนัย และการสอบปฏิบัติการทางคลินิกแบบปรนัย งานวิจัยเชิงพรรณนานี้มีวัตถุประสงค์เพื่อเปรียบเทียบคะแนนข้อสอบปรนัย และคะแนนการสอบปฏิบัติการทางคลินิกแบบปรนัย วิชาเวชศาสตร์ทั่วไป ประจำปีการศึกษา 2544 ของนิสิตแพทย์ชั้นปีที่ 6 คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย จำนวน 176 คน ซึ่งเป็นนิสิตจากโครงการปกติ จำนวน 145 คน จากโครงการส่งเสริมการศึกษาแพทย์สำหรับชาวชนบท จำนวน 19 คน และจากโครงการผลิตแพทย์ร่วมระหว่างจุฬาลงกรณ์มหาวิทยาลัยและกองทัพอากาศ จำนวน 12 คน ผลการสอบพบว่า มีนิสิตสอบผ่านวิชาเวชศาสตร์ทั่วไป จำนวน 172 คน และจะได้เข้ารับพระราชทานปริญญาบัตรจากพระบาทสมเด็จพระเจ้าอยู่หัว ยกเว้นนิสิต 4 คนที่สอบไม่ผ่านข้อสอบปรนัย (โครงการปกติ 2 คน, โครงการส่งเสริมการศึกษาแพทย์สำหรับชาวชนบท 2 คน) ซึ่งนิสิตเหล่านี้จะได้รับโอกาสให้สอบแก้ตัวในอีก 6 เดือนข้างหน้า*

The Faculty of Medicine, Chulalongkorn University (CU) has been officially opened since 1947. It has been founded to keep up with the wishes of King Ananda Mahidol to "see the University of Medical Science to produce more doctors for better health care of the people". It also has been founded in keeping with the speech of King Chulalongkorn to have the equity in education "...All of our subjects, from our royal children down to the lowest commoners, will have the same opportunity to study –royals, nobles or commoners...".[1] By joining and collaborating with King Chulalongkorn Memorial Hospital and the Thai Red Cross Society, the Faculty of Medicine of Chulalongkorn University has remained steadfast to the philosophy that "In pursuit of academic excellence, and internationalization, doctors of Chulalongkorn University serve the public virtuously alongside the Thai Red Cross Society". [2] The first medical curriculum is the regular program which has been established since 1947.[3] An applicant must be qualified with the certificate of Grade 6 of secondary school education (Mathayom Suksa 6) or equivalent which is recognized by the university and s/he has passed the competitive entrance examination held annually by the University Entrance Examination Board. The 1st year medical students study at the Faculty of Sciences; the 2nd – 6th year medical students, at the Faculty of Medicine, Chulalongkorn University. The time to complete their course is six years.[4] The second medical curriculum is the Medical Education for Students in Rural Area Project (MESRAP) which has been successfully launched since 1976.[2] This is a joint project between Chulalongkorn University and the Ministry of Public Health. Its main objective is to produce qualified medical personnel to work in rural areas. This is achieved by admitting selected candidates from twelve eastern and northeastern provinces directly to the course. Prior to their entry, these candidates are required to pass the minimum passing level (MPL) examination to the university as an aptitude test at their local provincial hospitals. The pre-clinical part of the curriculum is the same as that of the regular program. The clinical course (4th to 6th year), however, is conducted provincially at the Phra Pok-klao Hospital in Chantaburi province and at Chonburi Provincial Hospital.[5] The third medical curriculum is the Community-Targeted Problem-Based Medical Education Program (CTPB or PBL) which has been established since 1988. The candidates are graduates of any curriculum and have taken at least 26 credits of basic science. To be eligible, they must also pass a intensive screening conducted by the institution.[6] By the year 2001, the curriculum was slightly modified in order to produce graduated medical doctors in parallel with the policy guideline of the National Medical Board, and also to meet with the international standard. The new curriculum emphasizes community-based training and holistic approach. This means that the primary health care (PHC) has to be strengthened for the community. Three major factors, including social, governmental policy and education, are strategies to renovate the new health system for the nation.[7] The medical students from three programs could receive their degree if they have grade point average higher than or equal to 2.00 and passed the comprehensive examination. The measuring instruments used in comprehensive examination were multiple-choice questions (MCQ) and Objective Structured Clinical Examination (OSCE).

All of them attended their pre-clinical course of the same curriculum at the Faculty of Medicine of Chulalongkorn University. Their performances in MCQ and OSCE tests in the comprehensive examination of the year 2001 were accordingly studied.

Objectives

1. To study the outcomes of MCQ and OSCE tests of the comprehensive examination of the year 2001, regarding the highest and lowest scores, arithmetic mean, standard deviation, and percentage for the followings:

1.1 the entire three programs,

1.2 the regular program,

1.3 the MESRAP program, and

1.4 the CTPB program.

2. To compare the MCQ and OSCE scores among the three programs.

Population, materials and methods

1. Population

There were 176 sixth year medical students from the three programs. The number of medical students of the regular program, MESRAP program and CTPB program were 145, 19, and 12 students, respectively.

2. Materials

2.1 One microcomputer: Intel Pentium IV 1.8 GHz

2.2 One dot matrix 24 pins printer: NEC-P6300

2.3 One optical reader: OPSCAN Model 5

2.4 Software for the optical reader: TOOLS

2.5 Software for word processing: QEdit

2.6 Software for spread sheet: Microsoft Excel

2.7 Software for statistics: EPISTAT

2.8 Software for item analysis: CTIA

2.9 176 sheets of the MCQ computer answer sheets

2.10 OSCE scores of 176 students

3. Methods

3.1 An optical reading machine scanned the MCQ answer sheets to obtain the raw data.

3.2 A word processing software prepared the raw data for a data file for calculating the reliability and a data file for spread sheet program.

3.3 Microsoft Excel program calculated statistics indices such as maximum score, minimum score, arithmetic mean, standard deviation and percentage.

3.4 EPISTAT program compared the means of MCQ and OSCE scores among three programs by the one-way ANOVA and compared between two programs by independent sample t-test.

Results

1. The total score of 13 subjects in the MCQ test of the comprehensive examination was 299. The highest score was 228 (76.00 %); and the lowest, 129 (43.00 %). The arithmetic mean was 183.71 (61.24 %); the standard deviation, 17.26 (5.75 %). When classified by program, in regular program, the highest score was 228 (76.00 %); and the lowest, 135 (45.00 %). The arithmetic mean was 185.59 (61.86 %); the standard deviation, 17.28 (5.76 %). In MESRAP program, the highest score was 203 (67.67 %), the lowest, 129 (43.00 %). The arithmetic mean was 175.21 (58.40 %); the standard deviation,

16.84 (5.61 %). In CTPB program, the highest score was 188 (62.67 %); the lowest, 160 (53.33 %). The arithmetic mean was 174.42 (58.14 %); the standard deviation, 10.07 (3.36 %) [Table 1.].

2. The total score of 22 stations of the OSCE test in the comprehensive examination was 220. The highest score was 197.65 (89.84 %); the lowest, 135.75 (61.70 %). The arithmetic mean was 169.87 (77.21 %); the standard deviation, 12.84 (5.84 %). When each program was analyzed: in regular program, the highest score was 197.65 (89.84 %); the lowest, 135.75 (61.70 %). The arithmetic mean was 170.76 (77.62 %); the standard deviation, 12.99 (5.91 %). In the MESRAP program, the highest score was 183.25 (83.30 %); the lowest, 148.70 (67.59 %). The arithmetic mean was 168.09 (76.41%); the standard deviation, 10.33 (4.70 %). In the CTPB program, the highest score was 183.10 (83.23 %); the lowest, 146.75 (66.71 %). The arithmetic mean was 161.94 (73.61 %); the standard deviation, 12.36 (5.62 %) [Table 1].

3. When compared the outcome of the MCQ tests of the comprehensive examination among the three programs, the means of these samples were significantly different at level of 0.01 ($p < .01$). The mean of MCQ score of the regular program was significantly higher than the mean of MCQ scores from MESRAP and CTPB programs at level of 0.05 ($p < .05$). When compared between MESRAP and CTPB programs, the means of these two samples were not significantly different [Table 2].

Table 1. Highest score, Lowest score, Mean and Standard deviation of the 2001 comprehensive examination MCQ and OSCE tests.

Program	No. of Student	Test	Highest score	Lowest score	Mean	S.D.
regular	145	MCQ	228 (76.00%)	135 (45.00%)	185.59 (61.86%)	17.28 (5.76%)
		OSCE	197.65 (89.84%)	135.75 (61.70%)	170.76 (77.62%)	12.89 (5.91%)
MESRAP	19	MCQ	203 (67.67%)	129 (43.00%)	175.21 (58.40%)	16.84 (5.61%)
		OSCE	183.25 (83.30%)	148.70 (67.59%)	168.09 (76.41%)	10.23 (4.70%)
CTPB	12	MCQ	188 (62.67%)	160 (53.33%)	174.42 (58.14%)	10.07 (3.36%)
		OSCE	183.10 (83.23%)	146.75 (66.71%)	161.94 (73.61%)	12.36 (5.62%)
Total	176	MCQ	228 (76.00%)	129 (43.00%)	183.71 (61.24%)	17.26 (5.75%)
		OSCE	197.65 (89.84%)	135.75 (61.70%)	169.87 (77.21%)	12.84 (5.84%)

Table 2. The comparison of means, the 2001 comprehensive examination MCQ and OSCE Tests.

Program	Test		Significant
regular vs MESRAP vs CTPB	MCQ	F = 5.139328	p<.01
	OSCE	F = 2.878533	NS
regular vs MESRAP	MCQ	t = 2.470073	p<.05
	OSCE	t = 0.857993	NS
regular vs CTPB	MCQ	t = 2.206046	p<.05
	OSCE	t = 2.266542	p<.05
MESRAP vs CTPB	MCQ	t = 0.147004	NS
	OSCE	t = 1.497681	NS

Remark NS = Not Significant

4. When compared the outcomes of the OSCE test of the comprehensive examination among the three programs, the means of these samples were not significantly different. Only when the regular and CTPB programs were compared, the means of these two samples were significantly different at the level of 0.05 (p <.05) [Table 2].

5. There were 13 subjects in MCQ test of the 2001 comprehensive examination. Some medical students could make full scores on five subjects, namely: Forensic Medicine, Rehabilitation Medicine, Ophthalmology, Orthopedic and Otolaryngology, whereas some received zero score on Forensic Medicine and Rehabilitation Medicine. In average the medical students could receive scores higher than 50 % in all the 13 subjects except for Radiology in which they received 40.15 % averagely [Table 3].

6. As for the 145 students in the regular program, some of them reached the full score in five subjects, namely: Forensic Medicine, Rehabilitation Medicine, Ophthalmology, Orthopedic and Otolaryngology. Some, however, received zero score in Forensic Medicine and Rehabilitation Medicine. In average, the students scored higher than 50 % in all the 13 subjects except for Radiology wherein they received the average score of 40.92 %.

7. As for the 19 students in MESRAP program, some of them reached the full score in four subjects, namely: Forensic Medicine, Ophthalmology, Orthopedic and Otolaryngology. However, no student received zero score. In average the, students scored higher than 50 % in 11 subjects except for Radiology and Preventive Medicine, wherein they reached the average score of 36.26 % and 49.321 %, respectively.

8. As for the 12 students in the CTPB program, some of them reached full score in two subjects, namely: Forensic Medicine and Rehabilitation Medicine. No student received zero score. In average, the students scored higher than 50 % in 10 subjects except for Psychiatry, Radiology and Preventive Medicine, wherein they reached the average scores of 39.17 %, 37.04 % and 47.08 %, respectively.

Table 3. Highest score, Lowest score, Mean and Standard deviation of MCQ thirteen subjects for the whole 176 medical students.

Subject	Total score	Highest score	Lowest score	Mean	S.D.
Surgery	67	56 (83.58 %)	28 (41.79 %)	40.11 (59.87 %)	4.96
Medicine	58	43 (74.14 %)	16 (27.59 %)	31.19 (53.77 %)	4.58
Anesthesiology	8	7 (87.50 %)	2 (25.00 %)	4.65 (58.10 %)	1.13
Psychiatry	10	9 (90.00 %)	1 (10.00 %)	5.64 (56.42 %)	1.61
Forensic Medicine	5	5 (100.00 %)	0 (0.00 %)	3.95 (78.98 %)	0.95
Rehabilitation Medicine	3	3 (100.00 %)	0 (0.00 %)	2.14 (71.21 %)	0.74
OB-GYN	44	38 (86.36 %)	25 (56.82 %)	32.03 (72.79 %)	3.23
Pediatrics	48	41 (85.42 %)	17 (35.42 %)	29.21 (60.85 %)	4.63
Ophthalmology	6	6 (100.00 %)	1 (16.67 %)	4.10 (68.37 %)	1.12
Radiology	9	6 (66.67 %)	1 (11.11 %)	3.61 (40.15 %)	1.14
Orthopedic	15	15 (100.00 %)	8 (53.33 %)	12.06 (80.38 %)	1.41
Preventive Medicine	20	17 (85.00 %)	2 (10.00 %)	11.11 (55.57 %)	2.69
Oto-laryngology	6	6 (100.00 %)	1 (16.67 %)	3.91 (65.15 %)	1.11
Total	299				

9. There were 22 stations in the OSCE test of the 2001 comprehensive examination. Some students could reach the full score at a station in which the highest score of each station was 10. Some students, however, received zero score in Medicine 3 and Preventive Medicine stations. In average, the students scored higher than 50 % in all the 22 stations [Table 4].

Table 4. Highest score, Lowest score, Mean and Standard deviation of OSCE twenty-two stations for the whole 176 medical students.

Station	Total score	Highest score	Lowest score	Mean	S.D.
Medicine 1	10	10 (100 %)	4.5 (45 %)	8.65 (86.5 %)	1.35
Medicine 2	10	10 (100 %)	5.0 (50 %)	8.65 (86.5 %)	0.87
Medicine 3	10	10 (100 %)	0.0 (0 %)	7.20 (72 %)	4.22
Surgery 1	10	10 (100 %)	5.0 (50 %)	9.02 (90.2 %)	0.99
Surgery 2	10	10 (100 %)	0.5 (5 %)	6.41 (64.1 %)	2.76
Surgery 3	10	10 (100 %)	4.0 (40 %)	8.97 (89.7 %)	1.17
Surgery 4	10	10 (100 %)	6.8 (68 %)	9.28 (92.8 %)	0.74
OB-GYN 1	10	10 (100 %)	2.0 (20 %)	6.8 (68 %)	1.69
OB-GYN 2	10	10 (100 %)	4.0 (40 %)	8.0 (80 %)	1.28
OB-GYN 3	10	10 (100 %)	2.6 (26 %)	7.12 (71.2 %)	1.30
Pediatrics 1	10	10 (100 %)	3.8 (38 %)	7.71 (77.1 %)	1.05
Pediatrics 2	10	10 (100 %)	2.0 (20 %)	5.94 (59.4 %)	1.85
Pediatrics 3	10	10 (100 %)	1.0 (10 %)	6.51 (65.1 %)	1.95
Orthopedic	10	10 (100 %)	2.0 (20 %)	8.09 (80.9 %)	1.33
Rehab. Med.	10	10 (100 %)	6.0 (60 %)	7.39 (73.9 %)	1.01
Anesthesia	10	10 (100 %)	6.0 (60 %)	9.24 (92.4 %)	0.83
Psychiatry	10	10 (100 %)	5.0 (50 %)	8.32 (83.2 %)	1.28
Prevent. Med.	10	10 (100 %)	0.0 (0 %)	5.57 (55.7 %)	3.02
Forensic. Med.	10	10 (100 %)	2.25 (22.5 %)	8.51 (85.1 %)	1.08
Ophthalmology	10	10 (100 %)	4.0 (40 %)	8.53 (85.3 %)	1.37
ENT.	10	10 (100 %)	5.0 (50 %)	8.62 (86.2 %)	1.04
Bhumiphol	10	10 (100 %)	1.5 (15 %)	5.34 (53.4 %)	1.62
Total	220				

10. As for the 145 students in the regular program, some of them reached full score in every station. Some, however, received zero score in Medicine3 and Preventive Medicine stations. In average, the students scored higher than 50 % in all 22 stations.

11. As for the 19 students in the MESRAP program, some of them reached full score in 12 stations such as Medicine 1-3, Surgery 1-4, Orthopedic, Anesthesia, Psychiatry, Ophthalmology and Otolaryngology. Some, however, received zero score in Preventive Medicine station. In average, the students scored higher than 50 % in 18 stations except for OB-GYN 1, Pediatrics 2-3, and Preventive Medicine stations wherein they received the average score of 49.5 %, 41.6 %, 47.9 % and 40.8 %, respectively.

12. As for the 12 students in CTPB program, some of them reached full score in 12 stations such as Medicine 1-3, Surgery 1-4, Orthopedic, Psychiatry, Preventive Medicine, Ophthalmology and Otolaryngology. Some, however, received zero score in Medicine 3 and Preventive Medicine stations. In average, the students scored higher than 50 % in 18 stations except for Medicine 3, OB-GYN 1 and Pediatrics 2-3, wherein they received the average score of 45.0 %, 44.3 %, 47.5 % and 40.8 %, respectively.

Discussion

Regarding the knowledge, this study found that the students in the regular program received higher mean score than those in the MESRAP and CTPB programs. This result is the same as that of Laisnitsarekul *et al.* [6] who studied in 1993 and Pholwan and Tantayaporn [8] who studied in 1995. Sangprasert and Makinanukul[9] found that students in the MESRAP program scored less in Preventive Medicine I, II than students in the regular program. Hongladarom *et al.*[10] found that students in the MESRAP program had less grade point average (GPA) than the students in the regular program; however, in the comprehensive examination and evaluation of their clinical performance they showed no difference. Phulklongtan *et al.*[11] found that the students in CTPB program scored less in basic medical sciences than those students in the regular program, but there was no difference at the end of their clinical years. Laisnitsarekul *et al.*[12] compared the achievement score, grade point average (GPA) and cumulative grade point average (GPAX) of the second year medical students and found that students in the regular program scored higher than those in MESRAP and CTPB programs. Kijpridaborisuthi [13] found that rural students gained grade point average lower than urban students both at the Faculties of Medicine of Siriraj Hospital and Ramathibodi Hospital. However, regarding the skills and attitude this study found that there was no difference of OSCE scores among students of the three medical programs. But in the year 1993 Laisnitsarekul *et al.*[14] found that students in the regular program scored higher in OSCE tests than students in the MESRAP and CTPB programs, whereas those in the MESRAP program had higher OSCE scores than those in the CTPB program.

Since 1947, the Faculty of Medicine of Chulalongkorn University has produced medical doctors from regular program.[3] There was a problem in the distribution of doctors. The effective system to distribute doctors to the rural communities in Thailand is much needed. To study the medical curriculum,

the students from secondary school must received the entrance examination's score in highest rank of the country and most of them usually came from the urban area. In the past 30 years, there was no medical student from the rural area. Chulalongkorn University served the equity in education by giving the chance for rural student to study medicine in Medical Education for Students in Rural Area Project (MESRAP)[15]

Therefore, since 1978 the MESRAP of Chulalongkorn University has been developed to serve the objectives, i.e. producing more doctors, who will be working in the communities with proper knowledge and attitudes.[16] The students in the MESRAP program came from the 8 rural communities in the eastern region of Thailand.[17] To produce 180 qualified doctors who are well-versed in solving all health problems in rural communities, to meet targets contained in the Fifth Plan of the National Economic and Social Development Board, the Faculty of Medicine of Chulalongkorn University initiated the Community Targeted Problem Based (CTPB) Medical Education Program-in addition to its existing conventional medical program and its Medical Education for Students in Rural Area Project (MESRAP) since 1988.[18] The Faculty of Medicine, Chulalongkorn University plans to produce 30 medical students per year from the CTPB program. Candidates to the program are graduates of any curriculum other than health sciences and must have at least 26 credits of basic science. To be eligible for the program, they must pass an intensive screening conducted by the two co-organizing institutions, the Faculty of Medicine of Chulalongkorn University and the Directorate of Medical Services, The Royal Thai Air Force. During the academic year 1988-1996, there was no difference among outcomes of the programs [Table 5].

Table 5. Number of medical students who passed to be M.D. graduate and failed in education from three medical programs.

Academic Year	regular Program			MESRAP Program			CTPB Program		
	No.	PASS	FAIL	No.	PASS	FAIL	No.	PASS	FAIL
1988	103	99	4	44	40	4	19	19	-
1989	101	94	7	48	48	-	12	12	-
1990	99	96	3	26	25	1	14	14	-
1991	99	97	2	50	47	3	12	12	-
1992	101	98	3	50	50	-	18	18	-
1993	144	140	4	18	17	1	30	30	-
1994	145	144	1	37	35	2	20	19	1
1995	148	146	2	28	26	2	20	20	-
1996	146	144	2	21	20	1	16	15	1

Remark Number of M.D. graduate included the graduate who obtained M.D. late.

Resource : The Registration Unit, Faculty of Medicine, Chulalongkorn University

The medical students from the regular, MESRAP and CTPB programs studied their pre-clinic year at the Faculty of Medicine, Chulalongkorn University. In their clinical years, the students in the regular program study at the Faculty of Medicine, Chulalongkorn University, the students in the MESRAP program study in their communities, i.e. at Chonburi Hospital and Chantaburi Hospital; and the student in the CTPB program study in their community at Bhumiphol Hospital. After finishing their clinical years, the medical students from three programs could receive a bachelor degree if their grade point average is higher or equal to 2.00 and pass MCQ and OSCE tests of the comprehensive examination.[19] There were two major findings identified by this study: the first is that medical students of the three programs are able to pass their assessment activities of the 2001 comprehensive examination, except 4 who failed the MCQ test (regular 2, MESRAP 2); the second is that the medical curriculum of Chulalongkorn University has the concept of equity in education because medical teachers from Chulalongkorn University, Chonburi Hospital, Chandhaburi Hospital and Bhumiphol Hospital have joined the whole process of education such as student selection, student preparation for learning in M.D. program, teaching and learning in pre-medical science, pre-clinical teaching and learning, clinical teaching and learning, evaluation activities and the comprehensive examination. Based on excellent co-operation 97.73 % of medical students of three programs passed the 2001 comprehensive examination and would be doctors of the Thai society.

Summary

This descriptive research is aimed to describe the findings of the comprehensive examination of the Academic Year 2001, done during March 11-12, 2002, and to compare the MCQ and OSCE scores among the regular program, the MESRAP program and the CTPB program regarding the highest and lowest scores, arithmetic mean, standard deviation and the percentage of all the three programs independently and compared the mean scores among them. The scores of MCQ test and OSCE test of the comprehensive examination of 2001 were collected. The findings were tabulated, analyzed and tested for statistical differences among students of the three programs by F-test and t-test. In total there were 176 enrolled medical students: 145 were from the regular program; 19, MESRAP program; and 12, CTPB program. The total score of MCQ exam was 299 in 13 clinical subjects. The total score of OSCE test was 220 from in 22 clinical performance stations. The highest MCQ score was 228 (76.00 %); the lowest was 129 (43.00 %). The mean of MCQ score was 183.71 (61.24 %). The highest OSCE score was 197.65 (89.84 %); the lowest was 135.75 (61.70 %). The mean OSCE was 169.87 (77.21 %). When compared the mean MCQ score, the regular program was higher than the MESRAP and CTPB programs ($p < .01$). Between the MESRAP and CTPB programs, there were no difference. Concerning OSCE test, there were no difference among the three programs. There were 4 students who failed: 2 from regular program, and 2 from MESRAP program. The Faculty of Medicine, Chulalongkorn University keeps concept of equity in education by following the address of King Chulalongkorn, who originated the concept of Chulalongkorn University. King Chulalongkorn said that all of his subjects, from royal children down to

the lowest commoners, will have the same opportunity to study - royals, nobles or commoners. This speech showed that the King did not forget his common citizens. Medical students of Chulalongkorn University, from urban area, rural area and bachelor graduate can come to learn and pass their examination to be doctors. The graduated medical doctors have abilities as mandated by both the policy guideline of the National Medical Board and also the international standards.

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