

ผลของการจัดประสบการณ์ทางคลินิกในช่วงต้นของหลักสูตรของนิสิตแพทย์ชั้นปีที่ 2 คณะแพทยศาสตร์ มหาวิทยาลัยบูรพา

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บทคัดย่อ

บริบท การจัดการศึกษาแพทยศาสตร์ในวิธีแบบดั้งเดิมทำให้ผู้เรียนประสบความยากลำบาก การให้ผู้เรียนได้สัมผัสความรู้และประสบการณ์ทางคลินิกตั้งแต่ระยะเริ่มแรกส่งเสริมให้ผู้เรียนเกิดการเรียนรู้ได้อย่างมีประสิทธิภาพ

วัตถุประสงค์ เพื่อศึกษาผลของนิสิตแพทย์ชั้นปีที่ 2 คณะแพทยศาสตร์ มหาวิทยาลัยบูรพาต่อโครงการ “การสัมผัสความรู้และประสบการณ์ทางคลินิกตั้งแต่ระยะเริ่มแรก” (ECE)

วิธีการศึกษา นิสิตแพทย์ชั้นปีที่ 2 คณะแพทยศาสตร์ มหาวิทยาลัยบูรพาสมัครใจเข้าร่วมโครงการ ECE ที่คณะผู้วิจัยจัดขึ้นในภาคฤดูร้อนหลังสิ้นสุดปีการศึกษาปีที่ 2 โดยเป็นการฝึกปฏิบัติกับผู้ป่วยในโรงพยาบาล จากนั้นนิสิตแพทย์ที่เข้าร่วมโครงการตอบแบบสอบถามทันทีเมื่อสิ้นสุดโครงการ และตอบแบบสอบถามเดิมอีกครั้งเมื่อจบการศึกษาภาคต้นของชั้นปีที่ 3 ใน 6 เดือนต่อมา เปรียบเทียบค่าเฉลี่ยความคิดเห็นระหว่าง 2 ครั้งโดยใช้สถิติ Wilcoxon match-pairs rank test เก็บข้อมูลเกรดเฉลี่ย (GPA) ของนิสิตปี 2 ภาคการศึกษาปลาย และนิสิตกลุ่มเดียวกันเมื่อจบชั้นปี 3 ภาคการศึกษาต้น เปรียบเทียบเกรดเฉลี่ยของ 2 ภาคการศึกษาในนิสิตแพทย์ที่เข้าร่วมโครงการเพื่อดูการปรับปรุงโดยใช้สถิติ Wilcoxon match-pairs signed-ranks test เปรียบเทียบการปรับปรุงของเกรดเฉลี่ยระหว่างนิสิตแพทย์ที่เข้าร่วมโครงการกับนิสิตที่ไม่ได้เข้าร่วมโครงการโดยใช้สถิติ independent samples t-test

ผลการศึกษา มีจำนวนนิสิตแพทย์ชั้นปีที่ 2 สมัครใจเข้าร่วมโครงการ 15 คน คิดเป็นร้อยละ 31.25 อัตราการตอบกลับแบบสอบถามร้อยละ 80 ในครั้งแรก และร้อยละ 100 ในครั้งที่สอง ไม่พบความแตกต่างอย่างมีนัยสำคัญทางสถิติของค่าเฉลี่ยความคิดเห็นของทั้งสองครั้ง ($p = 1.00$) นิสิตมากกว่าร้อยละ 90 เห็นด้วยว่าโครงการนี้ทำให้เข้าใจเนื้อหาวิชาพื้นฐานทางวิทยาศาสตร์ทางการแพทย์มากขึ้นและทำให้สนใจเรียนวิชาพื้นฐานทางวิทยาศาสตร์ทางการแพทย์มากขึ้น นิสิตอย่างน้อยร้อยละ 60 เห็นด้วยเป็นอย่างยิ่งว่าโครงการนี้ทำให้เห็นความสำคัญของวิชาพื้นฐานทางวิทยาศาสตร์ทางการแพทย์มากขึ้น นิสิต 8 ใน 10 คนอยากให้โครงการนี้บรรจุในหลักสูตรรายวิชาเลือกและร้อยละ 60 ของนิสิตไม่อยากจะให้โครงการนี้ถูกตัดออกจากหลักสูตร นิสิตแพทย์ที่เข้าร่วมโครงการมีการปรับปรุงของเกรดเฉลี่ยระหว่าง 2 ภาคการศึกษาอย่างมีนัยสำคัญทางสถิติ ($p < 0.001$) แต่ไม่แตกต่างอย่างมีนัยสำคัญทางสถิติเมื่อเทียบกับนิสิตแพทย์ที่ไม่ได้เข้าร่วมโครงการ ($p = 0.354$).

สรุป นิสิตแพทย์ส่วนใหญ่มีความเห็นในด้านบวกต่อโครงการ ECE โดยส่วนใหญ่อยากให้โครงการนี้บรรจุเป็นรายวิชาเลือกในหลักสูตรแพทยศาสตรบัณฑิต

คำสำคัญ การสัมผัสความรู้และประสบการณ์ทางคลินิกตั้งแต่ระยะเริ่มแรก การศึกษา นิสิตแพทย์ ชั้นปีที่ 2

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Impact of early clinical exposure for second year medical students at Burapha University

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Abstract

Background: Traditional study in medicine carries a heavy workload for medical students to learn. Early clinical exposure (ECE) enhances students to learn more effectively.

Objective: This study aimed to review the impact of ECE in 2nd-year medical students.

Materials and Methods: A ward-based ECE program was offered to medical students of the Faculty of Medicine at Burapha University, upon completing their second year in an adjunct teaching position. Questionnaires about the student's attitudes regarding the ECE program were sent to the participants, both at the end of the program, as well as 6 months later at the end of the first semester of their third year. The mean scores of the first and second surveys were compared using the Wilcoxon matched-pairs rank test. Additionally, the academic performance of each student determined by collecting grade point averages (GPAs), after both their 2nd-year second semester examination, and 3rd-year first semester examination were compared using the Wilcoxon matched-pairs signed-ranks test. The improvement of GPAs amongst those who participated in the program with those who did not participate was determined, using independent sample t-tests.

Results: Fifteen (31.25%) 2nd-year medical students participated in the study. The response rate for the first survey was 80%, and the second was 100%. There was no statistical difference between the mean score of the first and second surveys ($p = 1.00$). More than 90% of students agreed that the program enhanced their understanding of the basic science topics, as well as increased their interest in the basic sciences. At least 60% of the students strongly agreed that this program helped them to realize the importance of basic sciences. Eight out of ten participants would like the program incorporated as an elective course. There was a significant improvement in the participant's GPAs after the ECE ($p < 0.001$). However, improvements in grades between students who participated in the program (mean = 0.20) did not significantly differ from those who did not participate (0.17) ($p = 0.354$).

Conclusion: Most of the 2nd-year medical students had positive attitudes towards the ECE program with the majority of the students wanting the program incorporated in the elective part of the curriculum.

Keywords: Early clinical exposure, Education, Medical student, Pre-clinic

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การอ้างอิง

ศรสุภา ลิ้มเจริญ, จิรัฏฐ์ สุขมี, ผกาพรรณ ดินชุไท, นลินี ภัทรากกรกุล, สีนินาฏ พาณิชยวัฏ. ผลของการจัดประสบการณ์ทางคลินิกในช่วงต้นของหลักสูตรของนิสิตแพทย์ชั้นปีที่ 2 คณะแพทยศาสตร์ มหาวิทยาลัยบูรพา. บูรพาเวชสาร. 2564; 8(2): 15-25.

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Introduction

Traditional medical education in Thailand consists of an initial 3 years foundation of basic sciences (i.e., the pre-clinic years), followed by, another 2 years of clinical rotations, and a final year of clinical clerkship. Learning of the basic sciences without any clinical correlation may lead to the inability of students to fully perceive important concepts. Additionally, the large amount of content to be learned by students fosters stress and obstructs them from learning. Saipanich R. demonstrates that the highest number of students experiencing stress took place in the 3rd-years of study (76.5%).¹ Recently, there has been a growth of clinical integration in student's pre-clinical years.² Literature shows that students participating in early clinical exposure (ECE) offers a better perceived learning experience than for non-participants.^{2,3} Moreover, ECE promotes student satisfaction and the importance of student awareness in learning medicine.³⁻⁵ However, in spite of many evidence-based benefits of ECE, our curriculum has not officially implemented ECE in the pre-clinical years. Although we have a subject in Community and Family Medicine for all 3 pre-clinical years, allowing students to be exposed to the community, the actual exposure to the patient is community-based, not hospital-based. Moreover, there are different definitions and various activities of ECE.² Timing, duration, teaching methods and content in ECE are being researched. We designed our own model of ECE that considered 1) timing of the program at

the end of second year, 2) a short duration of 4 sessions (4-8 hours), and 3) bedside teaching by staff in the wards.

The presented study had 3 objectives; 1) to assess the 2nd-year medical student's attitudes towards our ECE program, which offered exposure to real patients in hospital wards with staff facilitation, 2) to study whether the students changed their attitudes when they returned to the traditional didactic classroom lecture and examinations, and 3) to explore whether the ECE program helped improve student academic performance by comparing participants with non-participants, before and after their ECE program.

Materials and Methods

All forty eight, second-year medical students at the Faculty of Medicine, of Burapha University were given information about the study, and informed that this study did not affect their grades or marks. Fifteen students voluntarily participated. Informed consents were obtained from all participants. This study was approved by our Institutional Ethics Committee, No 90/2562.

The ECE was conducted in the summer semester after the end of the second academic year, from the 20th-23rd of June, 2019. The ECE course was designed by three authors (S.L., P.D., N.P., S.P.). The program started with a 1 hour orientation to patient medical history taking by our program coordinator (J.S.), followed by 4 sessions of ward rounds (1 session/group/day). The 4 sessions included

2 patients from the medicine ward facilitated by internist staff (author, P.D.) and two patients from the pediatric ward, also facilitated by the pediatric staff (author, N.P.). The 15 students were divided into 2 groups (7 and 8 participants) according to their conveniences. Each group completed their clinical departments in turns. The length of each session last 1 to -2 hours, beginning with the student taking each patient's history under staff supervision, followed by bedside teaching conducted by the staff with group discussion. The contents provided to the students were skills for history taking, methods for ward rounds, and an overview of each patient's illnesses relevant to basic science subjects.

Student opinions were surveyed using a questionnaire (table 1). A 5-point Likert scale was used. Survey data were ranked into scores from 1 to 5, in which 1 represented a strong disagreement with the argument provided increasing to 5 as strongly agreeing with the argument. An openly written comment was available to submit anonymously. Questionnaires were sent to the participants immediately after completion of the ward rounds, with the same questionnaires sent again to the participants 6 months later, at the end of the first semester's final examination of their third year. All participants responded to the questionnaires voluntarily.

Grade point averages (GPAs) from the end of the second year and the first semester final examinations of the third year were collected.

Statistical analysis

Data were analyzed using SPSS 22 for Windows (SPSS, Chicago, IL, USA). Residuals were examined for the assumption of normality and heteroscedasticity. The mean score of the first and second surveys were compared using the Wilcoxon matched-pairs rank test. In addition, improvements in student grade were calculated by subtracting the second semester GPAs from those of the first semester. Grade improvements were transformed using $\log(x + 2)$ for the assumption of normality. The differences in student GPAs between the first and second semesters were analyzed using the Wilcoxon matched-pairs signed-ranks test. Effects of the ECE program on grade improvement between participants and non-participants were analyzed using independent samples t-test. A p -value of <0.05 was regarded as statistically significant.

Results

A total of fifteen, second-year medical students (31.25%) engaged in the study (10 males and 5 females). Twelve students responded to the questionnaires in the first survey and 15 students in the second survey, giving a response rate of 80% and 100% respectively.

The frequency and percentage of each result from both survey questionnaires are illustrated in table 1. From both survey questionnaires, over 90% of students agreed that the program enhanced their understanding of basic science topics. Also, both surveys

indicated that the program made almost all participants (> 90%) more interested in the basic sciences. Moreover, at least 6 of the 10 participants in the first survey strongly agreed that this program helped them to realize the importance of basic sciences. According to the 2nd survey, more than half of the participants (60%) neither agreed nor disagreed that the program should be incorporated as a compulsory course. However, 8 out of 10 participants in the first survey suggested that the program should be incorporated as an elective course. Lastly, as indicated by both survey results, around 60% of the participants did not suggest that the program should be discarded.

Regarding the survey scores, the mean scores of students did not differ significantly between the first (median = 3.33) and the second (3.18) surveys in terms

of comprehension (Wilcoxon matched-pairs rank test: $T_s = -0.106$, $n = 6$, $p = 1.00$). This indicated that the second survey's results did not considerably vary from those of the first. When comparing GPAs, there was a significant difference between GPAs from the first semester of the third year (median = 3.58) and the second semester of the second year (3.02) (Wilcoxon matched-pairs signed-ranks test: $T_s = 53.00$, $N = 48$, $Z = -5.408$, $p < 0.001$). However, when comparing improvements to grade, students who participated in the program (mean = 0.20) did not significantly differ from those who did not participate (0.17) (independent samples t-test: $t(46) = -0.936$, $p = 0.354$). It is important to note too that students commented that more departments and more sessions needed to be incorporated into this program.

Table 1 Survey questionnaires' frequencies and percentage

Question	Survey	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1 I had a better understanding of the basic sciences by the ECE	1st	0	0	1 (8.3%)	3 (25.0%)	8 (66.7%)
	2nd	0	0	1 (6.7%)	9 (60.0%)	5 (33.3%)
2 ECE created interested in the basic sciences	1st	0	0	0	3 (25.0%)	9 (75.0%)
	2nd	0	0	1 (6.7%)	6 (40.0%)	8 (53.3%)
3 I realized the importance of basic sciences by the ECE	1st	0	0	2 (16.7%)	2 (16.7%)	8 (66.7%)
	2nd	0	0	0	5 (33.3%)	10 (66.7%)
4 I would like the ECE to be incorporated in the compulsory curriculum	1st	1 (8.3%)	2 (16.7%)	2 (16.7%)	5 (41.7%)	2 (16.7%)
	2nd	1 (6.7%)	1 (6.7%)	9 (60.0%)	1 (6.7%)	3 (20.0%)
5 I would like the ECE to be incorporated in the elective curriculum	1st	0	0	0	3 (25.0%)	9 (75.0%)
	2nd	0	1 (6.7%)	1 (6.7%)	4 (26.7%)	9 (60.0%)
6 I would not like the ECE to be incorporated in the curriculum	1st	4 (33.3%)	3 (25.0%)	5 (41.7%)	0	0
	2nd	7 (46.7%)	5 (33.3%)	1 (6.7%)	1 (6.7%)	1 (6.7%)

Discussion

There are a variety of ECE methods as well as timings and durations.² Rawekar et al. gave a ward based teaching supplement to 1st-year medical students, and the study group showed significantly higher post-test marks than in those from the control group.⁶ Das et al. provided an outpatient clinic as an adjunct teaching venue to 1st and 2nd-year students. Their students demonstrated a significant gain in skills ($p < 0.001$) as shown by their OSCE scores.³ In contrast, Khorsand et al. demonstrated that early musculoskeletal classroom education to 1st-year students did not improve student musculoskeletal

knowledge at any year of training.⁷ The United States Medical Licensing Examination (USMLE) score was used to assess student knowledge in that study. This method is in line with our study, using improvement in GPA to represent student academic performance. The participants in the current study showed no substantial improvement in academic performance at six months after going through the ECE program, compared with their peers who lacked such exposure. There are possible reasons to explain this data. The provided content might not have correlated directly enough with the examination content. As well, the timing of this ECE program may have been

too short, with only four sessions at around 4-8 hours. In a related longitudinal study, longer timings and durations show the positive benefits of ECE experiences.⁸ Nevertheless, various factors affect academic performance in the basic sciences, including motivation, beliefs, test anxiety, and even gender.⁹

Real patients with clinical pathologies helped students in the early years of medical school to integrate fundamental concepts with disease pathology.¹⁰ The present study used ward-based teaching with real patients. Our results showed that all students had favorable attitudes towards our ECE programs similar to the study conducted by Vazzana et al., showing medical student's positive perceptions from their clinical exposure program.¹¹ The ECE improved student attitudes towards basic sciences. Clinical exposure allowed students to realize the importance of basic science knowledge and helped them to correlate their theories with clinical settings. Most of these students would like this program to be in the curriculum either as a compulsory program or an elective. The challenges for ECE include time and space challenges to the curriculum that require resource-intensive infrastructures. More staffs dedicated to teaching are required. Using clinical-year students as trainers may also reduce staff work loads.¹² A pilot study by Chang et al. gave a virtual reality video to the students prior to a standardized patient session, showing that video can be a low cost adjunct tool for early patient exposure.¹³ Another challenge is that dealings with

real patients are much more complex than simulations.

Limitations

There are certain limitations in the current study, as a large scale study with a control group is required. Owing to the small number of self-selected volunteer subjects, our study's results may have a selection bias. The short exposure time, limited ward teaching, and limited measured parameters (i.e., the satisfaction survey and GPAs), as well as a lack of a real control group give limited results. Additionally, we did not measure the educational outcomes or skills that the students acquired. Future work regarding the evaluation of educational outcomes is needed.

Conclusion

Exposure to real clinical situations helps medical students to realize the importance of basic sciences, understand the relevance of basic science in the clinical setting, and enhance their urge to learn basic science. Early clinical exposure for the pre-clinic medical student should be implemented in the curriculum.

Conflict of interest

The authors approve that there is no conflict of interest to disclose.

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