Preclinical Medical Students' Achievement to Learning Outcomes in Special Tracts of Rural Doctors

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Background: *Preclinical medical students are introduced to application of knowledge in communication skills, and clinical examination in third year of the curriculum including gaining clinical experiences without difference in learning environment and faculty administration to achieving personal and professional success.*
Objective: *To assess perception of medical students and the learning gap between One District One Doctor (ODOD) and Collaborative Project to Increase Production of Rural Doctors (CPIRD) when a special tract is used for rural doctors to achieve learning outcomes and management of the Institute of Medicine to study medicine including academic curriculum, environmental, and social factors.*
Material and Method: *A cross-sectional study of third years students of ODOD and CPIRD groups were recruited for this study. Self-administered questionnaire in domain of learning outcomes, motivation, and self-confidence including faculty administration were given to all the participants to assess and analyze the perception of preclinical students. t-test and bivariate analysis were used to evaluate the results.*
Results: *Thirty-six CPIRD (60%) and 24 ODOD (40%) participants completed the questionnaire. The CPIRD medical students' perceptions were higher in learning outcomes when compared with ODOD in all domains of cognitive, interpersonal skill, professionalism, and ethic aspect but not statistically significant. Grades before admission were different in special tracts of rural doctors; CPIRD medical students had higher examination scores before admission (63.73$\pm$3.37 vs. 56.76$\pm$5.22, $p<0.05$) compared with ODOD group. However, there was no difference in Grade point average (GPA)between the two groups (3.32$\pm$0.35 vs. 3.23$\pm$0.29, $p = 0.33$) after finishing in preclinical year. There was no difference between the two groups of medical students in perception in faculty administration including teacher preparation, learning environment, and social environment.*
Conclusion: *No learning gap in learning outcomes, learning environment, and faculty administration between two groups of special tracts of rural doctors after finishing preclinical medical year even when the examination score before admission were different in both groups. After studying in the same learning environment, there was no difference of all learning outcomes and GPA in third year of preclinical medical students.*

Keywords: *Learning Outcome, Rural doctors*

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Medical school curriculum was divided into preclinical and clinical phases. These two phases have distinct learning environments and require different learning skills. Preclinical students operate in largely objective learning environments with structured goals and less flexible content. Clinical medical students function in clerkships and post-clerkship experiences with different learning models that provide real-life clinical activities, offer guidance at critical times, and require knowledge application rather than knowledge from memory. Many medical students feel unprepared to begin their clerkships and find the conversion to clinical learning particularly stressful. Faculties try to bridge the learning gap to help students prepare for the different learning environment. Many medical schools offer transitional courses before the third-year clerkships. These early clinical exposure courses vary widely across institutions in structure and content[1,2]. The medical content of clinical clerkships, including procedural skills, has been described[3,4]. In this study,

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we describe the implementation and evaluation of an early clinical exposure program, a 2-week intensive introduction to clinical medicine course for third year medical students.

In Thailand, there is special track of medical students to become doctors in rural areas. The two ongoing national programs are the Collaborative Project to Increase Production of Rural Doctors (CPIRD) in a provincial area and the One District One Doctor (ODOD) in a non-provincial city[5,6]. The purpose of this study was to determine student perceptions of learning, curriculum, and learning environment. Faculty management in barriers of learning and the educational environment between CPIRD and ODOD project has study to improving learning outcomes at the Suranaree University of Technology, Thailand.

Material and Method

Study population

This study was conducted with 60 preclinical students who were randomly sampled based on student numbers from a full class of third year medical students, Institute of Medicine, Suranaree University of Technology, Thailand. These students were in the last semester of their preclinical studies. Ethical approval for this project was obtained from Suranaree University of Technology (EC-58-03).

Study protocol

All of participants received standard OSCE guide prior to perform maneuver. After introduction to the clinical medicine course or upon completion of academic studies in Institute of Medicine, Suranaree University of Technology, medical students completed an anonymous questionnaire in the Thai language with responses scored on Likert scale using a five-degree. The 10 minutes questionnaire also included demographic questions about academic year and gender.

Questionnaire

Questionnaire was modified based on previous studies of early professional contact and course experience[7,8]. This questionnaire consisted of 28 statements on education, goals, workload, clinical skills, and general satisfaction. Discussing each item thoroughly with facilitators and researchers at the university, ensured face validity of the study, which was reviewed by medical education staff. Items were classified into new domain categories. The first part contained four domains of cognitive, interpersonal skill, professionalism, and ethic. The second part contains four domain of medical education management, learning introduction to medicine, teacher preparation, learning, and social environment.

Sample collection

Data collection took place in the third semesters of third academic year. Medical students were approached after finishing the introduction to clinical medicine. The goals of the study were explained to them and any questions they had were answered. Those who consented to participate in this study were then given the study questionnaire and instructed to fill it without discussing with their classmates.

Definition of terms

Special tract of rural doctor: ODOD and CPIRD projects

The two special tracks for medical students include CPIRD in a provincial area launched in 1995 and ODOD in a non-provincial city launched in 2005. The recruitment was based on academic ability using a single examination paper.

Learning outcomes

The academic domain includes knowledge, clinical skill, and professionalism. The faculty administration in domain of curriculum, teacher, and environment assessment was assessed.

Preclinical medical students

The students selected were in the third year of the six-year medical curriculum of medical school studying introduction to clinical medicine course to the concepts of history and physical examination.

Statistical analysis

Descriptive statistics were analyzed. Chi-square and paired t-test were used to derive *p*-values for categorical variables by level of student learning ability. For the performed statistical analysis, a significance level of 0.05 was assumed.

Results

Thirty-six CPIRD (60%) and 24 ODOD (40%) participants completed the questionnaire. CPIRD medical students had higher examination score before admission (63.73$\pm$3.37 vs. 56.76$\pm$5.22, $p<0.05$) compared with ODOD students. There was no difference in Grade Point Average (GPA) between the two groups after finishing preclinical year (3.32$\pm$0.35 vs. 3.23$\pm$0.29,

Table 1. Domain in learning outcome in early clinical exposure curriculum

Domain	Aspect	CPIRD (n = 36)	ODOD (n = 24)	*p*-value
Cognitive	Stimulate and value of knowledge	4.03±0.77	3.83±0.70	0.33
	Expectations	3.28±1.19	3.13±0.95	0.60
	Study guide	4.19±0.710	4.13±0.74	0.72
	Interesting course	4.06±0.75	3.92±0.83	0.51
Interpersonal skill	Small group talks	3.69±1.01	3.67±0.70	0.91
	Students' influence to discussion with facilitators	3.69±1.01	3.33±0.92	0.17
	Clinical skills in health evaluation	4.03±0.69	3.83±0.64	0.28
	Laboratory assessments	3.92±0.64	3.92±0.69	1.00
	Training experience	3.89±0.785	4.00±0.66	0.57
	Team work	4.00±0.72	4.00±0.78	1.00
	Course objective	3.89±0.58	3.88±0.74	0.94
Professionalism	Students' confidence	3.72±0.91	3.46±0.72	0.24
	Medical profession	4.03±0.77	3.63±0.88	0.07
	Study motivation	4.25±0.87	4.04±0.91	0.38
	Inspiration	4.11±0.82	4.00±0.83	0.61
	Encouragement	3.94±0.860	3.96±0.75	0.95
Ethical Aspect	Patient's feelings	3.92±0.91	3.71±0.81	0.37

* Significant difference at $p < 0.05$

Table 2. Magement of Institute of Medicine to study medicine

Domain	Aspect	CPIRD (n = 36)	ODOD (n = 24)	*p*-value
Learning in early clinical exposure curriculum	Curriculum overload	3.44±1.21	3.63±0.77	0.52
	Meets the needs of students learning.	3.97±0.69	3.83±0.70	0.45
	Course structure	3.75±0.87	3.63±1.01	0.61
Teachers preparation	Students contribution to knowledge application	4.11±0.71	3.92±0.72	0.30
	Introduction to medicine tasks	4.19±0.79	4.08±0.88	0.61
	Feedback	3.94±0.67	3.88±0.79	0.72
	Two way communication	3.94±0.92	3.92±0.78	0.90
Learning environment	Satisfaction fun to learn	3.89±0.75	3.96±0.69	0.72
Social Environment	Facilitator, social media and network	3.69±0.79	3.79±0.78	0.64

* Significant difference at $p < 0.05$

$p = 0.33$). Learning outcomes in CPIRD was higher than that of ODOD project in all domains, cognitive, interpersonal skill, professionalism, and ethical aspect but it was not statistically significant (Table 1).

CPIRD had a higher perception in management of Institute of Medicine for all domain of academic curriculum, the environmental, and the social factor such as the improvement in promotion of learning outcome than the ODOD group but it was not statistically significant (Table 2). Overall academic domains in CPIRD was higher than ODOD but it was not statistically significant (Fig. 1).

Discussion

The result of the study reveals that there was no difference in perception in learning outcome knowledge, interpersonal skills, and professionalism including management of Institute of Medicine to study medicine between the ODOD and CPIRD groups. Learning and social environment can help medical students to prepare to study in medicine. There was no difference between the two groups of special recruitment projects. Before admission, CPIRD medical students got higher examination score than ODOD medical students. After finishing in preclinical year,

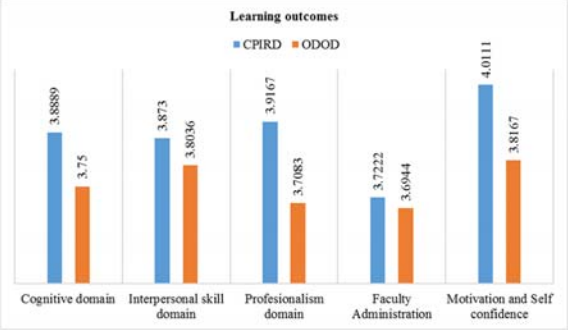

Fig. 1 Learning outcomes of medical students

grade point average (GPA), motivation, and self-confident were not different between the groups. All preclinical medical students, CPIRD and ODOD special project were satisfied with the early clinical exposure curriculum. This was similar to previous study showing that transitional course based on common skills is relevant to students' clerkship experiences and can increase students' self-reported preparedness for the clinical years of medical school[9].

Students identify the need for strong positive role models in their learning environment and for effective evaluation of the professionalism of students and teachers[10,11]. In addition, in our study, students' perceptions of CPIRD was more positive in learning, academic self-perception, and environment but the difference was not statistically significant. Skills taught in introduction to clinical medicine were performed during the third year by most students, indicating that the content was appropriate. Despite the apparent benefit of the course, it is important to keep in mind that our evaluation was a student self-assessment. The literature on self-assessment shows that strong students underrate and weak students overrate their performances, both groups remain consistent with previous study[12].

Future studies will need to determine the outcomes of early clinical exposure program. Ideally, evaluations that includes focus groups and in-depth interviews. This should include the integrated curriculum, the administration response to lapses, and the learning environment, which may include community and rural placements. Assessment of transition courses such as introduction to clinical medicine can be replicated in other institutions and help those medical schools determine if they are satisfied with the psychomotor skill levels obtained by their students in various stages of clinical training.

The limitation of this study is that the assessment of the learning outcome was only based on medical student opinions including the fact that the survey included only one medical school and may not be generalizable.

Conclusion

Special tracts of rural doctors after finishing preclinical medical year reported achieving the learning outcomes. It increased knowledge, confidence in ability to perform psychomotor skill, and professionalism in both ODOD and CIPRD without learning gap. The learning outcomes, learning environment, and faculty administration between the two groups before admission examination score were different. However, after the study in same learning environment, there was no difference of all learning outcome and GPA when completing the preclinical year.

What is already known on this topic?

The early clinical exposure in introduction to medicine based on common skills is relevant to students' clerkship experiences and can increase students' self-reported preparedness for the clinical years of medical school.

What this study adds?

The present study investigated learning outcome in medical students in three domains, knowledge, skill, and application to real practice.

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Potential conflicts of interest

None.

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การบรรลุผลความสำเร็จแห่งการเรียนรู้ของนักศึกษาแพทย์ชั้นปรีคลินิกในช่องทางพิเศษเพิ่มแพทย์เพื่อชาวชนบท

พรทิพย์ นิ่มขุนทด, ปัทมา ทองดี

ภูมิหลัง: นักศึกษาแพทย์ชั้นปรีคลินิกได้รับการสอนให้การประยุกต์ความรู้ด้านทักษะการสื่อสาร การตรวจร่างกาย ในหลักสูตรแพทย์ ชั้นปีที่ 3 รวมทั้งประสบการณ์ทางคลินิก โดยที่ไม่มีความแตกต่างของสภาพแวดล้อมในการเรียนรู้และการบริหารจัดการโดยคณะแพทย์ เพื่อให้ประสบความสำเร็จทั้งด้านความสามารถส่วนบุคคลและความเป็นวิชาชีพ

วัตถุประสงค์: เพื่อประเมินการรับรู้ของนักศึกษาแพทย์เกี่ยวกับช่องว่างของการเรียนรู้ ระหว่างโอดอดและซีเปิด ซึ่งเป็นช่องทางพิเศษในการเพิ่มแพทย์เพื่อชาวชนบทในการเข้าถึงผลลัพธ์การเรียนรู้และการบริหารจัดการของคณะแพทย์ รวมทั้งหลักสูตรสิ่งแวดล้อมและปัจจัยทางสังคม

วัสดุและวิธีการ: การศึกษาสังเกตแบบตัดขวางแจกแบบสอบถามให้กับนักศึกษาแพทย์ชั้นปีที่ 3 ในนักศึกษาซีเปิดและโอดอดที่ได้รับการคัดเลือกของมหาวิทยาลัยเทคโนโลยีสุรนารี ประเทศไทย ประเมินและวิเคราะห์ความเข้าใจของนักศึกษาแพทย์ชั้นปรีคลินิกในเรื่องผลลัพธ์การเรียนรู้ วิเคราะห์ข้อมูลทางสถิติด้วยทีเทสต์

ผลการศึกษา: ผู้เข้าร่วมวิจัยจากซีเปิด 36 คน (60%) และโอดอด 24 คน (40%) ได้มีการตอบแบบสอบถาม ในการรับรู้ของนักศึกษาแพทย์ซีเปิดพบว่ามีคะแนนของผลลัพธ์การเรียนรู้สูงกว่าโอดอดในทุกทางของความรู้ ทักษะกระบวนการปฏิบัติ ทักษะวิชาชีพ และจริยธรรม แต่ไม่แตกต่างอย่างมีนัยสำคัญทางสถิติ แม้ว่าคะแนนการสอบรับเข้าศึกษามีความแตกต่างกันในทั้งสองของช่องทางพิเศษในการเพิ่มแพทย์เพื่อชาวชนบท โดยซีเปิดสูงกว่ากลุ่มโอดอด (63.73±3.37 และ 56.76±5.22, $p<0.05$) แต่พบว่าเกรดเฉลี่ยหลังสิ้นสุดการศึกษา ชั้นปรีคลินิกไม่แตกต่างกันระหว่างสองกลุ่ม (3.32±0.35 และ 3.23±0.29, $p = 0.33$) ทั้งสองกลุ่มของนักศึกษาแพทย์ ในเรื่องการรับรู้ในการบริหารจัดการของคณะ รวมทั้งการเตรียมตัวสอนของอาจารย์ สิ่งแวดล้อมของการเรียนรู้และสิ่งแวดล้อมทางสังคมทั้งหมดไม่มีความแตกต่างกัน

สรุป: ในการรับรู้ของนักศึกษาไม่พบความแตกต่างของความสำเร็จแห่งผลลัพธ์การเรียนรู้สภาพแวดล้อมแห่งการเรียนรู้และการบริหารจัดการของคณะแพทย์ระหว่างสองโครงการในช่องทางพิเศษเพิ่มแพทย์เพื่อชาวชนบทหลังจากการจบการศึกษาในชั้นปรีคลินิกแม้ว่าคะแนนสอบเข้าศึกษาจะมีความแตกต่างกันในทั้งสองกลุ่มภายหลังจากเข้าศึกษาในสภาพแวดล้อมที่เหมือนกัน ส่งผลให้ไม่มีความแตกต่างของการบรรลุผลความสำเร็จแห่งการเรียนรู้และเกรดเฉลี่ยหลังจากเรียนจบของนักศึกษาแพทย์ในชั้นปรีคลินิก