Perspectives of Health System Sciences Education among Young Physicians in Provincial Settings

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Abstract:

Background: Thai Medical Council determines the internship training program in order to develop clinical practice skills of newly graduated physicians, which will be called young physicians in this study, as well as to give the resolution to insufficient physicians in other regions of the country. As a result, every medical graduate must go through the process of training. However, various studies indicated concerns about preparedness of newly graduated physicians as well as solutions and preparations by medical schools.

Objective: To explore and compare perspectives regarding medical school preparation of young physicians graduated from Phramongkutklao College of Medicine (PCM) for clinical practice.

Materials and Methods: This study was observational mixed model cross-sectional study, conducted in workplaces of intern physicians and focused on first-year and second-year intern physicians graduated from PCM. The questionnaire of this study included two parts; quantitative and qualitative sections. Quantitative part included 5-Likert scale covering 6 perspectives toward preparation for clinical practice (knowledge, health system, medical ethics & laws, continuity of medical education, technology usage and communication skills). Qualitative part was comment section. The questionnaire was made online and distributed via messaging applications and stored in online sheet. One-way ANOVA was used to compare all perspectives with independent t-test for comparing perspectives between groups.

Results: Seventy-four young physicians responded of which 62 were first-year interns. Young physicians perceived knowledge about knowledge of health system significantly lesser than other five aspects of preparations from medical school (F=11.082, p=0.001). Military and civilian physicians had different perspectives on preparation for technology usage (t=2.716, p=0.008). Second-year intern had lower knowledge on medical ethics and laws than first-year intern (t=2.066, p=0.042). Female physicians had lower preparation for communication

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skills than males (t=2.412, *p*=0.018). Qualitative data addressed educational issues about patient management, health system sciences and financial management.

Conclusion: Health system education was to be emphasized in medical schools for young physicians' competencies as well as technology usage, medical laws and ethics, communication skills and financial management.

Keywords: Young physician perspective, Health system sciences, Clinical practice

Introduction

Presently, Thai Medical Council determines the internship training program in order to develop clinical practice skills of newly graduated physicians, which will be called young physicians in this study, as well as to give the resolution to insufficient physicians in other regions of the country. As a result, every medical graduate must go through the process of training. However, various studies indicated concerns about preparedness of newly graduated physicians as well as solutions and preparations by medical schools.[1-5]

All young physicians must be qualified by Thai Medical Council before graduated. The process included three steps of national license examination during their third, fifth and sixth years. The examinations cover 3 steps of basic science examination, clinical science examination and objective structured clinical examination (OSCE) during their respective years. Despite these steps, many young physicians felt uncertain about their upcoming works after their graduation.[1,2]

Several factors render young physicians feel unprepared for clinical practices such as insufficient clinical knowledge and trainings by medical schools[2,6], inadequate or even lacks of practicing some medical procedures since they were medical students[2], lacks of knowledge regarding medical laws[6], unpreparedness for multidisciplinary communication[4], limited guidance from specialists[7] and unconfident in clinical practice.[3,8] In addition, rapid change of status from medical students to young physicians is considered one of the weakest links during their medical career which might causes stresses.[3,8,9]

The objective of this study was to explore and compared perspectives regarding medical school preparation of young physicians graduated from Phramongkutklao College of Medicine (PCM) – a military medical college in Bangkok, Thailand which provide graduated physicians for both civilian public healthcare system and armed forces medical branches – for clinical practices.

Materials and Methods

Study population and setting

This study focused on first-year and second-year intern physicians graduated from PCM. The setting for this study was classified into two settings; civilian hospitals which included public and university hospitals and military hospitals which were army, navy, and air force hospitals. The study was conducted during 2020 to 2021.

Study design

This study was observational mixed model cross-sectional study. This included quantitative and qualitative studies which address perspectives of the preparedness of young physicians in clinical practice.

Questionnaire and data collection

The questionnaire of this study included two parts; quantitative and qualitative sections. The quantitative part included another two parts which were general characteristics data (gender, internship year, average grades and medical branches of service (civilian or armed forces)) and perspectives toward medical school preparation for clinical practice which was 5-Likert scale. Perspectives toward medical school preparation for clinical practice included six aspects regarding physicians' work field; 1) medical knowledge: knowledge in internal medicine, surgery, paediatrics, obstetrics-gynaecology, emergency medicine, preventive medicine, holistic care of patients, history taking and physical examination, proper investigations and treatment, important medical procedures and confidence in patient care 2) knowledge of health system: knowledge regarding Thai health system including health coverage service, hospital accreditation, disease investigation and health economics, etc. 3) medical ethics & laws: knowledge and practice regarding medical ethics and medical laws 4) continuity of medical education: knowledge and practice of evidence-based medicine and use of literatures in patient management 5) technology usage: comprise of both literature search, use of hospitals' computerizing programs and use of medical technology with patient care and 6) communication skills: included communications between patients, patients' relatives and other healthcare providers as well as English and third language communication.

The questionnaire was made online on Google form and distributed via messaging applications to participants. Responses from participants were stored on Google sheet which can be downloaded for statistical analysis.

Qualitative part followed quantitative part. It included filling the comments on overall clinical preparedness and other knowledges important for internship situations.

Statistical analysis

SPSS 26.0 (Armonk, New York) was used for statistical analysis. General characteristics were calculated using descriptive statistics. Comparison between perspectives was conducted using one-way ANOVA with post-hoc tests by Bonferroni test. Comparison between internship years and genders were assessed using independent t-test. Significant differences between comparisons were counted at p-value < 0.05.

Ethical approval

This study was approved by Institutional Review Board Royal Thai Army Medical Department. The approval number was R061q/63_Exp.

Results

General characteristics

Seventy-four young physicians responded the questionnaire including 62 (83.78%) first-year interns. Males accounted for 58.11% of total participants. Most (79.73%) work in armed forces medical branches. Their Grade Point Average (GPA) of <3.50 were 60.81% as data shown in Table 1.

Table 1 General characteristics of young physicians giving perspectives toward preparation for clinical practice by Phramongkutklao College of Medicine (n=74)

Characteristics	Participants	
	First year interns N (%)	Second year interns N (%)
Gender		
Male	35 (81.40%)	8 (18.61%)
Female	27 (87.10%)	4 (12.90%)
Status		
Armed forces physicians	48 (81.36%)	11 (18.64%)
Civilian physicians	14 (93.33%)	1 (6.67%)
GPA		
< 3.50	35 (79.55%)	9 (20.46%)
≥ 3.50	27 (90.00%)	3 (10.00%)

Comparison between perspectives of medical school preparation for clinical practice

One-way ANOVA analysis shown that there were significantly different between perspectives of young physicians (F=11.082, *p*=0.001). Post-hoc analysis showed that young physicians perceived knowledge on health system significantly the least of five aspects of preparations from medical school (*p*=0.001). Other aspects did not show any significant differences in young physicians' perspectives as data shown in Table 2.

Table 2 Comparison between perspectives toward six aspects of medical school preparation for interns in clinical practice (n=74)

Mean score						One-way ANOVA				Pair comparison	p
MK	KHS	MEL	CME	TU	CS	Levene statistics	p	F	p		
4.01± 0.55	3.38± 0.83	4.05± 0.76	4.08± 0.59	3.97± 0.70	4.00± 0.66	3.14	0.009	11.082	<0.001	MK>KHS	<0.001*
										MEL>KHS	<0.001*
										CME>KHS	<0.001*
										TU>KHS	<0.001*
										CS>KHS	<0.001*

MK, medical knowledge; KHS, knowledge of health system; MEL, medical ethics & laws; CME, continuity of medical education; TU, technology usage; CS, communication skills; * Significant at 95% confidential interval

Comparison between young physicians working in civil and military hospitals demonstrated significant difference regarding to preparation for technology usage (t=2.716, *p*=0.008). For internship year, it was found that second-year interns had lower knowledge on medical ethics and laws than the first-year as significantly (t=2.066, *p*=0.042). Female young physicians had lower preparation for communication skills than those of male significantly (t=2.412, *p*=0.018) as data shown in Table 3, 4 and 5, respectively.

Table 3 Comparison between perspectives of military and civilian physicians toward six aspects of medical school preparation for interns in clinical practice (n=74)

Aspects	Mean score ± SD		t	*p*
	Military physicians (n=59)	Civilian physicians (n=15)		
Medical knowledge	4.06 ± 0.54	3.84 ± 0.58	1.386	0.170
Knowledge of health system	3.41 ± 0.83	3.24 ± 0.83	0.697	0.488
Medical ethics & laws	4.05 ± 0.79	4.07 ± 0.70	0.071	0.944
Continuity of medical education	4.08 ± 0.60	4.07 ± 0.55	0.073	0.942
Technology usage	4.08 ± 0.63	3.56 ± 0.81	2.716	0.008*
Communication skills	4.06 ± 0.62	3.77 ± 0.75	1.559	0.123

* Significant at 95% confidential interval

Table 4 Comparison between perspectives of first and second-year interns toward six aspects of medical school preparation for interns in clinical practice (n=74)

Aspects	Mean score ± SD		t	*p*
	First-year interns (n = 62)	Second-year interns (n = 12)		
Medical knowledge	4.03 ± 0.48	3.94 ± 0.84	0.362	0.724
Knowledge of health system	3.40 ± 0.75	3.25 ± 1.18	0.432	0.673
Medical ethics & laws	4.13 ± 0.67	3.65 ± 1.07	2.066	0.042*
Continuity of medical education	4.09 ± 0.57	4.03 ± 0.70	0.312	0.756
Technology usage	4.01 ± 0.65	3.80 ± 0.89	0.738	0.473
Communication skills	4.01 ± 0.61	3.94 ± 0.89	0.359	0.721

* Significant at 95% confidential interval

Table 5 Comparison between perspectives of male and female interns toward six aspects of medical school preparation for interns in clinical practice (n=74)

Aspects	Mean score ± SD		t	*p*
	Males (n=43)	Females (n=31)		
Medical knowledge	4.05 ± 0.62	3.97 ± 0.44	0.602	0.549
Knowledge of health system	3.47 ± 0.88	3.25 ± 0.75	1.156	0.252
Medical ethics & laws	4.16 ± 0.80	3.91 ± 0.69	1.372	0.174
Continuity of medical education	4.16 ± 0.61	3.97 ± 0.55	1.360	0.178
Technology usage	4.02 ± 0.79	3.91 ± 0.55	0.617	0.539
Communication skills	4.15 ± 0.66	3.79 ± 0.61	2.443	0.017*

* Significant at 95% confidential interval

Qualitative results

There were total of 29 comments which can be categorized into three major categories; 1) patient management and procedures by self-individual, 2) health system sciences and 3) financial management.

Patient management and procedures by self-individual

Fourteen physicians commented on not having enough experiences for medical procedure, too few occasions for ordering the management by themselves including sufficient exposure for real patients. One physician commented as follows:

'I think that regarding to knowledge, the medical school had sufficiently provided but some medical procedures and order of treatments were still be supervised by residents. We needed to do some of these procedures by ourselves due to real working situation, these things must be done on our own.'

Another physician comment regarding insufficient skills on medical procedure as follows:

'I want the medical school to emphasize more on medical procedures due to real working situation, these procedures such as intercostal drainage and joint aspiration must be done by ourselves without supervision.'

Regarding to insufficient exposure to real patients, some comments included as follows:

'I want the medical school to rotate us to other affiliated hospitals (provincial general hospitals and community hospitals) more than usual for exposure to more patients.'

'Medical school did not prepare enough to manage patients with non-communicable diseases for diagnosis, investigations, medicine prescription and follow-up patients due to not enough patients for learning.'

Health system science

Eleven physicians commented on health system science practice during their student years. These comments included hospital accreditation, referral system, patients' health scheme, disease reporting system such as influenza and dengue fever and health economics. These comments included:

'I think that medical school did not teach us about patient's scheme because charging cost of treatment can determine hospital's profit.'

Some physicians suggested topics for teaching them on how patient's schemes are related to cost of treatment per each one including hospital accreditation with

complex processes in getting their hospital accredited.

Financial management

Two physicians suggested to teach financial management including tax for physicians and savings. One comment suggested to teach categories of incomes regarding to tax paying type. Other comments suggested to teach about how to save money and manage income.

Discussion

This study addressed perspectives of young physicians toward medical schools' preparations for real world career. Many studies had already addressed the issues focusing on knowledge, clinical skills and interpersonal communications.[2,6,10-12] This study expanded the scope covering real life situations facing with their work, medical ethics and laws, health system sciences, technological skills and continuation of education.

Overall, it was found that young physicians' perspectives toward medical schools' preparation for health system science was significantly less than others. In context of Thailand's health schemes, there were several issues regarding difficulties in managing patients according to their schemes, especially national health policy, patients' schemes budget, medical oversupply and recording of treatments (e.g., Diagnosis Related Group). Many large-scale hospitals had financial loss in recent years with these factors as issues.[13,14] Most Thai medical schools educated their students well enough on clinical management of patients by investigations to treatments; however, public health education was not emphasized well, resulting in limited public health competencies.[15] The current curriculum of PCM does not incorporate health system sciences which should be integrated for young physicians.

This study also found that perspectives toward technology usage was differed between military and civilian physicians with lower mean score from civilian physicians. In our setting, clinical practice between military and civilian hospitals was different regarding to workload and number of patients. This could indirectly affect the use of technology for patient care especially online clinical management data. Patients and workloads were fewer in military hospitals than in civilian hospitals as most of the patients in military hospitals were military officers and their families while in civilian hospitals, patients were general citizens. Previous studies had demonstrated that technology usage, e.g., medical-related mobile applications, were used among physicians for education-learning, assisting in disease diagnosis and drug references.[16,17] This study implied that excessive workloads in civilian hospitals rendered technology using skills such as evidence-based medicine and online literature search, practiced by medical schools were insufficient for young civilian physicians in constraint of times and works. As the trend of healthcare has shifted to technology-based, it is recommended medical schools to prepare their medical students to step forward and handle technology-involved clinical practice such as artificial intelligence and telemedicine, etc.

Comparison between first-year and second-year interns found that there was significant difference in medical ethics and laws. Previous studies addressed ethical decline among young physicians who were attributed to multiple roles (as learners and healthcare providers simultaneously), stressful working environments, prioritization of patients' physical rather than psychological well-being and the attitudes of senior colleagues.[18,19] This might be implied that second-year interns had endured these situations for longer duration than first-year

interns, resulting in decline of medical ethics and knowledge regarding medical laws as factor attributed to limited preparation for coping with these situations for young physicians. One previous study suggested ethical education would halt the ethical decline among young physicians.[18]

Regarding difference between genders, it was found that female physicians scored communication skills lower than male physicians. Previous study addressed the problems regarding communication issues of female physicians had to face such as their negative viewpoints on patients' autonomy and cross-gender encounters (female physicians to male patients) in which patients were more satisfactory for male than female physicians.[20] Female physicians tended to be more attentive and used longer talking time with their patients.[20] This might be affected by the number of patients and time constraint which rendered female physicians to perceive their communication skills lowly as they had fewer time to talk with their patients. Despite the finding was contrast to previous studies which regarded female physicians had higher communication skills than males,[21,22] it was suspected that due to different workplace settings resulted in communication skills were more preferable to males. In our setting, most physicians were working in military hospitals, usually bound to some military bases. In this unique setting, the society was noticeably masculine and militaristic which required communications with not only physicians to patients or other health care providers, but also with military officers. We assumed that male physicians could be more adaptable to this environment better than females. It is suggested that training female military physicians to apply their communication skills to military officers could be beneficial. Also, further explorations into this unique setting are recommended.

Other issues were also reported from qualitative study, but one noticeable topic was financial management by young physicians. Although this issue was unrelated to clinical practice, but some young physicians concerned that they were unprepared for financial management such as savings, income calculation and tax calculation, etc. Previous studies indicated financial illiteracy could be indirectly related to stress, clinical practice, patient caring and burn out.[23,24] It is suggested that financial education course for senior medical students is important to prepare them for financial management in their career. Future studies that explore the financial literacy and perspectives of young physicians as well as medical students are recommended.

One limitation in this study was included young physicians who resigned from either military or civilian health sectors but the number of them were very few. Military and civilian health sectors are bureaucrat branches of Ministry of Defense and Ministry of Public Health, respectively. Physicians who resigned would enter private sectors, becoming casual workers in hospitals registered to non-governmental organizations, continuing their education in other degrees or even starting their career in other occupations. Qualitative studies with this group could revealed how they perceived medical school preparations different from their cohorts which resulted in their resignation.

This study concluded that in order to prepare young physicians well enough for clinical practice, other aspects of medical education than clinical knowledge and procedural skills should be integrated. Health system education was a topic to be emphasized in medical schools for young physicians' competencies in public health. Technology usage, medical laws and ethics, communication skills and financial management were concerns to be focused as well.

Data availability

No data are associated with this article.

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Competing Interests

No competing interests were disclosed

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