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Original Article

Comparing the outcomes of different postgraduate year training programs in Taiwan

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ABSTRACT

Background: Postgraduate year training programs play an important role in the development of a comprehensive medical education. The goal of these training programs is to inculcate in physicians the expected level of skill in patient care. After the initiation of such programs in the USA, Europe, and Japan, studies were conducted in Taiwan to investigate relevant training methods, and a training system was established in 2003. Beginning with 3-month programs, followed by 6-month programs, the programs were constantly modified and enhanced by the establishment of the 1-year training program in 2011. This year was the transition period from the 6-month programs to the 1-year programs.

Methods: We used a 50-item multiple choice question (MCQ) test and six 10-min stations for objective structured clinical examination (OSCE), which was composed of four stations relating to standardized patients and two stations concerning the clinical skill evaluation, to evaluate the learning results of the trainees. The trainees were divided into four groups according to the training program.

Results: There was no significant difference between the performance of the 6 months and 1-year groups. The *p* values were 0.424 in the MCQ test and 0.082 in the OSCE evaluation.

Conclusion: A well-designed postgraduate training program should develop trainees' competencies. The results of this study may provide useful insight for ways to improve the design of training programs. Further investigation to better understand the impact of different programs is warranted.

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At a glance commentary

Scientific background on the subject

PGY training programs play an important role in the development of a comprehensive medical education. The goal of these training programs is to inculcate in physicians the expected level of skill in patient care. The training programs were conducted in Taiwan to investigate relevant training methods, and a training system was established in 2003. Beginning with 3-month programs, followed by 6-month programs, the programs were constantly modified and enhanced until the establishment of the 1-year training program in 2011. This year was the transition period from the 6-month programs to the 1-year programs.

What this study adds to the field

This study we performed revealed no significant differences in medical knowledge and clinical performance among the trainees regardless of different programs, and showed that the learning results persisted long after the training ended if the programs were well designed. The results provide valuable information that can be used to improve the design of the training program such as arranging more core competencies in the 1-year program.

In the past, medical students were trained through knowledge-centered learning to obtain clinical skills and develop patient care abilities. The lack of general medical training was accepted due to the immediate entry into a specialization after graduating from school [1]. Over time, more advanced countries set up 1–2 years general medical training programs in order to improve the abilities of patient care, clinical skills, doctor-patient communication, and the integration of the patient care experience. The postgraduate general practice training system was set up as a pre-registration year in the United Kingdom in 1951 [2]. The postgraduate year (PGY) training program developed in America in 1970 [3]. In Taiwan, the doctor training program began in 1897 and from 1950, followed the American format. Medical students graduated from medical school after completing 6 years of college education and 1-year of internship training and then chose their specialty in the residency training program. The PGY training program was launched in Taiwan in 2003, starting with a 3-month course that eventually progressed into a 1-year course in 2011.

However, little is known about the effectiveness of this program in Taiwan on trainee learning. We also want to evaluate the impacts of the different training programs and timing issue on the learning effect. The objective of this study, therefore, was to use various assessment tools to compare clinical core competencies and relative attitudes to postgraduate general medicine practice among PGY residents at Chang Gung Memorial Hospital. We hope that the quantitative data and the qualitative information can be used to improve

program design and accurately evaluate the implementation of postgraduate general medicine training in Taiwan.

Materials and methods

Participants were 314 trainees. The evaluation was conducted in two parts. The first consisted of a 50-item multiple choice question (MCQ) test with each item worth two points. The items were chosen according to the core knowledge required, as indicated by the Taiwan Joint Commission on Hospital Accreditation (TJCHA). The second part involved six 10-min stations objective structured clinical examination (OSCE). Standardized patients (SPs) were used in four stations including internal medicine, surgery, obstetrics and gynecology, and pediatrics. Two stations concerned clinical skills performance such as endotracheal tube intubation and infection-protective clothing. The evaluation was held in the last month of the training program the Group PGY trainees accepted mentioned as below.

All of the 314 trainees participated in the MCQ exam. They were divided into four groups according to their training program.

Group R2 contained 156 2nd-year residents enrolled in a 6-month PGY training program.

Groups R1a and R1b contained 61 and 49 1st-year residents, respectively who were also enrolled in a 6-month PGY training program. According to the TJCHA's policy, the 61 R1a residents were enrolled in the PGY training program from July to December 2011 and then continued onto their 1st-year resident training program. The 49 R1b residents proceeded with their resident training program and then enrolled in the PGY training program from January to June 2012.

Group PGY consisted of 48 general residents who had just completed their internship training and then enrolled in a 1-year PGY training program from July 2011 to June 2012.

In Groups R2, R1a, and R1b, the residents chose their specialization for residency prior to enrolling in the PGY training program. The trainees of Group PGY had not decided on their specialization for a residency at the time the study was conducted.

In the second part, 24 residents from each group ($n = 96$) chosen randomized participated in the OSCE. The criteria for passing or failing each station were determined by the Angoff method. The results of every checklist were divided into three possible scores, not completed (score of 0), partially completed (score of 1), and fully completed (score of 2). The final score obtained at each station was determined by using the following equation: (Score obtained/maximum obtainable score) \times 100. The mean score was then calculated across all stations. All the raters were qualified by the Taiwan Association of Medical Education after completing the rater training program.

The item difficulty index and the item discrimination index of the MCQ test were analyzed after the assessment. The trainees were scored by arrangement, taking the upper and lower quartiles, and then categorized into high- and low-grade groups with respect to the correct rate for each item as percentage in high (PH) or percentage in low (PL). The item difficulty index was calculated as $(PH + PL)/2$ and the item

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