Correlation of Residents' Knowledge and Clinical Performance with Their Teaching Skill and Attitude

Ruangsak Lertkhachonsuk MD*,
Danai Wangsaturaka MD**

** Department of Obstetrics and Gynecology, Faculty of Medicine, King Chulalongkorn Memorial Hospital, Chulalongkorn University, Bangkok, Thailand*
*** Department of Pharmacology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand*

Objective: *To determine whether teaching skill is associated with knowledge or clinical performance in Obstetrics and Gynecology residents, King Chulalongkorn Memorial Hospital, Thailand.*
Material and Method: *A questionnaire evaluating residents' teaching skills was completed by medical students using a global rating scale. The results were compared with the residents' score from in-training examination and clinical performance score from the medical staff. Correlation between teaching skill and knowledge, teaching skill, and performance was done by using bivariate correlation.*
Results: *Forty-nine medical-students were enrolled to evaluate residents' teaching skills. Twenty-eight Obstetrics and Gynecology residents were evaluated in the present study. The correlation between teaching skill and knowledge was not significant ($r = 0.066$; $p = 0.25$). The correlation between teaching skill and clinical performance was not significant ($r = 0.172$; $p = 0.28$). However, clinical performance and knowledge showed a significant correlation ($r = 0.558$; $p = 0.002$).*
Conclusion: *Clinical performance and knowledge had no correlation with teaching skill in Obstetrics and Gynecology residents. However, results of the present study show that clinical performance and knowledge had positive correlation. Training courses are recommended to increase residents' abilities in the range of teaching skills.*

Keywords: *Clinical competence, Education, Medical, Educational measurement, Internship and residency, Teaching*

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The importance of the residents' role in the teaching process cannot be overlooked. Research in medical education has shown that residents play an important role in teaching medical students[1]. Although most of them never attended a medical teaching course, they spend substantial time in teaching undergraduate students.

In Thailand, the education program for the specialty in obstetrics and gynecology requires three years of training. During the training period, they have to do clinical work under supervision of the attending staff. The staff can evaluate the residents' working performance through observation. There are in-training examinations to evaluate residents' knowledge twice a year. Fourth year medical students do their rotation in the Obstetrics and Gynecology Department. Residents teach medical students during or after their clinical work. This is usually done in small group sessions. After finishing their specialty training, some of the residents apply to be teaching staff in their institutes. Several aspects have been considered for their recruitment-knowledge, performance, personality, but teaching skills were hardly considered in the past.

In the present study, the authors questioned whether residents' knowledge and/or clinical performance are associated with the residents'

Correspondence to: Lertkhachonsuk R, Department of Obstetrics and Gynecology, Faculty of Medicine, Chulalongkorn University, Bangkok 10330, Thailand. Phone: 0-2256-4241, 08-9456-8494, Fax: 0-2254-9292, E-mail: ruangsakl@gmail.com, drruang9@yahoo.com

teaching skills. The results from the present study may be useful for developing recruitment criteria of teaching staff in the future. It might aid in the selection of residents to become better teachers.

Material and Method

In February 2006, twenty-eight Obstetrics and Gynecology residents from the King Chulalongkorn Memorial Hospital, Bangkok, Thailand were evaluated in three categories, knowledge, clinical performance, and teaching skills. The outcome measure for residents' knowledge was the in-training examination, which was done twice a year. The examination consists of six modified essay questions (MEQs) and 120 multiple choice questions (MCQs). Total scores were 200 marks, which come from MEQs 100 marks and MCQs 100 marks. Clinical performance was evaluated by medical staff using a clinical performance evaluation tool. This tool consists of five areas, fund of knowledge (20%), clinical skills (20%), responsibility (20%), personal attitudes (20%), and human relationship (20%). Clinical performance evaluation was done when each resident finished their rotation every 2-3 months. The score used in the present study came from the evaluation results in February 2006. The questionnaire evaluating residents' teaching skills was developed and focused on seven aspects, willingness to teach, time spent for teaching, teaching technique, knowledge content, students' understanding, usefulness, and being considered a good teacher. The questionnaire was completed by fourth-year medical students using a global rating scale from 1 to 5 in each aspect, then the sum of the score was divided by 7, therefore the final score in this item varied from 1-5. Small group teachings occurred when residents and students did their morning and evening ward round. The size of a small group teaching in this setting was one resident to 9-10 medical students. The score from the teaching evaluation was compared with the residents' score from in-training examination and clinical performance score from the medical staff. Median and range were used to assess residents score. Correlation between teaching skill and knowledge, teaching skill and performance was done by using bivariate correlation. Statistical significance was set at $p < 0.05$. Data was analyzed using SPSS (version 13.0 for Windows, copyright 2004 SPSS Inc, Rainbow Technologies, Chicago, III).

Results

During the study period in February 2006, forty-nine medical students were doing their rotation in the Department of Obstetrics and Gynecology and agreed to participate in the present study. All participants completed the questionnaire to evaluate the teaching skill of Obstetrics and Gynecology residents. Overall, twenty-eight residents were evaluated by using the global rating scale. The residents' in-training examination score, which were taken in the same period, represented their knowledge. The clinical performance scores were assessed by the attending staff using a departmental evaluation form. The assessment of both knowledge and clinical performance was done during the same period of teaching skill evaluation. The results from the evaluations are shown in Table 1.

Because the distribution of these scores is not normally distributed, the authors used Spearman correlation coefficient to identify the relationship between two groups of data. When the score from the in-training examination (knowledge) and result of teaching skill evaluation were compared, there was no statistically significant relationship between teaching skill and knowledge ($r = 0.066$; $p = 0.25$). Comparing the score from teaching skill and clinical performance, the correlation between teaching skill and clinical performance was not significant ($r = 0.172$; $p = 0.28$). However, when focused on clinical performance and knowledge, they showed a statistically significant positive correlation ($r = 0.558$; $p = 0.002$). Fig. 1 to 3 demonstrate the scatter plot for the correlation of these data.

Table1. Residents' score from knowledge evaluation, clinical performance evaluation and teaching evaluation (n =28)

	Knowledge: In-training score Median (Range)	Clinical performance score Median (Range)	Teaching score Median (Range)
First year residents	101.91 (78.17-115.33)	87.14 (81.17-94.83)	4.20 (308-4.6)
Second year residents	122.67 (103.17-134.83)	90.76 (84.17-97)	4.30 (1.41-4.83)
Third year residents	120.41 (106.5-131.17)	90.64 (76.67-96.5)	4.56 (2.83-4.81)

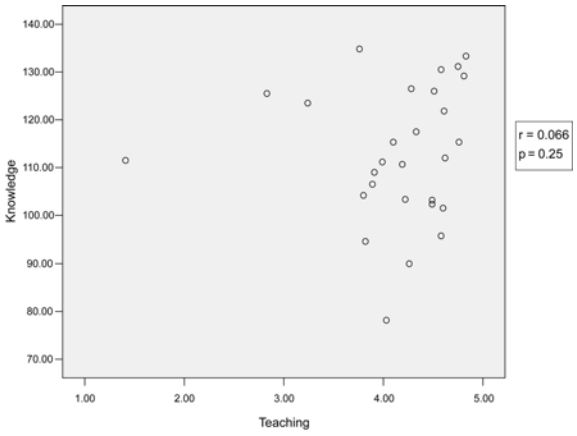

Fig. 1 Scatter plot demonstrates the correlation of teaching and knowledge

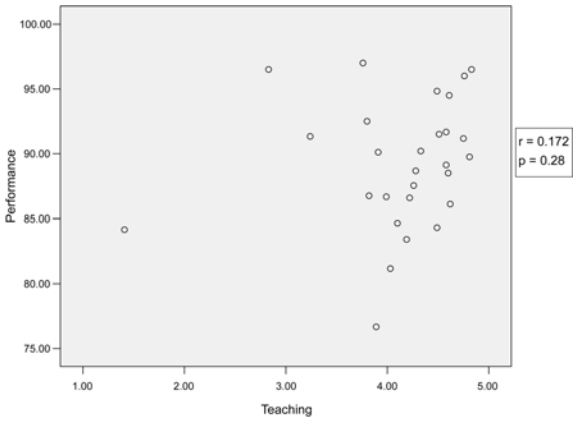

Fig. 2 Scatter plot demonstrates the correlation of teaching and clinical performance

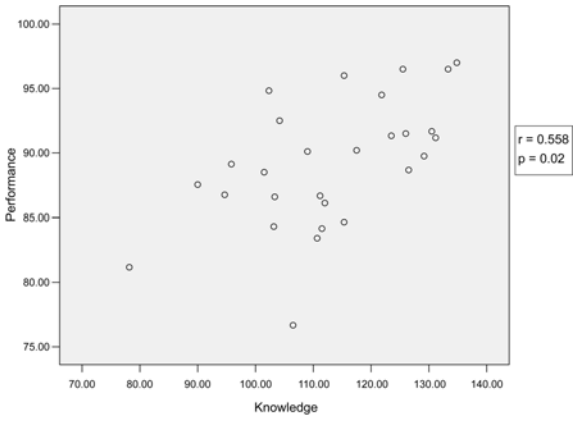

Fig. 3 Scatter plot demonstratesthe correlation of clinical performance and knowledge

Discussion

The teaching role of residents is important to medical students[1-3]. They claim that up to a third of their education is derived from residents and they feel that each department should provide minimum guidelines for residents' teaching responsibilities[4]. Teaching also encourages residents to identify potential outstanding teachers that demonstrate powerful mentoring, humanism, student-centered approaches, enthusiasm, organization, and clarity[5]. However, residents' teaching skill was rarely evaluated. Some residents have excellent cognitive knowledge and good clinical performance, but how can we be sure that they are also good teachers? Limited study showed the relationship among these three aspects. The objective of this study was to determine whether teaching skill is associated with knowledge and/or clinical performance in Obstetrics and Gynecology residents. The in-training examination score represented knowledge, clinical performance score from staffs' observation and teaching skill was evaluated by medical students themselves.

According to the results, lack of correlation between knowledge and teaching skill, and between clinical performance and teaching skill imply that a good doctor may not be a good instructor. This information can be applied to recruitment criteria for future teaching staff. Most of our teaching staff once was residents in the same institute. When they apply to become teaching staff, one must consider knowledge and performance, but teaching skills should be evaluated as well. Teaching skill can also be trained. Future teachers, who attend training courses increased their abilities in the range of teaching skills[6].

The finding of significant correlation between knowledge and clinical performance is not unexpected. A previous study showed that a higher level of knowledge led to better performance[7]. In clinical practice, good performance should consist of appropriate basic knowledge as well. The doctor cannot perform well without good clinical knowledge.

The present study has several limitations. First, it was focused only on Obstetrics and Gynecology residents at King Chulalongkorn Memorial Hospital. The number of participants is limited by the amount of medical students in each rotation. Moreover, concerning evaluation of teaching skills, medical students may provide the most reliable data about teaching satisfaction, but the technical aspects should also be evaluated by experts.

However, the results from the present study can be tested in different populations and using more meticulous methodology.

In conclusion, clinical performance and knowledge had no correlation with teaching skills in Obstetrics and Gynecology residents. However, results show that clinical performance and knowledge had a positive correlation. Teaching skill evaluation before recruitment of new teaching staff is recommended.

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ความสัมพันธ์ของทักษะการสอนของแพทย์ประจำบ้านสูติศาสตร์-นรีเวชวิทยากับความรู้และความสามารถทางเวชปฏิบัติ

เรืองศักดิ์ เลิศขจรสุข, ดนัย วังสตุรค

วัตถุประสงค์*: เพื่อศึกษาว่าความรู้ทางการแพทย์และความสามารถทางเวชปฏิบัติ จะมีความสัมพันธ์หรือไม่กับทักษะการสอนของแพทย์ประจำบ้านสูติศาสตร์- นรีเวชวิทยา โรงพยาบาลจุฬาลงกรณ์*

วัสดุและวิธีการ*: แบบสอบถามเกี่ยวกับทักษะการสอนของแพทย์ประจำบ้าน ถูกประเมินโดยนิสิตแพทย์ โดยใช้ global rating scale คะแนนสอบทฤษฎีในระหว่างฝึกอบรมของแพทย์ประจำบ้าน ใช้ประเมินความรู้ ส่วนความสามารถทางเวชปฏิบัติได้มาจากคะแนนการปฏิบัติงานที่อาจารย์ในภาควิชาฯประเมิน ความสัมพันธ์ระหว่างทักษะการสอนกับความรู้และความสามารถทางเวชปฏิบัติ ถูกวิเคราะห์โดยใช้ bivariate correlation*

ผลการศึกษา*: นิสิตแพทย์ 49 คน ได้ประเมินการสอนของแพทย์ประจำบ้านสูติศาสตร์-นรีเวชวิทยา ทั้งหมด 28 คน ไม่พบความสัมพันธ์ที่มีนัยสำคัญระหว่างทักษะการสอน กับความรู้ (r = 0.066; p = 0.25) และไม่พบความสัมพันธ์ที่มีนัยสำคัญระหว่างทักษะการสอน กับความสามารถทางเวชปฏิบัติ (r = 0.172; p = 0.28) อย่างไรก็ดีความรู้ทางการแพทย์และความสามารถทางเวชปฏิบัติมีความสัมพันธ์กันอย่างมีนัยสำคัญ(r = 0.558; p = 0.002)*

สรุป*: ทักษะการสอนของแพทย์ประจำบ้านสูติศาสตร์-นรีเวชวิทยาไม่มีความสัมพันธ์อย่างมีนัยสำคัญกับความรู้และความสามารถทางเวชปฏิบัติอย่างไรก็ดีความรู้ทางการแพทย์ และความสามารถทางเวชปฏิบัติ มีความสัมพันธ์กันอย่างมีนัยสำคัญ*