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The impact of outpatient clinical teaching on students' academic performance in obstetrics and gynecology

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Abstract:

INTRODUCTION: Clinical teaching at outpatient settings is an essential part of undergraduate medical students' training. The increasing number of students in many medical schools and short hospital stays makes inpatient teaching alone insufficient to provide students with the required clinical skills. To make up this shortfall, outpatient clinical teaching has been implemented by our Department of Obstetrics and Gynecology, King Khalid University, KSA, throughout the academic year 2015–2016. The aim of this study was to evaluate the impact of clinical teaching at outpatient settings on the academic performance of our students.

MATERIALS AND METHODS: In this comparative retrospective study, the effects of outpatient clinical teaching of obstetrics and gynecology on the academic performance of student was assessed through an objective structured clinical examination (OSCE). During their course on obstetrics and gynecology, 58 students had their clinical teaching both at inpatient and outpatient settings and constituted "study group". The remaining 52 students had clinical teaching only at inpatient settings and were considered "control group". Students in both groups sat for OSCE at the end of week 8 of the gynecology course. Students in both groups sat for OSCE at the end of week 8 of the gynecology course. Four stations were used for assessment: obstetric history, gynecological history, obstetric physical examination of pregnant women, and gynecological procedure station. Twenty marks were allocated for each station giving a total score of 80. The OSCE scores for study group were compared with those of the control group using Student's *t*-test; $p < 0.05$ was considered statistically significant.

RESULTS: The total mean OSCE score was statistically significantly higher in the study group (62.36 vs. 47.94, $p < 0.001$). The study group participants showed significantly higher scores in the gynecological procedure station (16.74 vs. 11.62, $p < 0.0001$) and obstetric examination station (16.72 vs. 10.79, $p < 0.0001$).

CONCLUSION: Clinical teaching at outpatient settings leads to an improvement in students' performance in OSCE. There is evidence of remarkable improvement in the mastery of clinical skills as manifested in the students' scores in physical examination and procedures stations. These results will encourage us to have clinical teaching in other disciplines at outpatient settings.

Keywords:

Clinical teaching, inpatient, outpatient, objective structured clinical examination

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Introduction

The number of medical schools in Saudi Arabia has increased in the past 10 years.[1] This revolution in undergraduate medical education in Saudi Arabia has, therefore, resulted in an urgent need for additional clinical teaching facilities. A large number of these medical schools have not yet established their university hospitals, so their students are trained in hospitals of the Ministry of Health where there can be no guarantee of the quality of the environment for clinical learning.

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Observations made by experts in medical education indicate some deficiencies in undergraduate medical education including an exclusive focus on hospital-based teaching.[2] Clinical teaching has recently moved from the wards to the clinics. In recent years, outpatient clinics (OPCs) have become an integral venue for the teaching of clinical medicine.[3] The problems of the traditional inpatient clinical teaching such as short hospital stay, patient availability, and large class sizes can be solved with OPCs. As a wide range of general medical practice and specialties is represented in OPCs, it has been acknowledged that ambulatory care settings present an opportunity to maximize learning opportunities.[4]

The literature has revealed several advantages to teaching residents and students in outpatient environments. These include adequate case exposure, experience with diverse clinical topics, and efficient development of doctor–patient relationships.[5] Besides, teaching in outpatient or ambulatory clinics can provide more opportunities for the acquisition of history taking skills, physical examination, and training on different procedures under direct supervision.

Students were also able to develop better relationships with both their patients and their teachers during the ambulatory rotations than during their stay in the wards. Moreover, ambulatory students performed just as well academically as their classmates.[6] The combination of teaching in general practice and hospitals is likely to provide medical students with the most effective technique for learning. To ensure a more complete education, medical trainees have to be exposed to a wide variety of cases.[7]

OSCE scores for students in community-based and academic medical center affiliated clinics were similar. Since students' performances were similar at all locations and disciplines, it has been recommended that the focus should be on improving clinical training at all sites.[8]

Based on all these advantages, the decision to implement outpatient clinical teaching was taken by our Department of Obstetrics and Gynecology, King Khalid University, KSA, at the beginning of the academic year 2015–2016. That was particularly possible with the opening of the new university medical service building, where four obstetrics and gynecology clinics per week were run by our staff. Now, students are involved in clinical teaching both with inpatients at the hospital and with outpatients at the university medical service clinics.

The aim of this study was to test the effectiveness of outpatient clinical teaching. The outcome was measured by the objective structured clinical examination (OSCE).

Materials and Methods

A comparative, retrospective study was carried out in three stages. In the first stage, the participants, a cohort of 6-year students ($n = 52$) of the College of Medicine, King Khalid University, participated in the course of obstetrics and gynecology in the 2nd semester of the academic year 2014-2015. They had clinical teaching at the inpatient settings only, and were, therefore considered the control group. After completing their 8-week course, they were assessed by OSCE. Stations were set up to measure students' ability to take obstetric history, gynecological history, to conduct obstetric physical examination, and gynecological procedure. The students' performance was assessed by raters from our faculty; each station was scored out of 20 marks giving a total OSCE score of 80. The results were then recorded and saved.

Second, another cohort of 6-year students ($n = 58$), who had studied the obstetrics and gynecology course in the first semester of the academic year 2015–2016, had their clinical teaching at both the inpatient and outpatient settings. They were considered the study group. The student outcome was measured by their scores achieved on the OSCE administered at the end of week 8 of the obstetrics and gynecology course. Four similar OSCE stations were set up to measure the students' ability to take obstetric history, gynecological history, conduct obstetric physical examination, and gynecological procedure. Again their performance was assessed by faculty raters. Each station was scored out of 20 marks giving a total OSCE score of 80.

Finally, the statistical analysis was carried out, and Student's *t*-tests were used to compare average students' scores in each station between control and study groups. In addition, the mean total OSCE score were also compared between control and study groups; $p < 0.05$ was considered statistically significant.

The study was approved by the ethical committee. All participants in the study signed the informed consent form indicating a willingness to participate in the study.

Results

One hundred and ten medical students were included in this study. Fifty eight students (52.7%) who had had their clinical teaching at the outpatient setting as well as the hospital ward comprised study group, and 52 students (47.3%) who had their clinical teaching only in hospital ward constituted control group.

All participants were male medical students in the 6th-year class at the College of Medicine, in the age range of 23–25 years. The mean age of the participants was

24 ± 1.90 and 24 ± 1.98 years for the study and control group, respectively.

Table 1 shows the academic performance of the students in the study and control group. The students' scores in the study group were higher on obstetric and gynecological history stations (12.85 vs. 14.02 and 12.69 vs. 14.88 respectively). The results showed that the study group students had a significantly higher average score than the control group (16.74 vs. 11.62, $p < 0.0001$) on the gynecological procedure station and (16.72 vs. 10.79, $p < 0.0001$) on the obstetric examination station [Table 1].

In general, our results showed that the academic performance of our students had improved after the outpatient clinical teaching. This was clearly evident by the total mean OSCE scores which were significantly higher in the study group (62.36 vs. 47.94, $p < 0.001$) [Table 2].

Table 1: Mean objective structured clinical examination scores for the study and control groups for each OSCE station

OSCE stations	Scores/20		*p*-Value
	Control group (*n*=52)	Study group (*n*=58)	
Obstetric history	12.85±2.02*	14.02±2.00	0.001
Gynecological history	12.69±2.00	14.88±1.86	0.001
Obstetric examination	10.79±2.15	16.72±1.52	0.0001
Gynecological procedure	11.62±2.34	16.74±166	0.0001

*Mean of OSCE stations' scores±SD. *P*<0.05 as significant. OSCE = Objective structured clinical examination, SD = Standard deviation

Table 2: Objective structured clinical examination scores for the study and control groups of students

Group	Control group (*n*=52)	Study group (*n*=58)	*p*-Value
Total mean score	47.94	62.36	0.001
SD	2.28	2.12	

P<0.05 considered significant. SD = Standard deviation

Discussion

This study was conducted to assess the impact of outpatient clinical teaching on students' learning with the retention of knowledge and clinical skills using OSCE as a tool of assessment. We believe that this is the first study to evaluate the effectiveness of outpatient clinical teaching in a major clinical course in a Saudi medical school.

The results, statistically significant, revealed that the students retained the knowledge and clinical skills when they were exposed to the combination of outpatient and inpatient clinical teaching. Previously, our students had had their clinical teaching only in the hospital ward which adversely affected their learning outcome. This could be attributed to many factors, namely, the dramatic increase in the number of students, such challenges as short hospital stay, and the unwillingness of patients to participate in a teaching process. Modern medical education is increasingly shifting toward providing real-world experience by employing ambulatory services as educational tools.[9]

Kouter proposed that clinical teaching opportunities should involve treating and managing patients in OPCs, operating rooms, and hospitals to develop a system of evidence-based medical education that promotes continuous development of competencies and produces self-directed learners,[10] We were thus encouraged to start an outpatient clinical teaching in our department of obstetrics and gynecology. A new university service clinic was established in our institution at the start of this academic year. Four gynecology clinics per week were launched, and the patients attending OPCs were used for clinical teaching under the supervision of our faculty members.

Our results revealed that students who had their clinical teaching in OPCs and inpatient ward had better scores in OSCE than those who had their clinical teaching at inpatient settings only. This is explained by the significant increase in the total mean OSCE scores in the study group compared to the scores of the control group. Similar findings had been reported by Gupta *et al*. earlier in 1993.[11] These results were not far from our expectations because the students in outpatient settings were exposed to a variety of cases in a better learning environment that allowed them to practice the required skills.

In agreement with these findings, in a pediatric setting, the postrotation test scores of medical students who had completed a short rotation in an outpatient department were found to be higher than those of students that had been based in an inpatient environment.[12] In line with these results, another multi-institutional study which compared students' performance after clinical skills teaching in primary care offices with experience on the hospital wards showed better performance by those who were taught their clinical skills in primary care offices.[13]

On the other hand, some studies which assessed the effect of outpatient clinical teaching on students' performance found that subsequent knowledge test scores were unaffected.[14,15] These studies were based on knowledge test, so student scores were expected to be unaffected as outpatient clinical teaching resulted in improvements in a range of skills rather than knowledge.

It is not surprising that our students' scores were significantly higher at gynecological procedure station and obstetric examination station ($p < 0.0001$). We believe that this is because the students in OPCs had had

hands-on experiences. Similar findings were observed by Wallis *et al.* who evaluated the teaching programs for clinical skills teaching for male and female genital examinations at outpatient settings.[16,17]

We surmised that the limitations of our study would be effect of inter-rater variability in OSCE on the scores. We used the OSCE as a tool to assess clinical performance because the use of OSCEs to measure medical students' clinical competency has become increasingly widespread, and evidence of the validity of the test is mounting.[18] Another limitation was the focus on one course (obstetrics and gynecology) for the study. Unfortunately, this was the only department to show an interest in using this teaching method.

Further studies in other medical schools in Saudi Arabia and with larger sample sizes are needed to fully understand the effect of clinical teaching at the outpatient settings on students' academic performance.

Conclusion

The implementation of clinical teaching at outpatient settings improves students' academic performance and constitutes a solution to the problems encountered in traditional inpatient clinical teaching with short hospital stays and large class sizes.

Our study also showed a dramatic improvement in the mastery of clinical skills. We, therefore, recommend this teaching method to all medical schools which depend on traditional inpatient teaching alone for their clinical teaching.

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Conflicts of interest
There are no conflicts of interest.

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