

MEDICAL EDUCATION

A Comparative Study of Performance on the Bahrain Licensure Examination by Medical Graduates from a Problem-Based Community-Oriented Curriculum and Graduates from Conventional Curricula

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ABSTRACT

This study was carried out to compare the performance on the Bahrain Licensure Examination of the Arabian Gulf University (AGU) graduates who experienced a problem-based community-oriented curriculum (PBCO) and their counterparts from traditional curricula.

Twenty-three of 32 graduates passed the examination, 6 were AGU and 17 were non-AGU graduates. Comparing the difference in mean scores between the two groups on various components of the examination showed a statistically significant difference on the overall examination score, overall written questions and patient management problem (PMP) questions ($P < .05$). There was no

difference of knowledge questions, objective structure clinical evaluation (OSCE) and oral examination.

The obtained results could be due to the better training of AGU graduates on PMP. Although this study does not allow proper assessment of known areas of expected distinctive difference between conventional and innovative curricula, it reassures the students and faculty that the products of an innovative curriculum were equally good to their counterparts from conventional curricula or even better when tested on a national licensure examination.

A major concern of any educational programme is to evaluate its graduates in order to determine the level of attainment of competencies required on the job. This is

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particularly important when innovative programmes are implemented.

In recent years, innovation in medical education has focused on two main approaches to curriculum development: community-oriented and problem-based. It is not uncommon that these approaches are melded into one.¹

The implications of these changes in the educational process, however salutary they may appear, do not ensure the desired outcomes of the educational programme. These outcomes, as described for problem-based learning, include greater ability to integrate the basic and clinical sciences, increased problem-solving abilities, and self-directed learning.²

A common question is asked: Do these innovative curricula produce a different kind of doctor? There is currently no definitive answer to this question. However, the ability of these innovative curricula to produce competent physicians has been generally accepted in the medical field.³

The College of Medicine and Medical Sciences of Arabian Gulf University (CMMS/AGU), located in Bahrain, has adopted since 1982 a problem-based community-oriented curriculum (PBCO). One of the main concerns of the college is to evaluate the knowledge, skills, and attitudes of their graduates in job-like settings. This is not easy, due to the geographical spread of these graduates over seven Arabian Gulf Countries. In addition, there is the difficulty of comparing the graduates with a matched group from conventional universities.

In Bahrain, the Ministry of Health has conducted a Licensure Examination since 1981. Graduates from different medical schools (conventional and PBCO) are required to pass this examination before being appointed.

The aim of this study is to compare the performance of AGU graduates who experienced a PBCO curriculum and non-AGU graduates who experienced traditional curricula on Bahrain Licensure Examination. This comparison may help in identifying the validity of the PBCO type curriculum experience.

METHODS

The Bahrain Licensure Examination is composed of three parts: written, oral and OSCE. The written portion includes 150 multiple-choice questions (MCQ); 50 questions on PMP; and 100 questions testing knowledge and its application. These questions cover general practice, surgery, medicine, obstetrics and gynaecology, paediatrics, psychiatry and basic science.

In 1990, 32 physicians took the examination: 6 were graduates of AGU, and 26 were graduates from conventional universities in Saudi Arabia, Egypt, Kuwait, Pakistan, India and Iraq.

Statistical Analysis

Two sample analysis tests were used. The difference in the mean scores of the AGU and non-AGU successful candidates was calculated using a student t-test. The confidence interval for the difference in means was 95%, $\alpha = 0.05$.

RESULTS

Twenty-three of 32 graduates (71.8%) passed the examination. Six were AGU graduates and 17 were non-AGU graduates. The nine who failed were all non-AGU graduates. Successful AGU graduates scored better than non-AGU graduates on all examination components. On the total examination score and the written examination, the difference in means between the two groups was significant ($P < .05$). There was no significant difference in mean scores between the two groups on the oral and OSCE examinations ($P > .05$) (Table 1).

Table 1
Mean performance score of medical graduates who passed the licensure examination

Examination	AGU (N=6)	Non-AGU (N=17)
Written		
M	31.4	27.8
SD	3.4	3.2
		t = -2.3 P < .05
OSCE		
M	18.9	17.4
SD	1.2	2.0
		t = -1.6 P > .05
Oral		
M	17.4	16.8
SD	2.0	1.2
		t = -0.75 P > .05
Total		
M	67.7	62.4
SD	5.9	5.1
		t = -2 P < .05

On the written examination, a significant difference in favour of the AGU graduates was found between the mean performance score of AGU and non-AGU graduates on PMP questions ($P < .05$). However, no significant difference was found on knowledge questions ($P > .05$) (Table 2).

Table 2
Mean performance score of medical graduates on PMP and knowledge questions

Written questions	AGU (N=6)	Non-AGU (N=17)
PMP*		
M	39.3	32.9
SD	3.2	3.6
	$t = -3.7$ $P > .05$	
Knowledge†		
M	54.8	50.2
SD	7.7	7.2
	$t = -1.3$ $P > .05$	

* 50 PMP questions

† 100 Knowledge questions

DISCUSSION

Innovative curricula, such as the PBCO are generally expected to produce distinctive differences in areas such as interpersonal skills, continuing learning, and professional satisfaction. However, with regard to performance on traditional tests of basic science knowledge, the general expectation is that students in traditional curricula will perform better than those in innovative programmes.^{4,5}

Although the present structure of the Bahrain Licensure Examination does not allow proper assessment of known areas of expected distinctive differences between conventional and innovative curricula, the results show that the AGU graduates performed better on the overall examination than their non-AGU colleagues.

The obtained results could be due to better training of AGU students on PMP since a significant portion of their learning experiences was centered around patient problems. Of course, many other factors may account for the observed difference. We also recognise that the number of participants is small and caution should be used in analysing these results.

Although the better performance of AGU graduates on the PMP could be predicted, we were surprised that there were no difference on the OSCE. A possible explanation is that the OSCE situations were structured around common uncomplicated health problems, and it is expected that all curricular models try to provide an adequate level of direct exposure to uncomplicated presentations of common medical problems. The same explanation could apply to the oral part of the examination.

Curriculum evaluation at AGU is enhanced by studies such as this. An important outcome of this study is its possible psychological impact on the students and faculty members in that it reassures them that they are on the right track.

Further studies are required to determine whether the hypothesised linkage between the process and outcomes of innovative curricula actually occurs. Follow-up longitudinal studies which attempt to control for extraneous variables are planned.

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