

## Gender differences in academic performance among Arab medical students

Shabih Manzar, MD, FAAP.

Gender difference in medical education has been a topic of recent debate. In a recent study, from Dublin, McDonough et al<sup>1</sup> have reported a female predominance in the results of the final year medical examination. This finding contradicts the concerns raised by others regarding the high attrition among female students.<sup>2,3</sup> Similarly, it disagrees with the conclusion of Leonard and Ellsbury,<sup>4</sup> reporting lower interest in academic careers among the third-year female residents than among third-year male residents, despite the similar interest in academic medicine among male and female first-year residents. They attributed this reduced interest in leadership and academic careers to the increasing role stress among women at more advanced levels of training.

Interestingly, a regional study from the University of Oman presented another controversial findings describing higher levels of fear and stronger physical and behavioral reactions among Arabian female students as compared to male students.<sup>5</sup> Also, female students were noted to use certain coping methods more frequently than their male peers. Thus, ambiguity surrounds the issue of performance difference among the male and female medical students. We carried out this study to look further into this controversy and to see if such a difference really exists.

The study was carried out at King Faisal University (KFU), Dammam, Kingdom of Saudi Arabia. The pediatric rotation at KFU consists of a total of 10 weeks, with 2 weeks designated for neonatal intensive care unit (NICU) rotation. To compare the differences in the performances between the male and female students, we selected 2 groups of students, males and females rotating through the NICU. The students were coded alphabetically. We used the multiple-choice questions (MCQs) with pretest-posttest model to assess the difference in academic performance among the male and female students. Multiple-choice questions consisting of 15 items was made and approved by consultants involved in teaching the students. The study was conducted in one-month period, May 2001. Both groups, male and female students, had the same method of

teaching and assessment. On the first day after introductory session, all students were given a pretest consisting of 15 MCQs. Then, after 2 weeks of intensive clinical teaching, a posttest (same questions) was given. A total of 37 students, 18 males and 19 females, participated in the study. During the 2 weeks of clinical teaching, both the groups were exposed to the same structured teaching format, which included case presentations and discussions. The items selected in MCQs were reflective of common problems faced in neonatal care covering both the theoretical and practical aspects. Strict invigilation was observed during both the sessions. Improved performance was defined as increase in the total score represented as percentages. Negative marking was not used during evaluation. Statistical package for social sciences for Windows, version 10, was used to analyze the data by using paired t-test for comparing male pre and post and female pre and post scores. For male students the mean pretest score was noted to be  $69\pm 13$  while posttest score was  $80\pm 12$ . The difference was noted to be statistically significant,  $p=0.004$ . For female students the mean pretest score was noted to be  $68\pm 14$  while posttest score was  $80\pm 7$ . The difference was noted to be statistically significant,  $p=0.001$ . On comparing the pretest scores of males with females no significant difference was noted. Similarly, on comparing the posttest scores of males with females no significant difference was noted (**Table 1**). Our findings of no significant difference in gender differences in academic performance among Arab medical students are in disagreement with the findings of Fabrega et al.<sup>6</sup> They described gender-related differences among students due to the difference in medical students' ability to assimilate and cope with the clinical experience. Our finding of no difference signifies that we as medical teachers should continue to teach and assess students unbiased.

**Table 1** - Comparison of scores between male and female students.

Scores	Male students	Female students	p value
Pretest	$69\pm 13$	$68\pm 14$	0.94
Posttest	$80\pm 12$	$80\pm 7$	0.97
Results expressed as mean±standard deviation, $p>0.05$ non significant			

Other important aspect, which is clear from our study, is that admission to medical colleges should continue to be carried out on merit basis without gender preferences and the fear of drop outs among female students should not be unduly highlighted, as the case in the western medical universities.<sup>2,3</sup>

The 2 main limitations of the present study were the sample size and settings. Ideally, evaluation should be carried out in one of the major disciplines of medicine rather than NICU and with a larger group of participants. Although no sample size calculation was performed, our numbers of 18 males and 19 females seemed reasonable. The other argument could be regarding the assessment tool. We expect further work being carried out in other units and disciplines with larger sample size to confirm our findings.

In conclusion, no major differences were observed in the academic performance of the male and female Arab medical students. However, to know more on the gender differences in medical education, further studies with larger groups of students and with better objective assessment tools are warranted.

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From the Department of Child Health, Royal Hospital, Muscat, Sultanate of Oman. Address correspondence and reprint requests to Dr. Shabih Manzar, Department of Neonatology, John H. Stroger Jr. Hospital, 1969, West Ogden, Chicago, Illinois 60612, United States of America. Tel/Fax. +1 (312) 8644043. E-mail: shabihman@hotmail.com

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