

ORIGINAL RESEARCH PAPER

Description and Evaluation of a Clerkship in International Health and Medicine

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ABSTRACT Background and Objectives: *In 1998 Ben-Gurion University, in collaboration with Columbia University, inaugurated the first medical school with the express purpose of training students in International Health and Medicine (IHM). The highlight of the program is the two-month clerkship in IHM. The purpose of this paper is to describe the IHM clerkship and report the preliminary results of an evaluation.*

Methods: *To evaluate the impact of the clerkship on the students' attitudes and knowledge of IHM, the students were asked to complete a previously validated self-assessment questionnaire before and after the clerkship.*

Results: *Ninety-six students participated in the IHM clerkship in the first 3 years. The mean age of the students was 29.4 ± 4 and 53% were female. Comparison of the student's answers before their departure and after their return showed a significant difference in 5 of 64 items on the questionnaire. There was also a significant increase in the overall scores of the female students but no change in the scores of the male students pre- and post-clerkship.*

Discussion and Conclusions: *Our results show that students who completed the clerkship modestly increased their knowledge of some aspects of IHM as measured by the survey. Further studies on the long-term impact of IHM experiences are needed in parallel with efforts to increase medical students' exposure to IHM.*

KEYWORDS *International health, medical education.*

Background and Objectives

Medical Schools are increasingly recognizing the importance of rotations in International Health and Medicine (IHM) (Bateman *et al.*, 2001). Globalization

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has had a major impact on the practice of medicine. Diseases once thought limited to the developing world can be contracted to other parts of the world in a matter of hours. In addition, recent patterns of immigration almost guarantee that even if students plan to spend their whole careers practicing in the developed world they will encounter patients from a wide variety of cultures with differing health care beliefs. A medical experience in a developing country can help prepare students for these new realities and also teach them how it is possible to practice medicine with limited medical resources and without the newest and most sophisticated technology. Skills such as communicating with patients who don't share a common language and mastering the physical exam may best be learned in these environments (Thompson *et al.*, 2003). These experiences may also imbue in students a sense of altruism and a willingness to expend time and effort for those less fortunate without expectation of financial gain, which is sometimes lacking in modern medical education. Students returning from international experiences have noted the many personal benefits they have obtained from them, such as a broadened perspective, greater awareness of limitations and the need to set realistic goals (Mutchnick *et al.*, 2003; Thompson *et al.*, 2003).

In 1998, Ben-Gurion University of the Negev (BGU) in collaboration with Columbia University, inaugurated the first medical school with the express purpose of training students in IHM. Details of the program have been described elsewhere (Urkin *et al.*, 2001). Briefly, in addition to a standard four-year post-graduate medical school curriculum, the students receive extensive training in IHM. The IHM studies begin in the first year with a two semester introductory course in IHM and are followed by a number of short modules on selected topics in the first and second years and a student run cross-cultural communication workshop in the third year (Rosen *et al.*, 2004). IHM issues are also integrated in the third year clinical clerkships. The highlight of the IHM program is the two-month clerkship in IHM which occurs during the fourth year in a medical school in a developing country. We have previously shown that students who completed the four-year program and participated in the two-month international clerkship increased their knowledge of IHM and retained their positive attitudes toward IHM (Jotkowitz *et al.*, 2004a). The purpose of this paper is to describe the IHM clerkship and report the preliminary results of an evaluation of its effect on the individual student's knowledge and attitude.

Description of Clerkship

Objectives for the clerkship in IHM were formulated by a clerkship committee with expertise and experience in IHM. The clerkship has three main components:

- (1) A clinical rotation in a teaching hospital,
- (2) An attachment to a rural primary healthcare center,
- (3) Completion of a public health project.

Previous personal contacts helped identify distinguished community-oriented medical schools in developing countries, where these sites had to have the ability to fulfill the clerkships goals. Contact was made with these institutions and site visits were arranged to discuss the clerkship and develop curricula. After ensuring that there was willingness of the institution to accept our students, formal collaboration agreements were signed and a local academic coordinator was appointed by the Dean of the hosting medical school. Students are integrated into the existing hospital-based and community-based programs of the host school and student tuition payments are made to the host school by BGU.

Extensive administration and educational preparation are necessary before, during and after the IHM clerkship, which run from mid January to mid March. Logistical issues were addressed prior to the clerkship including: coordination with the host school, travel arrangements, visas, accommodations, immunizations and personal safety issues. A designated administrator at BGU is responsible for this coordination.

Prior to the clerkship, students attend an orientation seminar at BGU for a week where they receive intensive preparation. Among the topics covered in the orientation are: travelers' health, health promotion in developing countries and implementing a public health project including questionnaire design and data analysis. The students are provided with a site manual prepared for each clerkship which contains information on the country, the local site, health precautions, background information and travel information.

Currently clerkship programs have been developed in the following countries:

- (1) India – Christian Medical College (CMC), Vellore,
- (2) Kenya – Moi Medical School, Eldoret,
- (3) Ethiopia – Addis Ababa University, Addis Ababa,
- (4) Peru – Loreto Ministry of Health, Iquitos,
- (5) Nepal – B.P. Koriala Institute of Health Sciences, Dharan,
- (6) Israel – Ben-Gurion University Beer-Sheva.

The in-hospital rotation consists of a four-week clinical experience in the departments of pediatrics, medicine, emergency room and outpatient clinics. Students participate in all of the academic activities of the departments and work side by side with local students examining and caring for patients.

The community medicine component of the clerkship lasts for three weeks and takes place in a rural setting with local students under the supervision of a host faculty member. The program includes community diagnosis, nutrition surveys, environmental and school health. Students also work in a primary care health center evaluating patients and participating in health education programs.

During the clerkship each student is required to complete a project that focuses on a relevant public health issue. Project topics are chosen by the

students with guidance from the host faculty. Students must submit a final project report consisting of a literature review, data analysis, conclusions and a discussion.

The clerkship committee at BGU meets periodically to review all aspects of the clerkship. A faculty member of the Medical School for International health visits the students at each of the sites and joins in debriefing sessions with the hosting faculty. Students are also evaluated for their performance by the local academic coordinator.

After the return from the IHM clerkship an extensive debriefing session is held with the students from each site covering all clinical and administrative aspects of the clerkship.

Methods

In an attempt to evaluate the impact of the clerkship on the students' attitudes and knowledge of IHM, the students were asked to complete a previously validated self-assessment questionnaire before and after the clerkship (Haq *et al.*, 2000). The instrument included 64 statements for which students were asked to indicate the extent to which they agree or disagree with each statement on a scale from 1 to 5, where 1 indicates complete agreement and 5 indicates total disagreement.

The statistical analysis was carried out for each item and as a combined score for each student using the mean of the responses. For the combined score all questions were scored with a 5 being most favorable, in the eyes of the authors to IHM, necessitating some of the question scales to be reversed in the analysis. Paired *t*-tests compared the attitudes of the students before and after the clerkship. *T*-test for independent samples or ANOVA were used to compare the answers to the questionnaire at baseline according to various characteristics of the students, e.g. gender. Statistical significance was defined as $p < 0.05$ and was conducted by SPSS version 12.0 (Chicago, IL).

Results

As shown in Table 1, 96 students participated in the IHM clerkship in the first 3 years of the clerkship (2002–2004). The students were evenly divided between the years. The mean age of the students was 29.4 ± 4 and 53% (51) were female.

Twenty-eight students (29.2%) completed their IHM clerkship in India, 20 (20.8%) in Kenya, 19 (19.8%) in Israel, 17 (17.7%) in Ethiopia, 3 (3.1%) in Nepal, 2 in Peru and seven students did independent clerkships.

Forty-nine (49) of the 96 (51%) students returned the self-assessment questionnaires before and after the clerkship. There were no significant

Table 1. Demographic characteristics of participants in IMH clerkship

	All participants in clerkship, <i>n</i> = 96		Those returning both questionnaires, <i>n</i> = 49	
	<i>n</i>	(%)	<i>n</i>	(%)
Gender				
Male	45	(49.6)	24	(49.0)
Female	51	(53.1)	25	(51.0)
Year of clerkship				
2002	30	(31.3)	13	(26.5)
2003	32	(33.3)	22	(44.9)
2004	34	(35.4)	14	(28.6)
Place				
Ethiopia	17	(17.7)	12	(24.5)
India	28	(29.2)	18	(36.7)
Kenya	20	(20.8)	10	(20.4)
Nepal	3	(3.1)	2	(4.1)
Israel	19	(19.8)	7	(14.3)
Peru	2	(2.1)	–	
Independent	7	(7.3)	–	
Age				
Mean ± SD	29.4 ± 4.0		29.2 ± 3.2	
Median	28.0		28.0	
Range	24–49		26–39	

differences in terms of age and gender between students who returned the surveys and those who did not.

Comparison of the students' answers before their departure and after their return from the clerkship showed a significant difference in 5 of the 64 items on the questionnaire.

As shown in Table 2, after the clerkship students more strongly agreed with the following statements:

- (1) "Some people consider it less rude to make up an answer than to say I don't know" (pre- 2.68, post- 2.13, $p = 0.006$),
- (2) "Nodding may signify understanding, not agreement" (pre- 2.02, post- 1.75, $p = 0.02$),
- (3) "National economics play a large role in determining the types of health care offered" (pre- 1.83, post- 1.64. $p = 0.04$).

Students more strongly disagreed with the statement: "Public information campaigns are ineffective for the illiterate" (pre- 3.98, post- 4.36, $p = 0.008$), and less strongly disagreed with the statement that "Methods for providing health care are almost the same around the world" (pre- 4.68, post- 4.49. $p = 0.05$).

There were no significant predictors of change among those who returned both the pre and post clerkship questionnaires. Variables analyzed were: place of clerkship, year of clerkship, and age at time of clerkship. Nevertheless, there was a significant difference in mean score between the genders both at baseline and at post clerkship (see Table 3, comparison by gender). There was also a significant change in the overall scores of the female students (4.17 pre vs. 4.28 post $p < 0.05$) but no change in the scores of the male students pre and post clerkship (Table 3, paired t -test).

Discussion and Conclusions

The IHM clerkship at BGU is unique in the following two ways: it is the culmination of a four-year curriculum in IHM and it is a required clerkship. The purpose of this study was to describe the IHM clinical clerkship and to

Table 2. Questions from 64 item questionnaire where there was a statistically significant change from before the clerkship to after the clerkship

Question #	Mean \pm SD pre	Mean \pm SD post	p value
7	2.68 \pm 1.1	2.13 \pm 1.0	0.006
8	4.68 \pm 0.59	4.49 \pm 0.69	0.05
12	3.98 \pm 1.05	4.36 \pm 0.71	0.008
21	2.02 \pm 0.67	1.75 \pm 0.67	0.02
24	1.83 \pm 0.64	1.64 \pm 0.61	0.04

List of questions:

7. Some people consider it less rude to pretend or make up an answer than to say "I don't know".
8. Methods for providing health care are almost the same around the world.
12. Public information campaigns are ineffective for the illiterate.
21. Nodding may signify understanding, not agreement.
24. National economic factors play a large role in determining the types of health care offered.

Table 3. Differences between pre- and post-clerkship mean scores by gender

	Males Mean \pm SD	Females Mean \pm SD	Comparison by gender	
			t	p value
Pre-clerkship	3.98 \pm 0.32	4.17 \pm 0.16	-2.37	0.02
Post clerkship	3.97 \pm 0.32	4.28 \pm 0.18	-4.2	<0.001
t (paired t -test)	0.17	-4.11		
p value	0.87	<0.001		

evaluate its impact. Our results show that students who completed the clerkship only modestly increased their knowledge of some aspects of IHM as measured by the self-assessment survey. Similar results were found (Haq *et al.*, 2000) on a group of American medical students without previous IHM exposure who volunteered to participate in an International Health experience.

We could find no significant change after the clerkship on questions relating to attitudes in IHM. This is probably due to the fact that our students had high baseline positive attitudes toward IHM reflecting our school's stated commitment and emphasis on IHM, and continuous exposure to IHM during their medical school experience in Israel. Or, it was possibly due to the inability of the survey instrument to differentiate between subtle changes in attitude among highly motivated students. These results need to be followed up with further studies using different evaluation methodology better suited to our study population. For example, by developing new questionnaires more appropriate to students who have had prior experience studying IHM or as discussed below, the use of qualitative research methodology can be used to probe more deeply into students' attitudes toward IHM before and after the clerkship.

It is interesting to note that the female students had a higher score than the male students both pre and post-clerkship and the female students also mildly increased their own scores on the questionnaire after the clerkship. In other contexts it has been shown that women score higher than men in certain areas. For example, it has been demonstrated (Bylund & Makoul, 2002) that women physicians are more empathic than male physicians. Perhaps this empathic tendency may help explain our results that women scored higher than men on the survey both pre and post-clerkship but this needs to be further studied.

Developing a successful clerkship in IHM requires a great commitment in terms of resources by the sponsoring and host institutions and further research is needed to evaluate its long-term impact. Our institution, which is focused on IHM, contributed significant administrative and faculty time to the development and support of the clerkship. The host institution is primarily required to make an investment of faculty time, which can be significant and we have made an effort to invest in these personal relationships by hosting local faculty members at our institutions for further training or mini-sabbaticals. We have also formalized our agreements with the host medical schools so that the program can continue even if there are faculty changes. The host medical school can also potentially benefit from a formal relationship with a Western medical school in terms of potential for educational initiatives and reciprocal student and faculty visits.

It is also difficult to monitor the academic progress of the students' long distance and to make changes if necessary. For example, at one of our sites this year there was a union strike at a hospital which forced us to change the clerkship in the middle of the program. In this regard, the role of the local coordinator is crucial and they must have significant buy-in to the importance

of the program for it to work. At each site there is also a student group-leader to help us monitor the progress of the clerkship. We have made an effort for a member of the BGU faculty to visit each of the sites during the clerkship in order to receive direct feedback from the students and to maintain contact between faculty and the host institution.

There were several limitations to our study. Due to the nature of our curriculum, the study was not randomized, there was no control group without the IHM clerkship, and as mentioned previously, the students were self-selected for those with an interest in IHM. The 51% of the students who responded may not reflect the attitudes of the entire group. We also did not perform a long-term evaluation of their knowledge or their long-term commitment to practicing IHM. The survey instrument used was developed to evaluate students from traditional medical schools and may not be the optimal instrument to assess the impact of the IHM clerkship on students who have had a comprehensive four-year curriculum in IHM. In order to better evaluate the IHM clerkship, other evaluation modalities may be more appropriate, even though they are often more expensive. In the future, qualitative analysis through the use of focus groups and in-depth interviews, may give us a better understanding of how the clerkship impacts on the attitudes of the students and if they have attained the objectives of the rotation. In addition, we feel it is important to evaluate the impact of the program on the hosting institution, including students, faculty and patients.

As others have pointed out the benefits of an elective in IHM are difficult to measure (Thompson *et al.*, 2003), but students report being changed by the experience. We agree with this perception and have previously suggested that an experience in IHM can strengthen young physicians' native altruism and can have a life long impact (Jotkowitz *et al.*, 2004b). In addition, there is a lot for students to learn by experiencing medicine where expensive and high technology testing is not readily available. There is a crisis in the teaching of the physical examination in many Western medical schools (Smith *et al.*, 2003) and working in a developing country can certainly improve these skills.

Due to recent immigration patterns, physicians in all countries need to learn how to care for patients from many different cultures and backgrounds and IHM experiences can help prepare them for this aspect of modern medicine. We encourage other schools to develop similar clinical experiences in IHM, but are well aware of the costs and commitments necessary to do so. Students from schools in the developed and developing world can learn in each other's hospitals where scientific, clinical and personal relationships can develop between institutions with the potential to benefit both partners and our patients.

Acknowledgements

The authors would like to thank Professors Michael Alkan, Richard Deckelbaum, Yaakov Henkin, Carmi Margolis and Lechaim Naggan for their

vision and commitment to International Health and Medicine and the dedicated faculty from the participating institutions. We also would like to thank Dr Cynthia Haq for providing us with the evaluation instrument and the students for their enthusiasm and desire to learn. The work was supported by a Goldman Faculty Development grant.

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