

Muslim women and medical students in the clinical encounter

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CONTEXT Increasingly, male medical students report being refused by female patients, particularly in obstetrics and gynaecology, which is impacting on recruitment into the discipline. However, little has been documented in terms of Muslim patients and medical students in the clinical consultation.

METHODS Female Emirati nationals ($n = 218$) attending out-patient clinics at a public hospital in Al Ain, United Arab Emirates (UAE), were interviewed by medical students. Participants were provided with four hypothetical clinical scenarios (three personal, one concerning a pre-pubertal child) and asked whether they would allow male and female students to be present at a consultation, take a history or perform an examination. They were also canvassed about their past experiences with medical students and their social responsibility to contribute towards the training of Emirati doctors.

RESULTS Significant differences were recorded in terms of female versus male student involvement for all activities ($P < 0.05$ – 0.0005). For gynaecological and abdominal problems, patients would generally refuse male students.

More than 50% of interviewees would not allow a male student to examine their face. Students of either gender could, however, examine their 8-year-old child. Although 47% of the women had had previous clinical encounters with students, in only 58% of consultations had the attending doctor asked their permission. Despite this, the women had generally felt comfortable, although satisfaction decreased with increasing age ($P = 0.088$). Almost 90% of the women believed that Emiratis had a social responsibility to contribute towards the training of Emirati doctors, but this decreased with increasing income ($P = 0.004$).

CONCLUSIONS As many medical students will encounter Muslim patients during their training, they need to be sensitive to religious and cultural issues, particularly for personal examinations. In contexts where most patients are Muslim, alternative options (e.g. manikins, international rotations) may be required for male students. In the UAE, patient education may improve history-taking opportunities but will probably not transcend religious and cultural beliefs without intervention from religious leaders.

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 INTRODUCTION

Many factors influence patients' preference for same-gender doctors. In general practice, preference for female doctors relates to perceptions of women as more empathetic and responsive,¹ whereas in obstetrics and gynaecology (O&G), female doctors reputedly possess better communication skills.^{2,3} Gender stereotyping undoubtedly contributes to same-sex doctor preference, but this may disappear if patients are provided with information pertaining to a male gynaecologist or obstetrician's technical competence or humanistic qualities.⁴ Most studies relating to female patient gender preference, however, reflect Western preferences and few have specifically addressed cultural and religious issues.⁵ In the Middle East and in countries with Muslim communities, doctor gender for female patients will be paramount, particularly if the consultation involves an intimate examination or the exposure of body parts normally required by Islam to be covered.^{2,6–13} Although female Muslim patients (or their spouses) generally insist on same-gender doctors, particularly in O&G,^{6,7} some may tolerate male doctors during emergencies and complicated procedures.^{6,13}

During their studies, medical students should be exposed to the full scope of professional practice. Published reports and anecdotal accounts, however, describe the difficulties experienced by male students in O&G,^{14–24} where they are more likely than female students (56.6% versus 38.0%) to perceive gender discrimination and sexual harassment.²⁵ O'Flynn and Rymer found that whereas 63% of patients attending an O&G clinic at a London teaching hospital agreed to an intimate examination by a female student, only 40% would allow a similar examination by a male student.¹⁸ In Higham and Steer's analysis of student O&G logbooks, male students received less clinical exposure than their female counterparts, possibly accounting for their poorer assessment performance.²⁰ The reported increasing preference for same-gender obstetricians and gynaecologists^{6,7,26–28} will probably further exclude male students and may result in some not achieving the expected competencies.^{19,20} Patient refusal has also been cited as one reason for the declining number of males specialising in O&G,^{21,23,29} contributing to an evolving gender gap in the discipline^{21,30–32} and concerns for its future.^{31,33}

If little has been documented about doctor preference amongst Muslim patients, even less has been reported in terms of Muslim patients' interactions

with medical students.^{16,19,22,27} The scant literature describes only the O&G context. In one such study of women of different cultural and religious origins, Muslim women were the least likely (only 10%) to agree to the presence of students of either gender at the time of delivery.¹⁶ In Pakistan, where religious beliefs and social forces restrict open interaction between opposite genders, two final-year male medical students have described gynaecology as a specialty almost exclusively for females.²²

Given the rapid global spread of Islam through conversion and immigration, today's medical students, irrespective of where they are training, should be adequately prepared for the eventuality of encountering Muslim patients. The present research, conducted in the city of Al Ain in the UAE, host to the only national medical school (Faculty of Medicine and Health Sciences [FMHS], United Arab Emirates University [UAEU]), is one of only a few studies that has specifically canvassed Muslim patients for their experiences and interactions with medical students. During their medical studies, UAEU Emirati students interact with patients (Emirati nationals and expatriates) in two public hospitals and primary health clinics in the city. In view of anecdotal accounts of male medical students being refused by female patients, Emiratis in particular, during their O&G rotations and in recognition of the general lack of data describing Muslim women's experiences with medical students,¹⁹ this study set out to:

- 1 canvas female Emirati patients about their past experiences with medical students;
- 2 ascertain what these patients would or would not allow male and female medical students to undertake during the clinical encounter, and
- 3 gauge the perceptions of female UAE nationals on their role in the training of Emirati medical students.

After the patients or their attending female chaperones, usually relatives, had been canvassed about their prior clinical encounters with medical students, the women were presented with four hypothetical clinical scenarios (three personal, one involving a child) and asked whether they would allow a male or female student to be present, take a history or perform an examination for each scenario. The scenarios included: presentation with an allergy causing red eyes and a runny nose, which would involve examination of the face; presentation with a 'stomach' problem requiring an abdominal and possibly a chest examination; presentation with a

gynaecological problem, with a vaginal discharge, which would necessitate an intimate examination, and the examination of a sick 8-year-old child (no gender specified). These scenarios were selected for several reasons. Firstly, the sparse literature documenting Muslim women and medical students (O&G only) does not specifically consider religious, cultural or social factors that may impact on cross-gender consultations. Furthermore, Islam dictates that in public and in the presence of marriageable males, a Muslim female's head should be covered and she should be clothed from her neck down, including her feet. Her face and hands may, however, be exposed. The abdominal and gynaecological scenarios therefore involved areas of the body that are required to be covered, with one less intimate than the other, and the allergy scenario involved the face, an area which may be publicly exposed and was therefore deemed not to be 'sensitive'. The presentation of the pre-pubertal child was included as a non-personal scenario for the purposes of comparison. Participants were then canvassed about their role in the training of Emirati medical students.

Taking cognisance of these issues, it was hypothesised that:

- in terms of prior experience with medical students, most women would not have been asked by the attending doctor for permission for students to participate in the consultation;
- in the personal scenarios, most female Emirati (Muslim) patients would allow female students to be involved in all aspects of the consultation, would generally exclude male students from the gynaecological and possibly the abdominal consultation, but would allow both male and female students to examine their face in the allergy scenario;
- male and female students would have equal opportunity to examine the pre-pubertal child;
- the women would be more willing to allow a student to take a history than to be present at the consultation or to perform an examination, and
- Emirati females would generally feel a social responsibility towards the training of medical students.

METHODS

This cross-sectional study was undertaken by four female medical students who had just completed their first academic year. During the first 2 weeks

of their summer vacation (July 2008), students conducted random interviews (in Arabic) in the female out-patient clinics (e.g. paediatrics, dermatology, rheumatology, diabetes, O&G) at the public hospital adjacent to the medical school.

Participants

Participants ($n = 218$) were female Emirati patients or their accompanying chaperones in the waiting rooms of the out-patient clinics. All participants were Muslim and Arabic speakers.

Survey instrument: questionnaire and interviews

In view of the anticipated variance in participant literacy, a structured interview-based instrument was selected over a self-administered version. The questionnaire was originally designed in English, translated into Arabic by the students and then translated back into English by a professional translator. This English translation was then compared with the original English and the Arabic instruments and a final version agreed upon. Following ethical approval by the Faculty Ethics Committee and the hospital, the questionnaire was piloted under supervision on four administrative staff members (two in English, two in Arabic) in the Faculty.

After the students had introduced themselves, explained the study to the individual participant and offered an information sheet, verbal consent was obtained from the participant to proceed with the interview, which lasted approximately 30 minutes. The questionnaire was designed so that once students had provided patients with an explanation and instructions, verbally solicited responses could be circled on the survey sheet. Initially, pairs of students interviewed participants until they were sufficiently comfortable to simultaneously interview and document responses. Biographical information collected included age, marital status, parity, level of education and English and Arabic literacy (reading, writing, speaking). Inquiries were made about past experiences with medical students in terms of level of student participation (i.e. attended the consultation, took a history or examined). Participants rated their level of comfort and the quality of the health care service during these consultations on a scale of 1–5. They were then asked to indicate the level of male and female student involvement they would permit in each of the four clinical scenarios. Finally, the women were asked to comment on whether Emirati nationals had a social responsibility to contribute towards the training of UAE medical students and how they could do so.

Data capture and statistical analysis

All interviews were conducted in Arabic. Following the interviews, information on completed questionnaires was transferred to an English version, coded and entered into an EXCEL spreadsheet. Entries were then checked by the supervisor and the student who had collected the data. Data were analysed using SPSS (Version 17.0; SPSS Inc., Chicago, IL, USA). Biographical data are presented as median (range) and mean (\pm standard deviation [SD]) for age (continuous variable) and as a percentage for categorical variables such as marital status, parity, level of education and literacy. Differences between groups with regard to nominal variables were tested using Pearson's chi-squared test with continuity correction. McNemar's test was used to compare paired dichotomous outcomes such as consent (yes/no) to be examined by a male or female student.

Using the allergy scenario as the personal scenario for which students were least likely to be refused as the reference, a conditional logistic regression was used to compare across other personal scenarios (i.e. abdominal and gynaecological examinations) in terms of whether patients would allow a female or male student to be present, take a history or conduct an examination. The child scenario was omitted from this test as it did not yield statistically meaningful results. All test outcomes were considered significant at $P < 0.05$.

RESULTS

Participant demographics

Participants ranged in age from 12 to 70 years, with a mean (\pm SD) age of 30 (\pm 11) years (median 28 years). Table 1 summarises the biographical information.

Past experiences with medical students

A total of 102 (47%) participants had prior experiences with medical students. As some had been in more than one such consultation ($n = 15$), the total number of consultations involving students was 122. Of these consultations, 16% ($n = 20$) had involved male students (Table 2). For only 58% of consultations had permission been asked by the attending doctor for student participation or presence. Permission was least often sought for consultations involving male students and for physical examinations. Women had generally felt neutral or comfort-

Table 1 Demographics of female patients interviewed ($n = 218$)

Characteristic	Patients
Marital status	
Married	68%
Single	24%
Divorced	4%
Widowed	4%
Parity	
0 (including 52 single females)	35%
1	11%
2	11%
3	9%
4 +	34%
Level of education completed	
University	15%
High school	41%
Elementary school or less	44%
Literacy	
Literate (speak, read, write English + Arabic)	69%
Partial literacy	23%
Illiterate (speak Arabic only)	8%

able during these consultations (Table 2). No significant association was found between participants' marital status, parity, income, literacy or level of education and their level of comfort with female students being present at the consultation. Although 95% of women rated these health care experiences as satisfactory, good or excellent (data not shown), a trend of decreasing satisfaction with increasing age was recorded for consultations when female students were present ($P = 0.088$). Too few consultations involved male students to meaningfully test the association between comfort, satisfaction and participant characteristics.

Hypothetical clinical scenarios: level of student involvement permitted

Significant differences ($P < 0.05$ – 0.0005) were measured in terms of cross-gender comparisons for different scenarios as well as the various levels of student involvement (Tables 3 and 4). In terms of participation, students were more likely to be granted permission to take a history than to attend a consultation or perform an examination. Using the allergy scenario as the personal scenario for which permission was most likely to be granted and comparing

Table 2 Consultations* ($n = 122$) at which patients ($n = 102$) were asked permission for students to attend, take a history or conduct an examination and the percentage of consultations rated as neutral or comfortable by patients

Student involvement ($n = \text{number of consultations}$)	Consultations for which permission was sought	Consultations rated neutral or comfortable
Female present ($n = 76$)	61%	82%
Male present ($n = 14$)	43%	79%
Female examination ($n = 24$)	58%	96%
Male examination ($n = 4$)	25%	75%
Female history ($n = 2$)	100%	100%
Male history ($n = 2$)	50%	100%
Average	58%	89%

* Patients with experience of students ($n = 102$, 47%). Some patients had been in more than one consultation with students

levels of student involvement across different body regions, the odds of male students being barred from taking a history, being present or performing an examination increased significantly ($P < 0.05$ – 0.0005) as the body area became more intimate (Table 4). Thus, for a gynaecological problem, < 5% of the women (versus 79.4% for female students) would permit a male student to examine them, 16.5% (versus 87.2% for female students) would allow a male student to be present and only 33.9% (versus 92.2% for female students) would grant a male student permission to take a gynaecological history. More than half of the women would not allow a male student (versus $\pm 9\%$ for female students) to examine their face (Table 3).

Although > 90% of participants would agree to all aspects of male and female student involvement with their 8-year-old child (Table 3), significantly fewer women would allow a male student to be present at the consultation ($P < 0.05$).

Role of Emiratis in the training of future UAE doctors

Almost 90% of the Emirati women interviewed acknowledged a responsibility to assist in the training of UAE medical students. With increasing monthly income, perceived responsibility, however, decreased ($P = 0.004$) (Table 5). A non-significant trend of

Table 3 Percentages of female Emirati patients who would allow a male or female medical student to be present at a consultation, take a history or conduct an examination in four hypothetical clinical scenarios ($n = 218$)

	Female student	Male student
Scenario 1. Red, itchy eyes, runny nose		
Present at consultation	95.0% ^{††}	69.7% ^{¶,††}
Take history	97.7% ^{†,††}	66.2% ^{¶,††}
Examine	91.3% ^{†,††}	47.7% ^{¶,††}
Scenario 2. 'Stomach' problem involving an abdominal and possibly a chest examination		
Present at consultation	93.6% ^{*,††}	29.4% ^{¶,††}
Take history	95.4% ^{‡,††}	66.5% ^{¶,††}
Examine	88.1% ^{*,‡,††}	10.6% ^{¶,††}
Scenario 3. Gynaecological problem involving an intimate internal examination		
Present at consultation	87.2% ^{*,†,††}	16.5% ^{¶,††}
Take history	92.2% ^{*,‡,††}	33.9% ^{¶,††}
Examine	79.4% ^{†,‡,††}	4.1% ^{¶,††}
Scenario 4. Involving an 8-year-old child (no gender given)		
Present at consultation	99.5% ^{‡,***}	96.8% ^{§,***}
Take history	100%	98.6% [¶]
Examine	93.6% [‡]	91.3% ^{§,¶}

McNemar's test was used for comparisons Student activities (presence, history taking, examining) by female students: * $P < 0.05$; † $P < 0.005$; ‡ $P < 0.0005$ Student activities (presence, history taking, examining) by male students: § $P < 0.005$; ¶ $P < 0.0005$ Male versus female students for each activity: ** $P < 0.05$; †† $P < 0.0005$

increasing responsibility with age was noted ($P = 0.175$, data not shown). When asked how nationals could contribute, responses were generally vague and many women were unable to respond. Suggestions offered included that students be allowed to examine patients in the presence of a doctor, that they should be sent abroad to study and that facilities should be provided for patients who did not mind being attended to by students.

DISCUSSION

Religion and culture

The results of the present study confirm anecdotal accounts of difficulties experienced by male Emirati medical students in accessing patients during O&G

Table 4 Odds ratios, 95% confidence intervals and P-values for the associations between areas of the body (head [reference], abdomen and gynaecological) and objection to certain involvement of students (presence, history taking, conducting an examination)*

Level of student involvement	Female student		Male student	
	OR	95% CI (P)	OR	95% CI (P)
Student presence				
Face (reference)	1	–	1	–
Abdomen	2.56	0.48–13.6 (0.27)	52.19	12.73–213.99 (< 0.0005)
Gynaecology	26.45	4.04–173.21 (< 0.0005)	411.18	77.83–2172.21 (< 0.0005)
History taking				
Face (reference)	1	–	1	–
Abdomen	3.94	0.77–20.13 (0.10)	10.86	4.24–27.80 (< 0.0005)
Gynaecology	15.19	2.65–87.11 (0.002)	87.47	31.05–246.39 (< 0.0005)
Physical examination				
Face (reference)	1	–	1	–
Abdomen	1.95	0.81–4.72 (0.14)	15.62	6.99–34.92 (< 0.0005)
Gynaecology	10.24	3.77–27.81 (< 0.0005)	68.73	21.36–221.11 (< 0.0005)

* An OR > 1 indicates that for this part of the body, women were more likely to object to student involvement compared with the allergy (face) scenario
P-values in bold indicate significance at P < 0.005
OR = odds ratio; 95% CI = 95% confidence interval

Table 5 Percentages of patients in different income categories who acknowledged a responsibility to participate in the training of Emirati medical students (n = 210)*

Income, AED/month	Patients acknowledging responsibility
< 20 000 (n = 122)	93%
20 000–50 000 (n = 81)	84%
> 50 000 (n = 7)	57%
	Mean, all patients: 88%

Pearson's chi-squared test for trends: P = 0.004
* Eight participants did not indicate their income
AED = United Arab Emirate dirhams (AED20 000 is approximately equivalent to US\$5446)

rotations. These findings concur with the reported increasing refusal of male students by O&G patients in Western settings^{14,15,17,18,23,24} and the literature dealing with male students and female Muslim patients.^{16,19,22} Our results suggest that the majority of Emirati women would also exclude male students

from being present at or carrying out an examination for an abdominal complaint. Taking into account the cultural and religious setting of the present study, it was anticipated that many women would not allow male students to perform a gynaecological and possibly an abdominal examination. In the first instance, Islam teaches cross-gender modesty, requiring that Muslim women be clothed in order not to display their *zeenah* (charms, beauty, ornaments) or *awrah* (areas of the body that should not be publicly exposed) to any male but their husband and non-marriageable males (*mahram*).^{11,13} What constitutes *awrah* is debatable, but all descriptions include the genital area. In addition, Islam states that patients requiring non-emergency treatment should first seek a same-gender Muslim doctor, followed by a same-gender non-Muslim, then an opposite-gender Muslim and, lastly, an opposite-gender non-Muslim doctor.¹³ In addition, irrespective of religion or culture, an intimate female examination is an invasion of privacy and, as Shann and Wilson report for a sexually transmitted diseases clinic, female patients are generally more likely than male patients to refuse students.³⁴ In the present study, almost 20% of the women interviewed said they would not allow female students to perform a gynaecological examination

and 12.8% would bar them from being passive observers at such a consultation.

Thus, for Muslim women with a deep-rooted sense of religious modesty, possibly exacerbated by the gender-segregated society of the UAE, examination of their *awrah* by a doctor or student of the opposite gender would not only be embarrassing,¹² but might also be culturally and religiously unacceptable. During emergencies, however, the prohibited becomes permissible in Islam^{13,35} and some Muslim women or their husbands will tolerate male doctors.^{6,36} This may explain our male students' accounts of their best O&G experiences in the emergency department.

That only 47.7% of women would allow a male student to examine their face, as would be required in the instance of the allergy scenario, was unexpected. Although local or regional cultural and social nuances may underlie this finding, a religious underpinning was, however, discovered. Islam requires Muslims to cast their gaze down so as not to attract attention from the opposite sex lest it leads to inappropriate thoughts and actions.³⁷ Thus, female Muslim patients may regard prolonged eye contact with a male student or doctor inappropriate, albeit during a clinical consultation. In terms of the religious requirement for a Muslim before a non-Muslim doctor, a facial examination by a male Western student or doctor may then be even more unacceptable.

Although these women said they would generally allow students unrestricted access to their 8-year-old, pre-pubertal child, some male students would still be excluded, particularly from performing an examination, which is perhaps reinforced by the religious, cultural and social gender segregation of the society. We postulate that had the 'child' scenario involved a 12- or 13-year-old female, the results would have been similar to the personal examination scenarios. If the child was adolescent, unmarried and, by implication in Islam, a virgin, male students, irrespective of their religion, would certainly be refused.

Previous experiences with students: permission

In only 58% of prior consultations involving students had permission been sought by the attending doctor for their participation, particularly if the consultation had involved a male student undertaking a physical examination. Although the doctors' failure to seek permission may have been unintentional, it may also have been deliberately intended to avoid refusal in view of the socio-religious gender-segregated context of the UAE. Irrespective of

the underlying reason, patient consent and autonomy are important considerations in any consultation.^{16,19,24,28} As students learn best through interacting with real patients, and early interaction is advocated to socialise students into the profession,^{38,39} patient cooperation and consent are imperative. As a principle of good practice and to improve patient compliance, doctors should always explain the student's role, highlighting the importance of patients' contributions to learning.

Patient education

The majority of participants in the present study believed that they have a national responsibility to contribute towards the training of Emirati doctors. When asked what role they could play, most responses were, however, vague and non-committal, perhaps reflecting the dilemma imposed by conflict between a genuine desire to be socially responsible and cultural or religious constraints. Although patient education should improve cooperation under most circumstances,³⁴ convincing Muslim women to contravene what they may *perceive* as cross-gender religious or cultural prohibitions would be difficult. Changing behaviour or mindsets probably requires intervention from religious leaders. In educating Muslim patients about their role in medical student training, it would be prudent to remind them of their religious duty to society. An Islamic dictum states that whatever is necessary to uphold a religious duty becomes a religious duty in itself. To this end, by studying to become doctors, Muslim medical students are fulfilling a duty of the *fardh kifaya* type (i.e. on behalf of community). The rest of society therefore has a religious obligation to support this duty.³⁹

Alternative training for male students

In situations where patient consent for student involvement may not always be forthcoming, alternative strategies should be sought to ensure students develop the required competencies. In the present context, transferring Emirati male students for their O&G rotation to a second public hospital which treats greater numbers of expatriates would at least increase male students' chances of assisting with a delivery or performing a pelvic examination. A more realistic but expensive option would involve an O&G rotation abroad for male students. More generally in medical education, simulation using pressure-sensitive manikins and models should probably be a standard method of ensuring that both male and female students are competent at intimate examinations before they attend to patients.

A personalised or expert patient programme, in which women prepared to undergo pelvic or breast examinations are trained as teachers,²¹ would be a good investment, although this would probably not be feasible in Islamic countries.

Given the increasing difficulty experienced by male medical students in accessing female patients for intimate examinations,^{14–24} perhaps the debate regarding the requirement for pelvic and even rectal examinations in the undergraduate curriculum should be resurrected. Arguments against the inclusion of these examinations are based to some extent on their questionable diagnostic value in detecting suspected masses, infections and cancer.^{40,41} This argument would certainly be relevant for Emirati male students and doctors who, unless they study or practise abroad, are unlikely to perform a pelvic examination in clinical practice in their home country where the majority of female patients are Muslim.

CONCLUSIONS

As the population of female Emirati participants in the present study, which we believe reflects the opinions and beliefs of Muslim women in the Gulf, Middle East and Muslim communities elsewhere, would generally bar male medical students from attending a consultation, taking a history or examining a woman for clinical problems involving areas of the body that have religious associations, alternative training opportunities should be sought. A short-term option in the UAE would involve O&G rotations abroad; pressure-sensitive models for training in intimate examination techniques would be universally applicable. If intimate examinations are deemed 'core' to the undergraduate curriculum and if the culture permits, medical schools should consider investing in an expert patient programme as well as in a range of manikins for practising breast, pelvic and urogenital examinations such that when students examine female O&G or male urogenital patients, irrespective of their culture or religion, there will be minimal distress and embarrassment for both patient and student. Given the increasing rates of conversion to Islam and rising emigration of Muslims to the West, there is a reasonable chance that male and female medical students will at some time during their training and practice encounter Muslim patients. For this, they need to be sensitised to the religious and cultural implications of such an encounter.

Patient consent for student involvement is imperative. If the role of the student is explained to patients,

there may be greater compliance. For most Muslim women throughout the world, however, the current practice of refusing male students and doctors is likely to remain. Within the context of the present study, an education campaign in which Emirati patients are informed of the need for students to obtain experience and of their own role in training national medical students may allow greater acceptance of student involvement. Reminders to Muslims of their religious duty to support those who have chosen to be doctors should be included. Although it is unlikely in the foreseeable future that female Emiratis will agree to any great extent to cross-gender examination by students, we are of the opinion that they could be convinced to become more involved in communication skills training.

Limitations

Several limitations of this study are acknowledged. A bias may exist in terms of UAE medical students interviewing Emirati participants about medical training. It is possible that the interviewees did not want to disappoint the female students. We believe, however, that the women answered honestly because > 20% of them said they would not allow a female student to perform a gynaecological examination.

Although such a study might lend itself to a qualitative approach, this was not undertaken for several reasons. Firstly, as little data are available in terms of Muslim patients and students, a quantitative approach was considered more appropriate at this exploratory stage. Secondly, as the students were research novices, quantitative data could be more accurately collected. In addition, reliably translating semi-structured Arabic interviews would be a difficult undertaking.

This study provides insight into female Muslim women's attitudes towards male and female students in the clinical encounter, but the perceptions of male patients have not been canvassed. Male students are currently undertaking this study.

Finally, we assumed there was a common understanding of 'medical student' by patients. However, some clinicians may refer to medical students and interns equally as 'doctors in training' when addressing patients.

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undertook the statistical analysis. All authors contributed to the design of the study and the revision of various drafts of the paper and approved the final submitted manuscript.

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