ORIGINAL ARTICLE

Actual Versus Simulated Breast and Rectal Examinations among Recent Medical Student Graduates

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Abstract

Clinical skills form the core of a physician's practice. Breast and rectal examinations help the physician to detect abnormalities that may lead to the identification of unnoticed diseases. Learning these skills with real patients can be difficult because patients can be hesitant to allow students to perform these examinations. Simulation-based teaching is a viable option for overcoming these obstacles. A cross-sectional study was performed that included interns at King Abdulaziz University. Of the 252 students who completed the questionnaire, most performed a breast examination on manikins. Among all, 206 reported that practicing on manikins prepared them to deal with real patients. More female than male students performed breast examinations on real patients. Rectal examinations were slightly less prevalent, with 223 students having performed them on manikins. Among all, 183 reported that this prepared them to deal with real patients. The most frequent barrier to performing an examination on real patients was the patient's refusal due to religious and cultural concerns. It is of paramount importance for doctors to help students perform these examinations under supervision on real patients. This could be achieved by encouraging doctors to supervise students' examinations more frequently and by improving students' communication skills.

Keywords

Breast exam; Rectal exam; Student; Simulation; Barriers

Introduction

The acquisition of clinical and practical skills represents the core of a physician's practice. Teaching and learning about how to perform a physical examination, including intimate area examination, has been integrated into the undergraduate medical curriculum to facilitate students' acquisition of such clinical skills[1,2].

Developing the skill to perform any physical examination is a long and a challenging process for students. Barriers such as gender, religion, culture, social and ethical values, and the rights of the patient to be examined can hinder students' development of good examination skills[3,4]. These barriers become even more evident with the examination of intimate areas and recording of a patient's sexual history[5-7].

Globally, there is increasing concern that medical students are no longer acquiring the appropriate skills for examinations, despite the fact that the examination of intimate areas can lead to the early detection of cancer[5,7,8]. To overcome these barriers, many medical institutions have integrated several teaching methods, simulation-based teaching being the most common and one that has gained a lot of attention in recent decades[3,9-11]. Several studies have shown how simulation helps students practice in a safe environment with the ability to repeat the process and correct errors, receive feedback, and build self-confidence without harming patients or invading their privacy[3,12,13]. Simulation gives students a chance to practice, interact, communicate, and receive immediate formative feedback, which helps them improve their physical examination skills[3,9].

Simulation-teaching technologies available in the Clinical Skills and Simulation Centre at King Abdulaziz University Hospital (KAUH), enable interns and undergraduates to improve their clinical skills and helps with the Objective Structured Clinical Examination. Using manikins for clinical training allows students to practice repeatedly until they feel confident. This method helps practice with feedback and supervision[9].

The objective of this study was to determine the patterns and barriers of simulated and real breast and rectal examinations among recent medical school graduates at KAUH.

Table 1. Number of medical students who performed examinations (real and manikin)

Type of Examination	Examination Performed	
	Yes N (%)	No N (%)
Real breast	146 (57.9)	106 (42.1)
Manikin breast	250 (99.2)	2 (0.8)
Real rectal	41 (16.3)	223 (88.5)
Manikin rectal	211 (83.7)	29 (11.5)

Methods

A cross-sectional study was conducted involving interns who had finished their sixth year of medical school at King Abdulaziz University (KAU) in Jeddah, Saudi Arabia, by using self-administered questionnaires. The questionnaires included questions related to demographics and to breast and rectal examinations. The study was reviewed and approved by the Biomedical Ethics Research Committee at KAUH (reference number 407-17). The questionnaires were delivered via email to 400 interns who had started their internship year in July 2018.

Counts and percentages were used to summarize the participants' demographic characteristics, and mean and standard deviations were used to describe continuous variables. Chi-squared and Fisher's exact tests were used to assess the association between the demographic characteristics and preparedness of clinical practice. A two-sided P-value of ≤ 0.05 was considered significant. The data were coded, entered and analyzed with IBM SPSS Statistics for Windows, Version 23 (IBM Corp., Armonk, NY USA).

Results

A total of 252 interns filled out and returned the questionnaire, a response rate of 63%. Of the respondents, 140 (55.6%) were females and 112 (44.4%) were males. Among all interns, 146 (57.9%) performed real breast examinations. The majority of all interns had performed a breast examination on a manikin (250, 99.2%), and 206 (81.7%) of the 252 reported that practicing on a manikin prepared them well to deal with a real patient (Table 1). There was a significant difference in the performance of breast examinations in terms of gender, with more females than males having performed an examination on a real patient ($P \leq 0.0001$) (Table 2). The main reason that students were prevented from performing a real breast examination was patient refusal (81, 32.4%), followed by ethical and religious concerns (64, 25.4%).

Table 2. Number of breast and rectal examinations performed on real patients by student gender

Student Gender	Number of Examinations				P-value
	Never N (%)	1-2 N (%)	3-5 N (%)	>5 N (%)	
Breast					
Female	21 (15.0)	55 (39.3)	43 (30.7)	21 (15.0)	≤0.0001
Male	72 (64.3)	25 (22.3)	13 (11.6)	2 (1.8)	
Rectal					
Female	115 (82.1)	21 (15.0)	4 (2.9)	0 (0.0)	0.120
Male	86 (76.8)	20 (17.9)	2 (1.8)	4 (3.6)	

Only 41 (16.3%) of all interns had performed a real rectal examination, whereas the majority of interns had performed rectal examinations on manikins (223, 88.5%) and most reported that practicing on manikins prepared them well to deal with real patients (183, 72.6%) (Table 1). There was no significant difference in the performance of rectal examinations in terms of gender; in fact, the rate was higher, although not significant, for males (p = 0.120) (Table 2). The most common reasons that students were prevented from performing real rectal examinations were patient refusal in addition to religious and ethical concerns.

Regarding interns' perceived barriers to performing breast and rectal examinations on real patients were the patient refusal, followed by religious and ethical concerns and lack of opportunity to do it. Negative emotions towards the experience such as feeling embarrassed to ask or being uncomfortable or afraid were the least frequent barriers (Fig. 1).

Discussion

The history of simulation goes back to the early 20th century when Edwin Albert Link introduced it to the field of aviation in 1929[14]. In the medical field, Peter Safar demonstrated the importance of mouth-to-mouth cardiopulmonary resuscitation (CPR) in the 1960s[14], and his efforts led to the manufacture of the first realistic manikin simulator to teach CPR[15]. In 1968, the cardiology patient simulator was introduced by Dr. Michael Gordon[15]. Both simulators are considered to be the initial bricks of modern-era medical simulation[15,16]. With the technological developments that took place in the 1980s and 1990s, Dr. David Gaba introduced simulation for anesthesia[14]. Simulation-based medical education permits repeated practice of clinical skills without the disadvantage of inconveniencing real patients[14]. In addition, it is a useful tool to assess different aspects of medical competencies of the medical students[16].

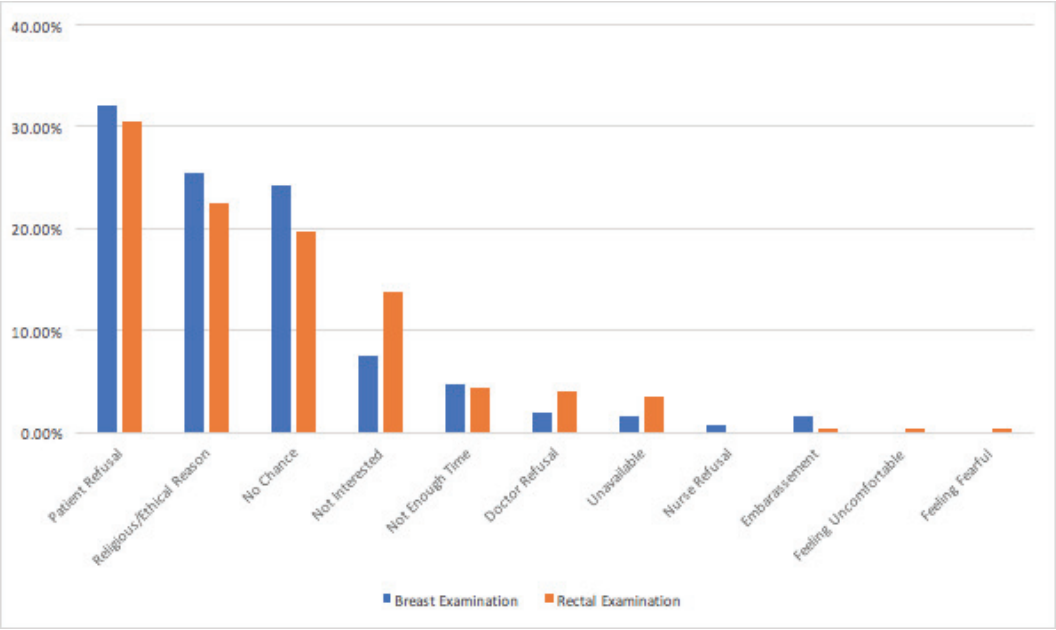

Figure 1. Perceived barriers to performing breast and rectal examinations.

The transition period from being a medical student to an intern is stressful in the professional journey of a physician. Interns face multiple challenges, including greater workloads, social challenges and more responsibilities[17-19]. During internship, with increased independent contact with real patients, interns have an opportunity to properly experience a physical examination and face numerous challenges, such as performing examinations of intimate areas with no prior experience[2,20]. Simulation prepares students as much as possible to go through this transition.

In this study, most participants had performed breast and rectal examinations on manikins, whereas half of them had performed a real breast examination and less than a fifth had performed a real rectal examination. The rate at which students at KAU had performed a real examination of an intimate area was less than the rate reported in previous studies, especially for digital rectal examination[21]. The most often reported barriers to performing real examinations in the present study were similar to those reported in previous studies. Abdulghani *et. al*.[4] reported examination performance rates at two Saudi medical colleges: 50.3% of students performed real breast examinations at King Saud University and 28.1% did so at Qassim University, and 16.6% of students performed real rectal examinations at King Saud University and 12.4% did so at Qassim University. Another study showed that 82.5% of students performed breast examinations and 71.1% preformed rectal examinations at King Saud University in 2010. This difference can be explained by changes in either the curriculum or in the response rate[5]. Abdulghani and his colleagues[4] reported that students are usually reluctant to perform real examinations of intimate areas for multiple reasons, mostly because of patient refusal, lack of supervision, lack of proper training, the sex of the patient, the patient's cultural background and ethical issues.

The introduction of simulation-based training into medical school helped overcome some of the challenges faced during teaching private area examination. Simulation-based training offers a good environment for proper exposure, hands on teaching and the opportunity to give immediate feedback[22]. Recent studies have further focused on improving the quality of simulation-based by improving the quality of the models by making them more realistic and help the students identify abnormalities[23]. However, simulation-based training should not replace bedside teaching. In a small, randomized trial by Patel and colleagues[24], students that were randomized to intervention group, where they were exposed to teaching digital rectal examination on volunteer patients were more confident in knowing the indication, the actual technique and in the ability to assess the findings accurately compared to students in the control arm that received standard teaching using simulation model.

Teaching medical students to master private areas examination is a challenge. Simulation-based training is a valuable teaching tool, but should not substitute for examining and interacting with real patients. Simulation offers a great opportunity to overcome barriers to performing breast and rectal examinations in patients, but all efforts should be made to maximize exposure to real patients.

Conclusion

Our study shows that simulation-based examination practice can substitute for training of students on real patients, especially for examinations of intimate areas in a patient of a different gender. Although many barriers to such examinations face students, patient refusal is the primary one. It is of paramount importance to encourage patients to allow students to perform intimate area examinations. That goal could be achieved through proper supervision, patient education, and improvement of students' communication skills.

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Conflict of Interest

The authors declared that there is no conflict of interest that is related to this study and this article.

Disclosure

The authors did not receive any type of commercial support either in the form of compensation or financial support for this case report. The authors have no financial interest in any of the products, devices, or drugs mentioned in this article.

Ethical Approval

The study was approved by the Ethics Committee of the KAUH in Jeddah, Kingdom of Saudi Arabia, also known as the Institutional Review Board of Hospitals.

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تأثير ممارسة فحص الثدي والمستقيم على المرضى الحقيقيين بمقابل المانيكان على تدريب طلاب الامتياز

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المستخلص. تشكل المهارات السريرية جوهر ممارسة الطبيب. فحص الثدي والمستقيم يساعدان الطبيب على كشف و تحديد الأمراض غير الملحوظة. قد يكون تعلم هذه المهارات على مرضى حقيقيين أمرًا صعبًا لأن المرضى قد يترددون في السماح للطلاب بإجراء هذه الفحوصات عليهم. بما أن التدريس القائم على المحاكاة بواسط المانيكان هو خيار جيد للتغلب على هذه العقبات، فقد تم إجراء دراسة مقطعية شملت متدربين في سنة الامتياز في جامعة الملك عبد العزيز. من بين ٢٥٢ طالبًا أكملوا الاستبيان، قام معظمهم بإجراء فحص الثدي على المانيكان. من بين الجميع، أفاد ٢٠٦ أن التدريب على فحص الثدي على المانيكان هيأهم للتعامل مع المرضى الحقيقيين. عدد الطالبات اللاتي قمن بإجراء فحص الثدي على المرضى الحقيقيين أكبر مقارنة بالطلاب. فحص المستقيم على مرضى حقيقيين كان الأقل إنتشارًا، حيث قام ٢٢٣ طالبًا وطالبة بإجرائه على المانيكان فقط. من بين الكل، أفاد ١٨٣ أن هذا أعدّهم لفحص المستقيم على المرضى الحقيقيين. كان العائق الأكثر شيوعًا لإجراء فحص المستقيم على المرضى الحقيقيين هو رفض المريض لأسباب دينية وثقافية. من المهم بالنسبة للأطباء مساعدة الطلاب على إجراء هذه الفحوصات على مرضى حقيقيين تحت إشرافهم. فيمكن تحقيق ذلك من خلال تشجيع الأطباء على الإشراف على أداء الطلاب بشكل متكرر وتحسين مهارات التواصل لدى الطلاب.