

Medical Students' First Male Urogenital Examination: Investigating the Effects of Instruction and Gender on Anxiety

Lisa D. Howley, PhD^{*}, Karen Dickerson, PhD[†]

^{*}The University of North Carolina at Charlotte

[†]The University of Virginia

Objectives: To investigate the effect that standardized instruction of the male urogenital examination had on the anxiety levels of students and to determine what influence, if any, the gender of the student had on this experience.

Methods: One hundred thirty six second year medical students were asked to report their level of anxiety before and after participation in a small group teaching session on the male urogenital examination. We gathered both qualitative and quantitative information to better understand students' anxiety surrounding this instruction.

Results: Students had significantly lower state-anxiety scores following the instruction than before ($F(1, 76)=102.353, p=.000, \eta^2=.574$) and female students were more likely to have greater state-anxiety than male students ($F=6.952, p=.010, \eta^2=.084$). Ninety-nine percent of students reported that the teaching associates successfully reduced their anxiety. This decrease was attributed predominantly to the personal qualities of the teaching associates and to the format of the instruction.

Conclusions: This study provides both quantitative and qualitative evidence that the use of male teaching associates to provide standardized instruction on the urogenital exam is effective at reducing students' anxiety, particularly with regard to female students. Added standardized instruction may lead to increased confidence, skill, and future compliance with intimate physical exam screening practices.

Keywords: Undergraduate medical education; Physical examination; Gender differences; Anxiety

The acquisition of basic physical examination skills is a vital component of the undergraduate medical education curriculum. However, recent research has shown that students' skills and confidence in intimate examinations are weak.¹ These deficiencies have been attributed to lack of practice, observed instruction, and to the anxiety levels of the medical students.¹⁻² The effect of a standardized small group instructional encounter of the male urogenital exam on students' anxiety was the focus of this research.

Medical students suffer high levels of stress, anxiety, and depression throughout their undergraduate training and several studies report that these levels are more pronounced among female students.²⁻³ Although much has been written about the instruction of intimate or invasive examinations in the medical curriculum, very few authors' have focused on the early medical students' anxiety surrounding these examinations; particularly the male urogenital and rectal examinations.⁴ The purpose of this study was to assess changes in second year medical students' anxiety before and after participation in a standardized male urogenital teaching session and whether

these changes were more pronounced among female students. In addition, we explored possible methods to make this instruction less anxiety provoking.

Since 1997, second year medical students at the University of Virginia have received instruction on the male urogenital and rectal examinations from extensively trained teaching associates. A small group of four students, both male and female, receive standardized instruction from two male teaching associates in one two-hour session. The session includes three components and is modeled after a program developed at the University of Iowa School of Medicine:⁵ (a) examination demonstration by the teaching associates, (b) standardized instruction regarding proper exam and patient communication techniques, and (c) opportunities for students to perform their first complete urogenital and rectal examinations on the teaching associates.

In order to explore students' anxiety surrounding their first male urogenital and rectal examinations, we administered a survey to all second year medical students (136) immediately after participating in the

Table 1 Overall and gender specific mean state -anxiety scores

	Pre-Instruction			Post-Instruction		
	Mean	SD ^b	SE ^c	Mean	SD ^b	SE ^c
Overall (n = 91 ^a)	29.87	8.88	0.90	20.59	5.35	0.55
Female (n = 32)	33.58	9.60	1.67	21.94	5.86	1.04
Male (n = 46)	28.59	7.74	1.08	20.02	5.14	0.74

Note. The higher the STAI score, the greater the anxiety. Mean values of pre- and post-instruction STAI scores for all (overall), female, and male students. ^aSub-groups do not equal overall number due to missing self-reported gender identification. ^bSD = standard deviation; ^cSE = standard error of the mean

instructional session. Students were asked to rate their feelings of anxiety before and after the session. The survey included a revised form of the Spielberger State-Trait Anxiety Inventory (STAI)⁶ and an open-ended question regarding if, and how, their anxiety had been reduced during the session. According to Spielberger⁶, ‘State-anxiety’ refers to anxiety relating to the present moment and ‘trait-anxiety’ refers to a stable dimension of personality.⁶ The essential qualities measured by the STAI are feelings such as apprehension, nervousness, tension, and worry. Since scores on the scale increase in response to these feelings of psychological stress, we predicted that students’ post-session state-anxiety scores would be significantly lower than pre-session scores.

Methods

One hundred and two students (75% RR) voluntarily completed the 31-item survey immediately following the session. Total scores were calculated for both the reported pre- and post-levels of state-anxiety and ranged from a possible 15 (no anxiety) to 60 (high anxiety). Reliability analyses were conducted to determine the internal consistency of the revised STAI. Specifically, we calculated Cronbach’s coefficient alpha on the pre- and post-session administrations (alpha = .86 and .85, respectively). Data analysis was performed to determine significant mean differences using a split-plot repeated measures ANOVA between males and female pre-and post-session anxiety scores. Results with $p < .05$ were considered significant. Effect sizes (η^2) greater than .40 were considered large and less than .10 were considered small. Finally, students’ responses to the

open-ended item were analyzed and categorized according to major themes.

Results

The overall mean difference score from pre- to post-session was 9.48 ($sd = 8.6$, 95% $CI = 7.69$ to 11.23). Table 1 shows the overall, male, and female pre- and post mean differences. A split-plot repeated measures ANOVA was calculated to examine the differences between males and females from pre- to post

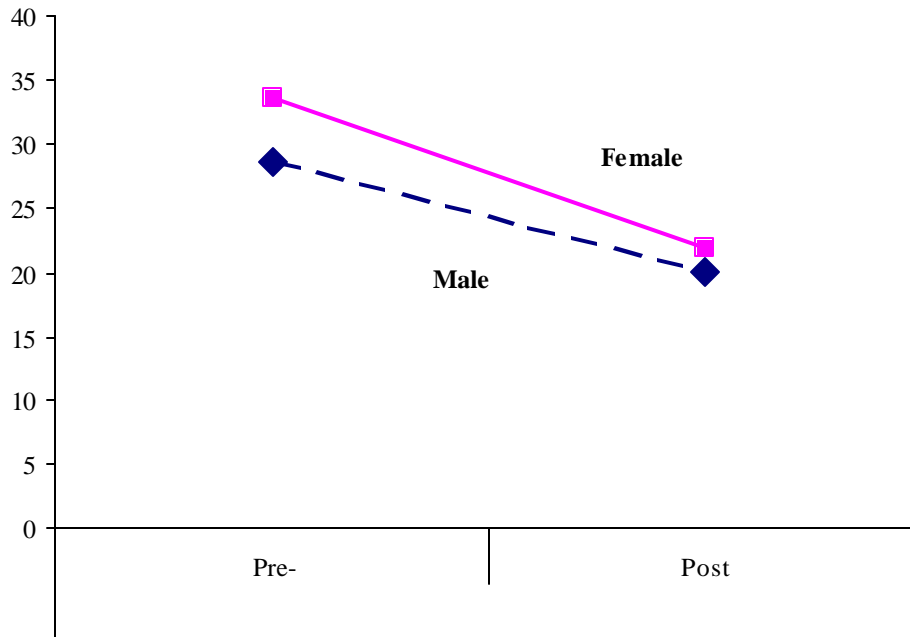
state-anxiety scores. There was a statistically significant within subject effect ($F(1, 76)=102.353$, $p=.000$, $\eta^2=.574$) and a non-significant interaction ($F=1.464$, $p=.230$, $\eta^2=.019$). In addition, there was a statistically significant between subjects effect, ($F=6.952$, $p=.010$, $\eta^2=.084$). A graph of the between subject effect is contained in Figure 1. The significant within and between subject effects suggest that all students had lower state-anxiety scores following the instruction than before and female students had relatively greater anxiety scores than male students.

Ninety-nine percent of students, who responded, reported that the teaching associates successfully reduced their anxiety during the instructional session. Reasons given for this reduction were categorized into the following five themes (in descending order of prevalence): (a) the professional, thorough, and relaxed demeanor of the associates; (b) the individualized instructional format; (c) their appropriate use of humor; (d) their knowledge level; and (e) their concern for teaching.

Discussion

Students’ mean levels of anxiety surrounding their first male urogenital examinations were significantly reduced following participation in the small group instructional session. The students attributed this reduction to the format of the session and to the personal affects and demeanor of the teaching associates. Although female students were significantly more anxious than their male peers, given the small effect sizes, the practical significance of this finding may be inconsequential. However, these findings are

Figure 1. Mean STAI scores for pre- to post instruction by gender



Note. The higher the STAI score, the greater the anxiety. Mean values of pre- and post-instruction STAI scores for female and male students. Overall, students were significantly more anxious prior to instruction than after ($p = .00$). Females were significantly more anxious than males ($p = .01$). This interaction was not significant.

consistent with previous research: female students report higher levels of anxiety.

Following this study, a seminar had been added to the curriculum to address students' concerns, meet a trained associate, and answer any questions surrounding the session. Further research is needed to investigate the impact of this intervention. Although the results of this study support this form of instruction for reducing male and particularly female medical students' levels of anxiety, additional research is needed to better understand the relationships between gender and anxiety on the clinical practice of the intimate examinations.

Acknowledgement

Both authors, Drs. Howley and Dickerson, have shared in the responsibility of this research and manuscript. Approval for this research was granted by the human subjects review board at the University of Virginia. At the time this research was conducted, Dr. Howley was a faculty member of the School of Medicine at the University of Virginia.

References

1. Turner KJ, Brewster SF. Rectal examination and urethral catheterization by medical students and house officers: Taught but not used. *Br J Urol* 2000; 86(4):422-6
2. Shapiro SL. Stress management in medical education: A review of the literature. *Acad Med* 2000; 75(7): 748-759
3. Toews JA, Jocelyn ML, Dobson DG, Simpson E, Brownell AW, Brenneis F, MacPherson KM, Cohen GS. Analysis of stress levels among medical students, residents and graduate students in four Canadian Schools of Medicine. *Academic Med* 1997; 72:997-1002
4. Wallis LA, Tardiff K, Deane K, Fringes J. Teaching associates and the male genitoretal exam. *Jo Amer Med Wom Assoc* 1984; 39(57): 58-62
5. Behrens A, Barnes VH, Gerber EL, Albanese M, Matthes S, Cangelosi A. A model for teaching sophomore medical stu-

Howley LD, Dickerson K. Medical students' first male urogenital examination: Investigating the effects of instruction and gender anxiety.

Med Educ Online [serial online] 2003;8:14. Available from <http://www.med-ed-online.org>

dents the essentials of the male genital-rectal examination. *J Med Educ* 1979; 54:585-587

6. Spielberger CD. *State-Trait Anxiety Inventory (Form Y)*. California: MindGarden, 1983.
7. Hennigan TW, Franks PJ, Hocken DB, Allen-Mersh TG. Rectal examinations in general practice. *BMJ* 1990; 301:487-480.

Correspondence:

Dr. Lisa Doyle Howley
The University of North Carolina at Charlotte
College of Education
9201 University City Boulevard
Charlotte, North Carolina 28223

Phone 704.687.2758
Fax 704.687.3493
Email ldhowley@email.uncc.edu