

An Illustrative Interactive Module as a Supplement to Perineal and Genital Anatomy Education

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Introduction

Anatomy education remains at the foundation of medical education. While an educational constant, the delivery of anatomy education has expanded greatly; aided by the explosion of online resources that were generated during the COVID-19 pandemic.¹ This expansion has included the use of self-directed and self-paced instructional materials, the goal of which is often to provide the learner with a more personalized and available instructional method.²

Prior studies have demonstrated the subjective usefulness of online resources, including dissection videos and electronic resources, as an adjunct to cadaveric instruction.² Despite the vast number of changes to anatomy education, research on illustrative methods for content delivery remains limited.³ The focus of prior illustrative delivery research has been through blackboard teaching styles, student-generated drawing, and, more recently, screencast use.³ These methods have demonstrated increased engagement and retention on behalf of the learner.³

Aims and Objectives

The goal outcome of this project is to further illustrate the positive benefits of self-directed illustrative teaching methods by providing students with additional learning materials more tailored to individual student's learning styles.³ Thus, this study aims to demonstrate improved educational outcomes (ie. test scores) and experiences (ie. subjective improvement) through self-directed, illustrated module-based learning that was implemented in the education of perineal and genital anatomy taught in Anatomical Foundations of Clinical Practice (AFCP).

Approach and Evaluation

A supplemental educational module was created using the 5HP software embedded in the Moodle learning space. The module contained author-illustrated drawings of the layers of the perineum in isolation and juxtaposition between the male and female sex, with common variations in the presentation of external genitalia, and interactive pages designed to mirror lecture slides, objectives, and key structures. This module was made available to the M1 students in the fall of 2023 for the duration of their Pelvis and Perineum section of AFCP2, under the direction of OUWB IRB-FY2022-370. Students were not required to complete the module but had the opportunity to use and repeat its exercises as part of their independent studying.

Following completion of the AFCP course, students were provided with an anonymous survey that included questions to gauge their satisfaction with the module and its perceived helpfulness in their understanding of the material.

Results

12 of the students 125 students who were part of the M1 classes responded to the anonymous survey. Of these 12 individuals, 100% reported that they would recommend the module to another student. Other metrics are below.

A. Female Pelvic Diaphragm (Superior View)

Obturator canal, Iliococcygeus m., Piriformis m., Rectum, Pubococcygeus m., Coccygeus m., Obturator internus m., Tendinous arch of levator ani, Ischial spine, Vagina, Urethra, Puboanalis m.

B. Fill in the blank.

Penile injury with localized swelling in the penis has _____ deep fascia of the penis (Buck's) and _____ tunica albuginea.

Penile injury with urine collection deep to Scarpa's fascia in the abdomen has ruptured _____.

The deep fascia of the penis (Buck's) is continuous with _____ and _____.

Options: intact, suspensory ligament of the penis, deep fascia of the penis (Buck's), ruptured, superficial penile fascia.

C. Match the following male structures with their female homologue.

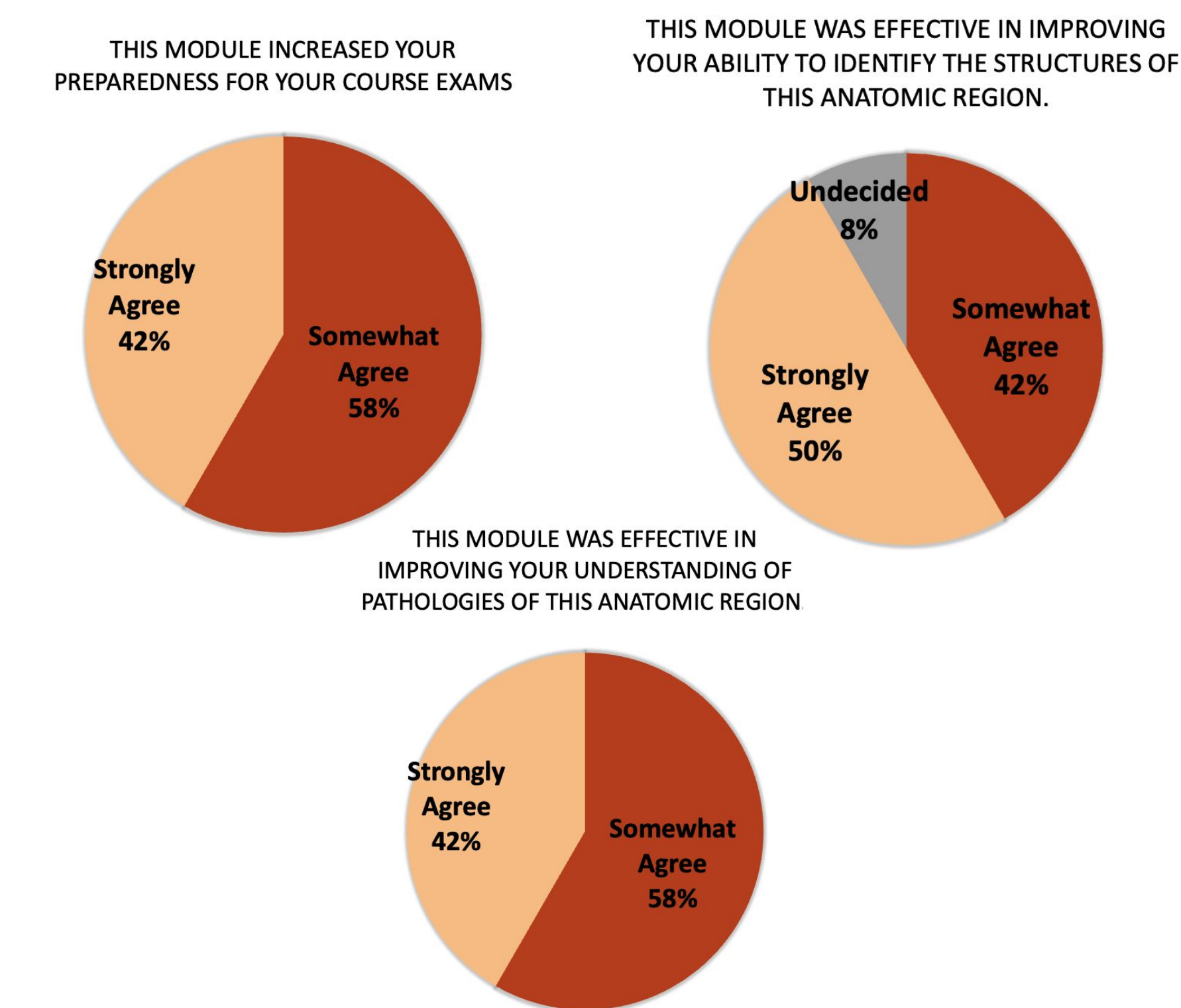
Prostate- _____	Crura of clitoris
Deep artery of the penis- _____	Labia minora
Testes- _____	Para-urethral glands
Bulbourethral glands- _____	Dorsal nerve of the clitoris
Corpus cavernosum- _____	Glans clitoris
Bulb of the penis- _____	Clitoris
Posterior scrotal n. and a.- _____	Labia majora
Scrotum- _____	Posterior labial n. and a.
Dorsal nerve of the penis- _____	Ovaries
Penis- _____	Bulbs of the vestibule
Glans penis- _____	greater vestibular glands
Raphe of penis- _____	Deep artery of the clitoris

D. Pelvic Diaphragm (Superior View)

Male: Tendinous arch, Urethra, Puborectalis m., Obturator Canal, Obturator Internus m., Rectum, Pubococcygeus m., Iliococcygeus m., Ischial Spine, Coccygeus m., Piriformis m.

Female: Tendinous arch, Urethra, Puborectalis m., Obturator Canal, Obturator Internus m., Vagina, Rectum, Ischial Spine, Pubococcygeus m., Iliococcygeus m., Coccygeus m., Piriformis m.

Figure 1. Image (A) serves to illustrate the interactive structure labeling actives present in the module, serving to help cement key anatomical structures and are present in at least 2 anatomical sex variations throughout the majority of the module. Images (B and C) serve as an example of the key clinical correlates of perineal anatomy covered in the module and in lecture. Image (D) serves as an example of the juxtaposed material presented in this module. Side-by-side images were used in an attempt to connect homologous structures and allow for a greater understanding of developmental differences.



Discussion

Though limited in response volume, students appeared to find the module useful as an adjunct to their exam preparation. Further analysis is required to see if student perceived preparedness correlates to exam scores.

References

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