Assessment of Weekly Study Guide Use and Utility in a Condensed Medical Gross Anatomy and Embryology Course

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RATIONALE

Implementation of a condensed preclinical curriculum is becoming a trend among US medical schools. Condensing basic science courses to fit into an 18-month curricular model involves careful and intentional planning in order to decrease contact hours without sacrificing foundational content. While a decrease in contact hours may allow for an increase in self-guided study time, it diminishes important faculty-student face-to-face interaction that many students need for higher-order learning. In an attempt to augment learning in the face of decreased contact time, 12 weekly study guides were developed for first-year medical (n=85) and graduate (n=4) students in a condensed medical gross anatomy and embryology course (ANAT7200). Each study guide contained multiple open-answer gross and clinical anatomy questions pertaining to selective content covered over the course of the week in lecture and laboratory sessions. Study guides were made available to all students through Blackboard. Study guide answers were not posted, though students were free to seek faculty assistance when needed.

The purpose of this study is to assess student use and perception of the study guides as a focused learning resource following course completion.

METHODS

Twelve weekly study guides were created by the ANAT7200 course director. Each study guide included a series of images taken from course texts (course pack; Clinically Oriented Anatomy, 7th ed.; Grant's Atlas of Anatomy, 14th ed.), open-ended questions/tasks, and clinical vignettes. Study guides were posted to the ANAT7200 Blackboard site prior to each corresponding week. Students were notified verbally and through email about the study guides and where to locate them on the Blackboard site. Study guide use was strictly voluntary for medical students, and had no direct influence on student evaluation. Graduate students were required to complete all 12 study guides. Students were encouraged to discuss questions with peers and faculty as needed.

At the completion of the course, students received a voluntary survey link via email to assess study guide frequency of use, strengths, weaknesses, and perceived utility in terms of learning and assessment preparation and performance. Using a 5-point Likert scale (1=strongly disagree; 5=strongly agree), students (n=88) rated study guide content applicability, organization, and utility for learning and quiz/exam preparation and performance. Only responses from students who used the study guides in some capacity (n=67) were included in statistical analysis of correlation (Table 2). Table of critical values for Pearson Correlation was used to determine significance ($p<0.05$).

RESULTS

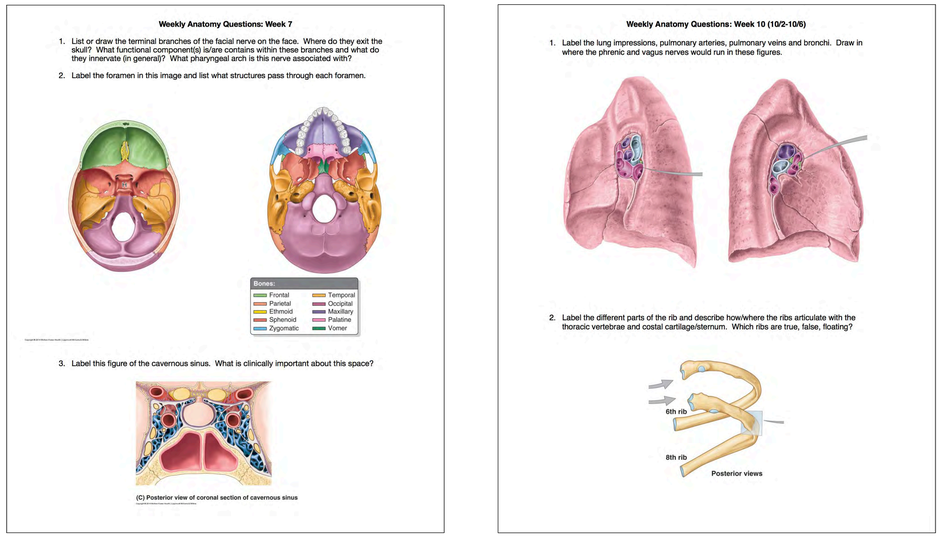

Figure 1. Examples of weekly study guide questions. Gross anatomy content was addressed through highlighting high-yield structures/spaces and asking students to label images, make charts, and/or draw out vascular/nerve pathways. Images correlated to what was covered in lab that week.

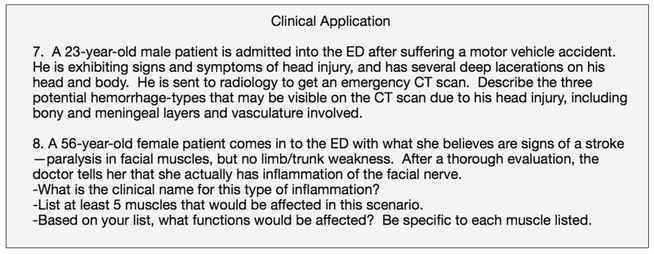

Figure 2. Examples of clinical anatomy questions. Clinical application questions were included to encourage higher-order thinking by assimilating gross anatomy content in a clinical context. At least two vignettes were included in each weekly study guide.

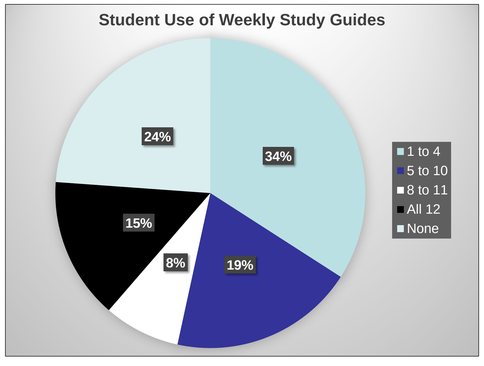

Figure 3. Assessment of weekly study guide use by students. Self-reported (n=88) use of number of weekly study guides throughout the length of the ANAT7200 course. Seventy-six percent of students used weekly study guides in some capacity to augment learning and retention.

Theme	Frequency
Time management	14
Used other resources	11
Simply forgot	7
Was unaware	6

Table 1. Theme frequency. Self-reported (n=35) short-answer survey data revealed four principle themes for non- or limited use of weekly study guides through the length of the ANAT 7200 course. Note some responses covered more than one theme.

Survey topic	R value	R^2
Preparation for assessments	0.55*	0.30
Positive effect on performance	0.60*	0.36
Improved understanding – gross anatomy	0.55*	0.30
Improved understanding – clinical anatomy	0.46*	0.21

Table 2. Frequency of use correlations. Survey data among all students who used weekly study guides (n=67) revealed moderate-strong correlations between frequency of weekly study guide use and quantitative responses for survey topics listed in table. R value = correlation coefficient; R^2 = coefficient of determination; *$p<0.01$.

IMPACT/LESSONS LEARNED

In Fall 2017, 12 weekly study guides were created and offered to students enrolled in ANAT7200, as additional focused learning resources within a condensed preclinical medical curriculum. A survey of student use and perceived utility of study guides revealed:

- Study guide use by 75% of enrolled students
- Moderate-strong correlations between frequency of use and perceived preparation for and performance on assessments, as well as improved understanding of gross and clinical anatomy content
- Quartile rank of final course grade was not strongly correlated with survey responses
- Strengths included high-yield content, clinical correlations, self-quiz tool, and method to organize material .
- Weaknesses included lack of time to complete study guides each week and lack of posted answers.

Overall, weekly study guides were well-used in varying degrees among students in ANAT7200. Students who used the study guides consistently reported positive effects on learning and assessment performance. Correlative results suggest that students who completed more study guides felt better prepared for assessments and perceived the study guides as useful learning tools for gross and clinical anatomy topics. Future directions include analysis of student performance on quiz/exam questions mapped to study guide questions. Based on student feedback, study guide answers will be posted to Blackboard at the close of each week in an effort to increase study guide use and provide opportunities for students to assess their own learning.

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