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Title

Impact of UCD UNITED on Medical Student Engagement with Health Systems Sciences

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INTRODUCTION

For over a century, undergraduate medical education (UME) has adhered to the “two-pillar” model focused mainly on the basic and clinical sciences. As a result, newly graduated medical students often state a lack of understanding of the structure and function of the U.S. health care delivery system. To bridge this gap, in 2016 the American Medical Association’s Accelerating Change in Medical Education Consortium introduced a new “third-pillar” of UME called Health Systems Science (HSS).^{3,4} HSS focuses on the broader context of health care delivery including organizational structures and processes, policy, economics and management, clinical informatics and health information technology, population health, value-based care, and health system improvement.³

Since the introduction of HSS, significant advancements have been made. Many schools have initiated curricula including didactic programs and experiential learning opportunities intended to provide context and motivation for learners. However, as noted in their article “Health System Science: The “Broccoli” of Undergraduate Medical Student Education,” leading HSS educators Jed Gonzalo and Greg Ogrinc note ongoing challenges fully integrating HSS into UME curriculum, specifically highlighting the challenge of students’ mixed receptivity.^{1,2}

In 2016, UC Davis School of Medicine introduced a HSS experiential learning curriculum called Understanding Needs in the Emergency Department (UNITED). The two primary goals of UNITED include: (1) to introduce 2nd year medical students to concepts in health systems science through semi-structured patient interviews in the Emergency Department; and (2) to engage students in health systems science education by exposing them to challenges real patients face in our current system of healthcare delivery. After meeting with patients, students submit written reflections highlighting what they learned from their patient interviews. An initial qualitative analysis of the reflective essays showed high levels of emotional engagement amongst students. In this study, we examined how effective UCD UNITED is in engaging students with HSS using a quantitative approach and aim to measure the effect of this course on future career preferences.

OBJECTIVES

- To determine whether the UCD UNITED curriculum engages medical students with health systems science using a quantitative study approach.
- To determine if the UCD UNITED curriculum impacts medical students’ stated career goals with respect to domains related to health systems science.

MATERIALS AND METHODS

Students enrolled in the UCD UNITED course were asked to complete a survey consisting of a 9 Likert-type items (Table 1) before and after taking part in the course. The survey was created using Qualtrics and disseminated through email via an anonymous link. Responses were completely anonymous and unlinked between the two surveys. Of the 123 students 108 completed the pre-course survey and 94 completed the post-course survey. The survey responses were analyzed using the independent samples t-test with STATA statistical software.

Table 1. Survey Design.

Survey Items					
	1. I plan to be involved in quality improvement in my future career as a physician.				
	2. I plan to choose a specialty that will enable me to improve/impact health systems.				
	3. I plan to conduct research within the field of health systems science in the future.				
	4. I plan to incorporate health systems science into my career as a physician.				
	5. I plan to complete a fellowship related to health policy or quality improvement.				
	6. Health systems science is an important part of medical education.				
	7. This course emotionally engaged me with health systems issues.				
	8. I feel comfortable explaining the basics of health systems science to a colleague.				
	9. This course provided a basic overview of health systems science				
Scale					
N/A	1. Hardly at all	2. To a small degree	3. To a moderate degree	4. To a considerable degree	5. To a very high degree.

RESULTS

- Post-course response means for questions 1, 2, 3 and 5 showed a slight increase compared to pre-course response means, however the increases were not statistically significant using a p-value threshold of <0.05.
- The post-course response mean for question 4 showed a small, but statistically significant increase compared to the pre-course response mean (Table 2).
- The post-course response mean for question 6 showed a statistically significant increase of 0.60 compared to the pre-course response mean (fig. 1, p<0.05).
- The post-course response mean for question 8 also showed a statistically significant increase of 1.33 compared to the pre-course response mean (fig. 2, p<0.05).
- Students were able to respond to questions 7 and 9 only after course completion. Post-course response means for questions 7 and 9 were 4.37 and 4.18, respectively (Table 3).

Table 2. Pre-course and Post-course responses to Survey Items 1-5 with analysis.

Survey Item	Pre-Course Mean	Post-Course Mean	Difference	p-value
I plan to be involved in quality improvement in my future career as a physician.	3.39	3.68	0.29	0.053
I plan to choose a specialty that will enable me to improve/impact health systems.	3.41	3.52	0.12	0.5
I plan to conduct research within the field of health systems science in the future.	2.49	2.68	0.19	0.31
I plan to incorporate health systems science into my career as a physician.	3.14	3.62	0.47	0.008
I plan to complete a fellowship related to health policy or quality improvement.	1.81	2.04	0.22	0.22

Table 3. Post-course responses to survey items 7

Survey Item	Response Mean	95% CI
This course emotionally engaged me with HSS.	4.37	4.19-4.54
This course provided a basic overview of health systems sciences.	4.18	4.0-4.36

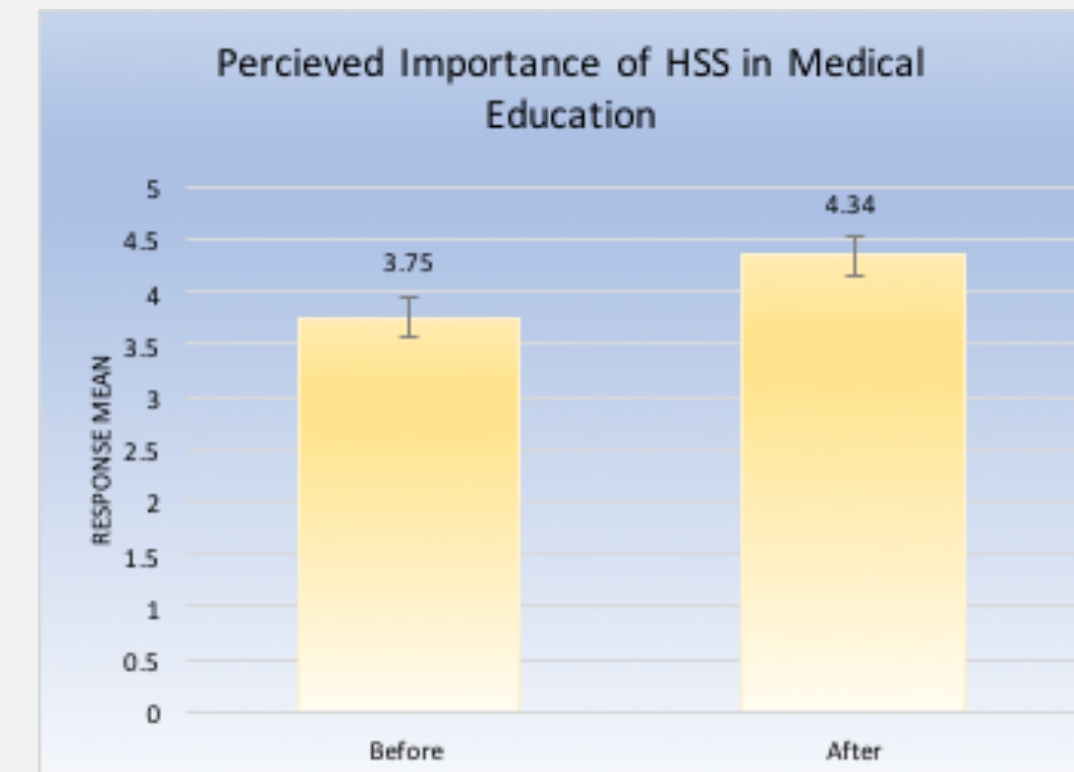


Figure 1. Graphical representation of difference in response means for survey item 6 (p-value <0.05).

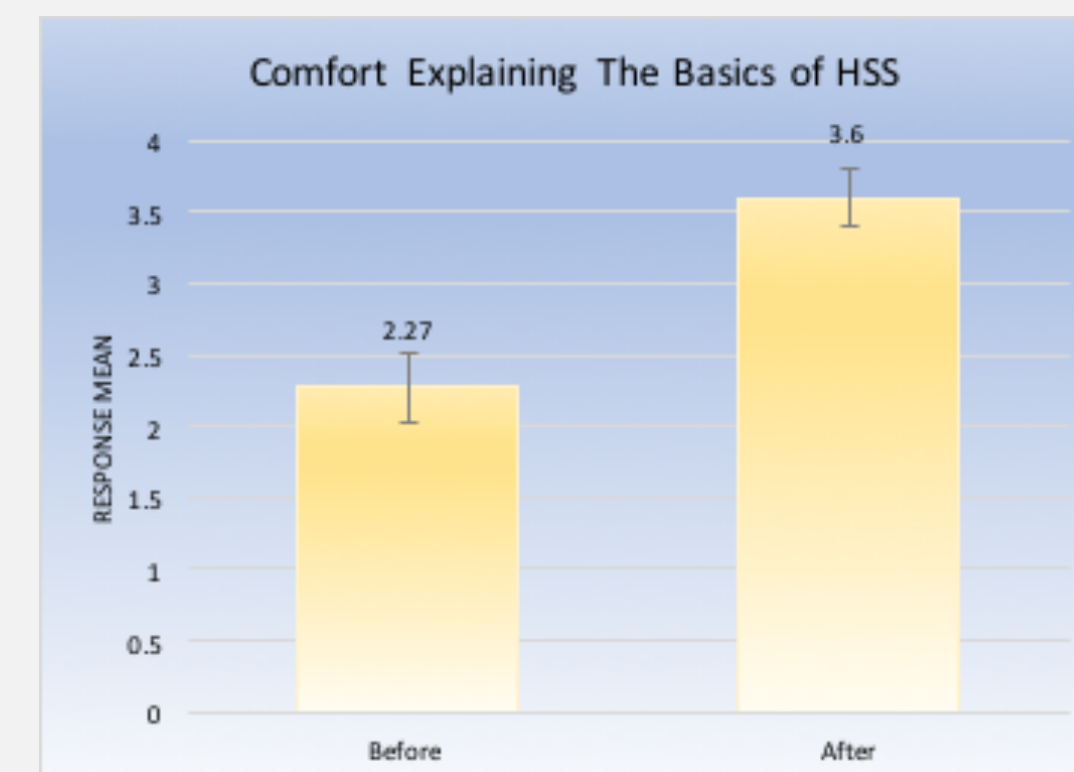


Figure 2. Graphical representation of difference in response means for survey item 8 (p-value <0.05).

CONCLUSIONS

The results of this study suggest that introducing medical students to health systems science through UCD UNITED leads to high levels of emotional engagement and increases students’ perceived importance of the value of health systems science in medical education. The study also suggests that the course provides students with a satisfactory introduction to health systems science and enables them to feel more comfortable explaining its basics to colleagues. Conversely, although students felt emotionally engaged with the course content, the course does not appear to significantly impact students’ career goals with respect to domains related to health systems science.

LIMITATIONS

- The surveys were voluntary and not all students participated, introducing the potential for response bias.
- Pre-course and post-course survey responses were not linked, limiting the strength of statistical analysis.
- Previous exposure to education in the domains of health systems science was not accounted for in our study.

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