



Increasing Dental Pharmacology Knowledge Through DMD Curriculum Innovation

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Introduction

- To address concerns that DMD students at the Midwestern University-Arizona College of Dental Medicine did not know clinical dental pharmacology or understand its application as the faculty desired, the college sought to enhance the pharmacology curriculum in the DMD program.
- This ADEA CCI Liaisons Project is investigating the effect of incorporating interprofessional education and expanded collaboration in a more applied clinical pharmacology curriculum. We developed the curriculum modifications in the 2015-2016 academic year and collected baseline data on student knowledge of clinical pharmacology in spring 2016.



Curriculum Innovation

- Traditional dental pharmacology is taught in the first and second “didactic” years, but not applied until the third and fourth “clinical” years of dental school. The curriculum innovation in this project is two-fold and both are interprofessional:
 - 20 curricular hours are moved from D2 basic pharmacology courses previously taught by pharmacologists to new D3 and D4 applied clinical dental pharmacology courses taught collaboratively by pharmacologists and general dentists.
 - 8 curricular hours are designated for interprofessional practice involving dental students and faculty with pharmacy students and faculty

Project Aim

- The specific aim of this project is to assess whether fourth-year dental students provided a modified and expanded clinical pharmacology curriculum will score higher on comprehensive clinical pharmacology exams than dental students in a prior class not provided the modified and expanded curriculum.

Collaboration & Resources

- This innovation involved collaboration between three separate colleges within Midwestern University – Arizona.
- The College of Dental Medicine worked with the College of Pharmacy and the Basic Science Division of the College of Osteopathic Medicine.

Significance of Curriculum Project

- The geriatric dental patient population has increased greatly over the last 10 years.
- Older adult patients have more complex medical histories and greater incidence of polypharmacy.
- A better informed public expects more explanation of medications and treatments.
- Dental students must gain an excellent understanding of clinical pharmacology in order to provide the quality of care that today’s dental patients deserve and demand.

Implementation

- Study cohorts include MWU-CDMA Classes of 2016, 2017, 2018, & 2019
- The Class of 2016 is the study control, given 7.0 hours of didactic basic pharmacology in the second year of dental school.
- The Class of 2017 received 7.0 hours of didactic basic pharmacology in the second year. In addition, this class received 0.5 credit hours of dentistry-pharmacy interprofessional practice (IPP) and will receive 1.0 credit hour of clinical pharmacology in the fourth year of dental school.
- The Class of 2018 received 7.0 hours of didactic basic pharmacology in the second year. They will receive 0.5 credit hours of dentistry-pharmacy IPP and 2.0 credit hours of clinical pharmacology in the fourth year of dental school.
- The Class of 2019 will receive the final curriculum shift with 5.0 credit hours of didactic basic pharmacology in the second year, 0.5 credit hours of dentistry-pharmacy IPP and 2.0 credit hours of clinical pharmacology in the fourth year.



Measurement of Outcomes

- A comprehensive, 56 question, clinical pharmacology examination will be administered at the end of the fourth-year spring quarter each of the four years of the study.
- Examination items are categorized in four themes: Medical History Implications, Premedication Protocol, Dental Treatment Implications, and Substance Abuse.
- Outcomes for the class cohorts will be compared through means and standard deviations of overall examination scores and three examination themes. The fourth theme will be compared by percent correct.
- The Classes of 2016, 2017, 2018, and 2019 will be compared as each class completes its curriculum.

Baseline Assessment

- The Class of 2016, the control group, provided baseline data in Spring 2016.
- All 109 students in the class completed the examination.
- Overall mean for the Class of 2016 was 80.2%. The range was 46% to 96%.
- Similar scores were obtained per theme, with ranges from 29% to 100%.

BASELINE ASSESSMENT			
Pharmacology Exam Categories	N	Mean (%)	Standard Deviation
Overall Item=56	109	80.2	8.9
Medical History Implications Item=18	109	79.9	11.8
Premedication Protocol Item=17	109	79.8	12.8
Dental Treatment Implications Item=20	109	80.6	9.9
Pharmacology Exam Category	N	Correct	
Substance Abuse Item=1	109	87.2	

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