



An Innovative Curriculum Integrating Statistics and Study Design with Core Sciences in a Thematic Block



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BACKGROUND

- Critical appraisal and application of drug therapy literature are key knowledge-based skills in pharmacy practice, which are mainly taught in the statistics and study design (SSD) content
- Based on student course evaluation and performance, it was not well-integrated into the first iteration of the Cardiovascular Sciences and Therapeutics (CST), a Doctor of Pharmacy thematic block, in 2018
- In 2018, there was a relatively high non-passing rate of 23% on questions assessing the skills in critical appraisal and application of drug therapy literature
- A better integration of statistics and study design content with core sciences (CS) content, including physiology, pharmacology, and therapeutics in the Cardiovascular Sciences and Therapeutics, was implemented in 2019

PURPOSE

- To develop and implement a curriculum that better integrated statistics and study design content with core sciences content in the thematic block
- To evaluate the curriculum by assessing students' perception and comparing academic performance between the 2018 and 2019 cohorts

METHODS

- To develop an innovative curriculum**
 - We integrated statistics and study design with core sciences content in a more systematic way, focusing on learning by application and practice
 - 4 topics in statistics and study design were selected based on students' learning in the previous theme and were taught in lectures in a large group setting, followed by journal clubs in a small group setting
 - Lectures and journal clubs were sequenced such that students could have time to digest lecture materials before a journal club
 - Journal club papers were selected considering the concurrent core content
 - Guiding questions as well as patient application questions were provided for journal club to help develop skills in critical appraisal and application of drug therapy literature
- To evaluate the curriculum**
 - We surveyed the 2019 cohort via online to assess students' perceptions after the course
 - We compared the pass rates between the 2018 and 2019 cohorts for three questions on summative assessments that were administered to both

RESULTS

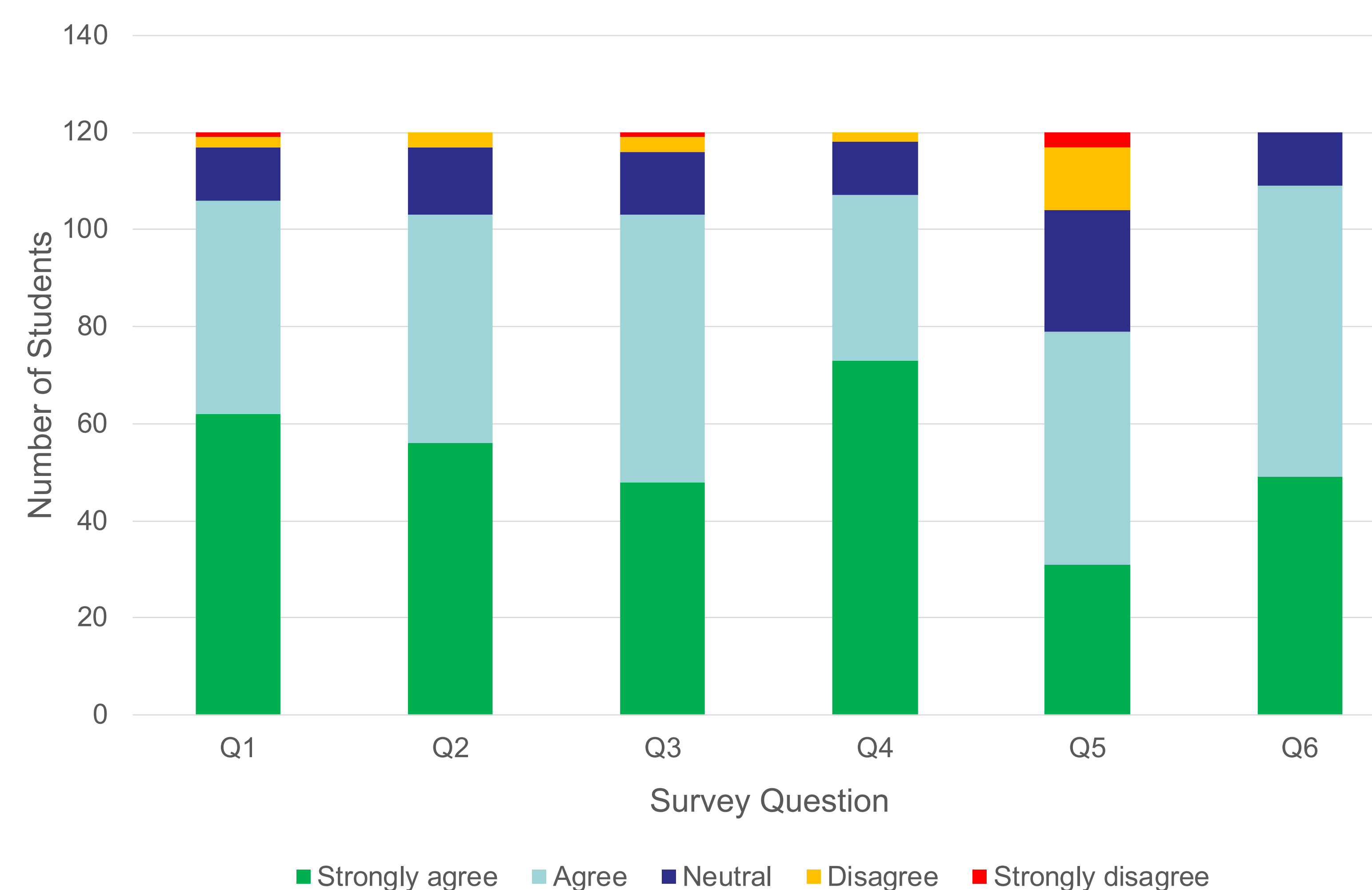
1. Development of a new curriculum: Topics of SSD, CS and journal club (JC) by week

SSD topic	Lecture	Journal club	Concurrent CS topic
Cohort study	W1	W2 JC paper: cohort study on P2Y12 antagonist use in post ACS patients	Ischemic heart disease
Meta-analysis	W2	W3 JC paper: meta analysis on baseline LDL and CV mortality after LDL-lowering therapy	Dyslipidemia
Survival analysis	W5	W7 JC papers: RALES and A-HeFT trials	Heart failure
Non-inferiority	W7	W8 JC paper: AUGUSTUS trial	Atrial fibrillation

2. Student perception and preferences

- Out of 127 students from the 2019 cohort enrolled, 120 (94%) responded to the survey regarding the 2019 inquiry curriculum

Student Perception Survey Results



- Q1:** Topics were sequenced and organized for effective learning
- Q2:** Journal club papers were helpful to reinforce and apply concepts
- Q3:** Guiding questions were helpful to improve critical appraisal skills
- Q4:** Patient application questions helped improve application skills
- Q5:** The SSD content in the previous theme content prepared me for that in CST
- Q6:** The SSD content was integrated well with the core science content in CST

- Overall, the new curriculum was received favorably by students
- Top 3 helpful aspects of the inquiry curriculum are integration of articles with patient cases, guiding questions to navigate articles, and inclusion of statistical analyses
- Students identified additional practice opportunities and early communication on a final project as areas for improvement

3. Comparison of student performance on questions related to critical appraisal and interpretation of drug therapy literature between the 2018 and 2019 cohorts

Item	Question format	2018 (n=95)	2019 (n=127)	P-value
Q1	MCQ	FP: 72 (75.8%) BP: 0 (0%) NP: 23 (24.2%)	FP: 110 (86.6%) BP: 0 (0%) NP: 17 (13.4%)	0.037
Q2	SAQ	FP: 46 (48.4%) BP: 32 (33.7%) NP: 17 (17.9%)	FP: 90 (70.9%) BP: 19 (15.0%) NP: 18 (14.2%)	0.0013
Q3	SAQ	FP: 44 (46.3%) BP: 17 (17.9%) NP: 34 (35.8%)	FP: 51 (40.2%) BP: 33 (26.0%) NP: 43 (33.9%)	0.34

Abbreviations: Q, question; MCQ, multiple choice question; SAQ, short answer question; FP, full pass; BP, borderline pass; NP, no pass

LIMITATIONS

- Instead of concurrent control, a historical control was used
- Only the 2019 cohort was surveyed
- Content delivery models were different between the 2018 and 2019 cohorts

CONCLUSIONS

- The new curriculum, which aimed to better integrate the statistics and study design with the core sciences content, was successfully developed and implemented
- The new curriculum in 2019 was received favorably and appeared to be more effective than the old curriculum in 2018 for student learning

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