Innovations of teaching cardiovascular pharmacology based on students’ feedback
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Introduction
Cardiovascular system (CVS) pharmacology had been rated as most-useful topic in internship by second-year medical students. CVS drugs affect whole body due to baroreflex and renin-angiotensin-aldosterone responses. How difficult students learn CVS pharmacology is unknown.

Purpose
To assess the difficulty degree of pharmacology content based on systems from students’ perception, and to investigate the effects of innovations of teaching CVS pharmacology.

Methods
A. A questionnaire was completed by 60 students after completion of Pharmacology in St Matthew’s Medical School. Students were asked to rate the difficulty degree of their learning Medical Pharmacology in each organ system in a 1-5 scale, with scale 1 to 5 as easiest, easy, neutral, difficult, most difficult, respectively.

B. Innovations in CVS pharmacology teaching:
1. Preview of CVS physiology 2-hour-lecture before the beginning of CVS pharmacology
2. CVS case-learning: students were given CVS cases, and asked to present the pathophysiology, tests need to be ordered to differentiate diagnosis, diagnosis, and treatment. Cases included heart failure, angina, myocardial infarction, arrhythmia, hypertension, diabetic nephropathy.
3. Pretest and posttest in each CVS pharmacology lecture. Same 10-15 multiple-choice-questions (MCQ) related with each lecture were tested before and immediately after lecturing in classroom.

C. External evaluation: National Board of Medical Examiners (NBME) pharmacology exam at the end of the semester.

D. Statistical analysis was done by SigmaPlot 13.0.

Results

Difficulty degree of topics by scale 1-5 from students

Students’ scores of pretest and posttest during each lecture

Percentage of students with NBME pharmacology score >60

Preview CVS physiology, CVS-case-learning, in-class pretest and posttest improved students’ performance in medical pharmacology.

Conclusions

CVS pharmacology was rated the toughest topic among all systems, with a mean scale 4.2 over maximal 5 (p<0.05 compared to all other systems).

Posttest scores were significantly higher than pretest scores for the same MCQ questions.

The number and percentage of students achieving score higher than 60 in NBME pharmacology exam were significantly increased compared with previous class without innovations.

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