

Key learning outcomes for clinical pharmacology and therapeutics education in Europe: A modified Delphi study

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Introduction

Harmonizing clinical pharmacology and therapeutics (CPT) education in Europe is necessary to ensure that the prescribing competency (i.e. knowledge, skills, attitudes) of future doctors is of an uniform high standard, given the increased mobility of healthcare professionals

Aim

We conducted this modified Delphi study to reach consensus on key learning outcomes for teaching and assessing CPT during the undergraduate medical training in Europe

Methods

Modified Delphi method: 3 questionnaire rounds and a 2-hour face-to-face panel meeting

Systematic literature review: 23 original articles

307 learning outcomes (233 knowledge, 65 skills, 9 attitudes), divided in 34 subcategories

177 experts from 27 European countries invited

5-point Likert scale (1= very unimportant, 5= very important)

Consensus: $\geq 80\%$ of the experts score of 4 or 5

Adapt outcomes or add new outcomes

Results

129 experts (73%) from 27 European countries accepted invitation

92 experts (71%) from 25 European countries completed all 3 rounds; 33 experts (26%) attended the panel meeting

Round 1: 226 outcomes included; 81 no consensus, 24 new, and 2 adapted outcomes resubmitted

Round 2: 18 outcomes included, 73 excluded, 16 selected for group discussion (75-80% agreement)

Panel meeting: 5 included, 6 excluded, 5 adapted outcomes

Round 3: 3 included, giving a total of **252** outcomes (192 knowledge, 47 skills, 13 attitudes)

Most of the included outcomes focused on knowledge (76%); skills and attitudes were generally considered more important (Figure)

Conclusion

- We identified **252 learning outcomes** that should be included in undergraduate CPT curricula in Europe
- An important next step is to reach European consensus on how and when the learning outcomes should be trained and assessed

