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11th EBHC International Conference
Taormina, 21st – 24th October 2026

#EBHC2026

Medical students' interpretation of an AI-generated evidence-based answer to a pharmacotherapeutic query – before and after a two-day hands-on educational session on systematic review methodology

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30th GIMBE 1996-2026 EVIDENCE FOR HEALTH

International Society for Evidence-Based Health Care

Background


PLOS ONE

RESEARCH ARTICLE

Preparing medical students to incorporate scientific evidence into patient care: A cross-sectional study

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Abstract

Objective

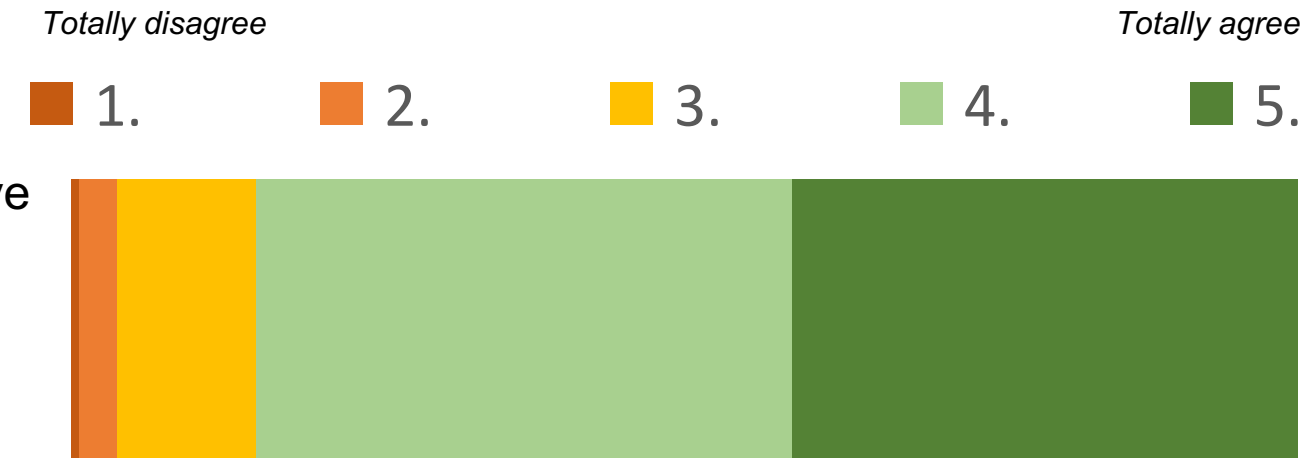
To explore teaching- and assessment-related factors that predict medical students' perceived attainment of sufficient skills to incorporate scientific evidence into patient care.

Methods

An anonymous questionnaire was distributed to final-semester students in six medical programs in Sweden. The students were asked to rate statements concerning the extent to which 11 national degree outcomes related to the scientific basis of medicine (scholarly degree outcomes) had been adequately assessed during the program; their perceived preparedness for evidence-based patient care; and training during the program regarding the components of a systematic review/health technology assessment (HTA).

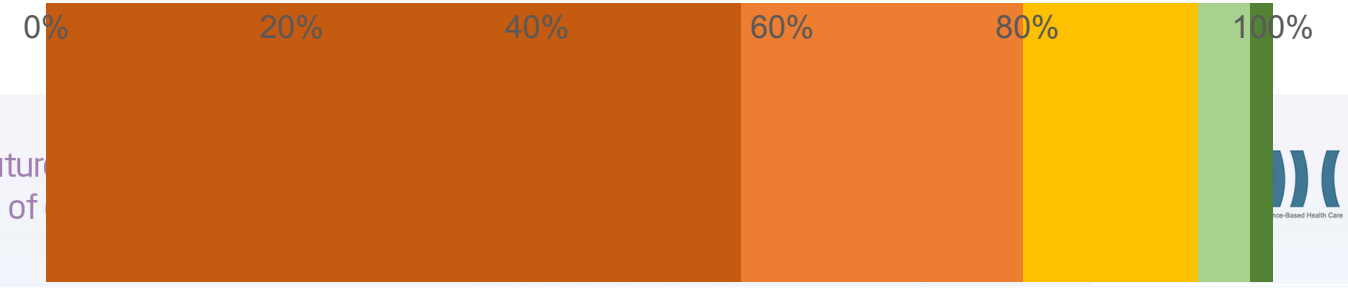
Results

In total, 433 students (median age: 25 years [interquartile range: 24–28], 59% female) participated in the study (response rate: 68%). A multivariate analysis indicated that experienced adequate assessment on a single scholarly degree outcome (i.e., "Demonstrate knowledge of the scientific foundation of medicine and insight into current research as well as knowledge of the link between science and proven experience") predicted the students' perception of having developed sufficient skills in incorporating scientific evidence into patient care (odds ratio: 6.17 [95% confidence interval: 3.10; 12.3]). The educational content predictors of this perception included the teaching of HTA (11.3 [1.44; 89.5]) and training regarding two components of a systematic review/HTA: appraising scientific



During the medical program, I have acquired sufficient skills in how to ground patient work on scientific evidence

Experience of having undergone education on HTA during the program



Adjusted odds ratio

(for agreeing with the statement “During the medical program, I have acq
sufficient skills in how to ground patient work on sci

Can training in systematic review methodology help future physicians interpret AI-generated evidence summaries?

Hi, how can I help?

Message Copilot

Refine Writing | Draft Content | Summarize | Find Content | ...

0.5 2

Education on HTA implemented in the medical programme at the University of Gothenburg

Aims

To examine how medical students interpret an AI-generated evidence-based answer—regarding both the findings and the uncertainty in the scientific evidence—before and after completing a comprehensive educational session on the systematic review process.

Methods



Define the PICO

Exclude/include publications retrieved in literature search

Assessments of risk of bias & directness

Data extraction & meta-analysis

Assessment of certainty of evidence (GRADE)

Conclusions



Certainty of evidence

Questionnaire: Interpret evidence-based answer to PICO question: effect & uncertainty

After unblinding: free-text reflections

Although ticagrelor is routinely prescribed after acute coronary syndrome, clinical experience suggests that older patients frequently discontinue treatment because of bleeding complications. This raises an important clinical question: for older patients, is ticagrelor or clopidogrel the preferable antiplatelet therapy overall? Given that ticagrelor is also substantially more expensive than clopidogrel, one may ask whether healthcare resources could be used more effectively elsewhere in cardiovascular care. Should a structured de-implementation of ticagrelor in older patients be considered?

HTA results



	Results	Certainty of evidence
Intended effects	No difference	⊕⊕◯◯
Adverse effects	Favours clopidogrel	⊕⊕⊕◯

AI-generated response
(Copilot, January 2026; source blinded for students)

Among older patients with acute coronary syndrome (ACS), the prespecified subgroup analysis of the PLATO trial (≥75 years) found that ticagrelor retained its superiority over clopidogrel in reducing cardiovascular death, myocardial infarction, or stroke, without an increased risk of major bleeding. However, real-world data from the SWEDEHEART registry (patients ≥80 years) showed comparable ischemic outcomes but higher mortality and increased bleeding rates with ticagrelor than with clopidogrel. These findings suggest that although ticagrelor demonstrated benefit in a randomized clinical trial setting, it may be associated with harm among older patients treated in routine clinical practice.

Results

Of 91 medical students in their 10th semester:

- 79 (87%) contributed their blinded interpretations before the session
- 71 (78%) contributed their blinded interpretations after the session

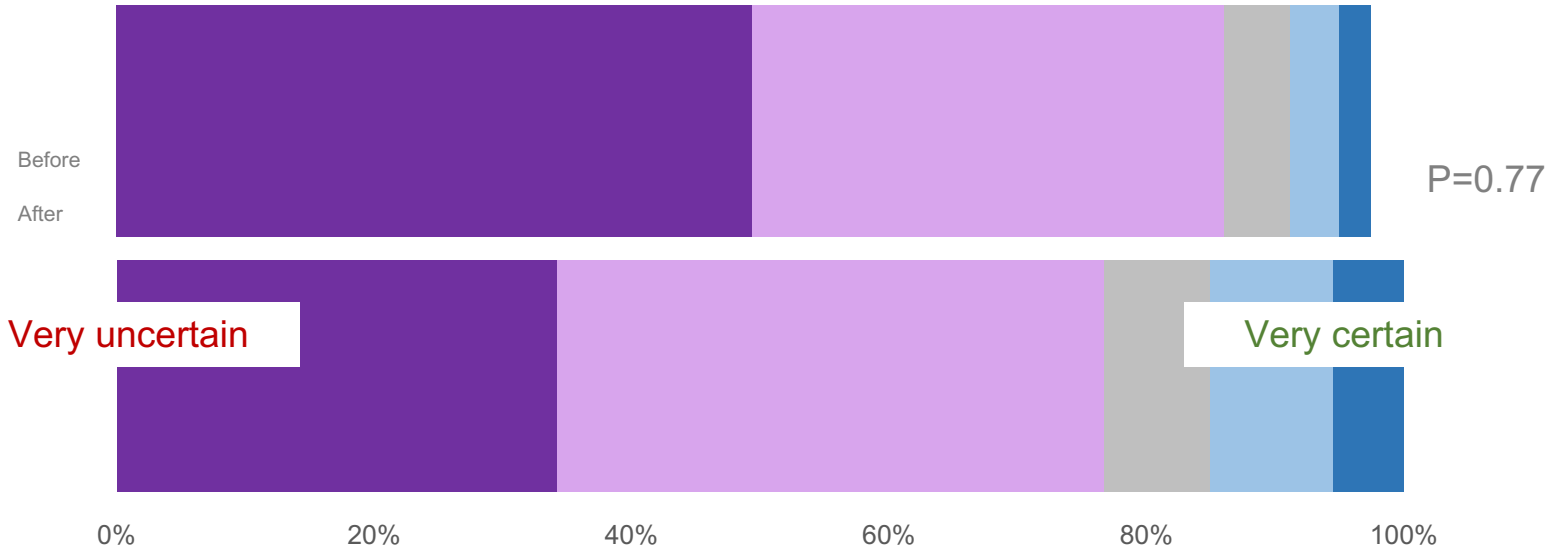
How do you interpret the evidence summary?

(source blinded)

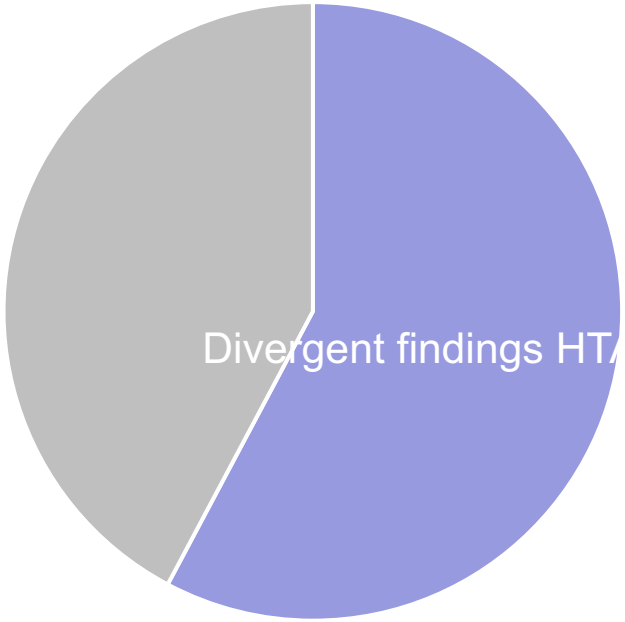
Does the available evidence favor ticagrelor or clopidogrel in older patients?



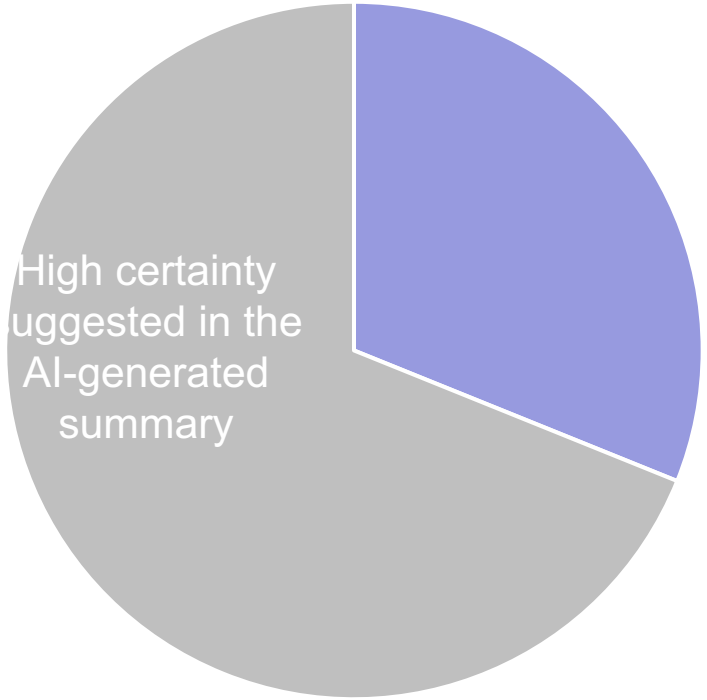
How certain do you think the available scientific evidence is?



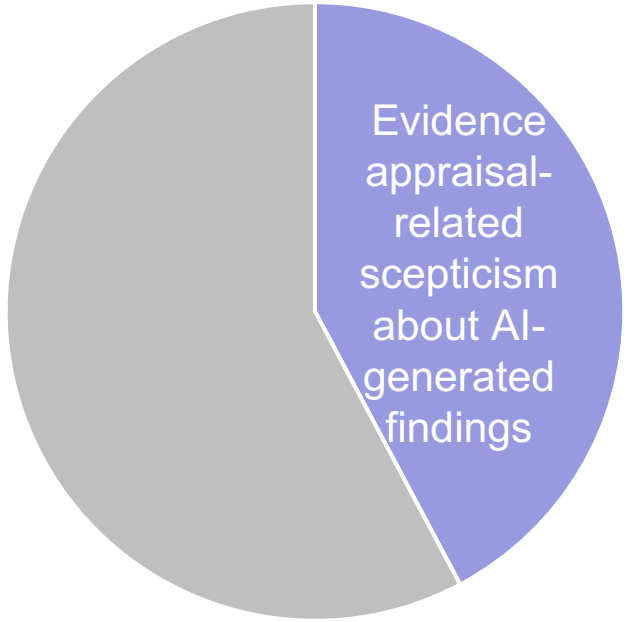
Free-text reflections after unblinding AI source



“The findings are interpreted as being more supportive of ticagrelor, whereas the HTA-based conclusions appear to favour clopidogrel”



“This is phrased much more strongly. It gives the impression that the evidence is robust”



“This highlights the importance of critically appraising a study's internal and external validity before drawing conclusions. Reading the abstract alone is insufficient without understanding the broader methodological and clinical context”

Limits

- One university
- One educational session
- Medical students, 10th semester
- Response rate: 87% before, 78% after
- Copilot – an AI tool not specifically developed for evidence synthesis

Conclusions

- Blinded interpretation of an AI-generated evidence-based answer differed before and after a comprehensive educational session on the systematic review process
- Free-text comments reflect increased attentiveness to critical appraisal aspects and evidence uncertainty after the educational session on the syst

Training in systematic review methodology may help future physicians interpret AI-generated evidence summaries