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### Question Formulation Skills Training Using a Rubric with First-Year Medical Students. Dataset

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# HSC EDUCATION DAYS

TUESDAY JANUARY 12, 2021. 11:20-11:40AM

# Question Formulation Skills Improvement among First-Year Medical Students

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# Background

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- Evidence Based Practice (EBP) is a decision making tool
- The EBP Process consists of five steps
- The pivotal first step is Question Formulation

# Quantitative Medicine Courses

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- Required courses for first- and second-year medical students
- Meets once per week
- Epidemiology, Biostatistics, and EBP
- Active learning in large studio classroom

# Challenge

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- Question formulation often taught as part of EBP training
- Growing body of evidence points to limitations of current systems
- Commonly-used PICO system limited to treatment questions
- Other systems do not compensate for limitations

# Research Question

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Does a new approach to training first-year medical students in question formulation that includes both a brief instructional session and a novel rubric overcome perceived limitations of the previous approaches?

# Methods

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- 107 first-year medical students
- Quasi-Experiment
  - Pre-Test
  - Intervention
  - Post-Test

Institutional Review Board approval #19-008



# Pre-Test

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You are at a rural site in your Doctoring 3 (“PIE”) experience during the summer. Today you are enjoying the work, even though you miss your friends back at medical school. Manuel Garcia, age 73, is in the clinic. During the last two months Mr. Garcia has experienced recurring leg tremors, complaints of “weakness,” apathy, slowness in his movements, unilateral rigidity, shuffling gait, and instability when walking. Your preceptor is seeing him today about Mr. Garcia’s recent fall in his kitchen. Mr. Garcia appears to be fine, yet shaken from the fall. Your preceptor has diagnosed Mr. Garcia as having fairly advanced stage Parkinson Disease. You know about Parkinson Disease based on your having taken the Neurosciences Block earlier this year. The discussion expands to include possible drugs that might improve the quality of life for Mr. Garcia. Your preceptor discusses possibly prescribing Levodopa or a dopamine agonist.

Formulate a question based on this clinical vignette that, when answered, will lead to the best treatment of this patient.

# Intervention

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- 28 days after pre-test
- 107 students in same active learning studio classroom
- Introduced EBP Process
- Instruction on question formulation
- Sample student formulated questions
- Introduced rubric
- Applied exercise
- Paired peer coaching

# Post-Test

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29 days after pre-test

Within 30 hours of intervention

Students presented with same clinical vignette

Students had ready access to the rubric

Given 5 minutes to formulate an EBP question using learned skills

# Results

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- Students improved performance on 70-point scale by a statistically-significant margin
- Pre-test average score was 45.5 (SD 11.1)
- Confidence intervals on pre-test was 43.3-47.6
- Post-test average score was 65.6 (SD 5.4)
- Confidence intervals on post-test was 64.6-66.6
- Paired T-Tests
- Average score increase of 20.1 points

# Discussion

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- Statistically-significant improvement in question formulation
- Brief, 25-minute instruction
- Rubric
- Limitations

# Conclusion

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- Brief, 25-minute intervention
- New rubric
- Pre- and post-test scores improved 20 points on 70-point scale

# Outcome:

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Eldredge JD, Schiff MA, Langsjoen JO, Jerabek RN. Question Formulation Skills Training in First-Year Medical Students. *Journal of the Medical Library Association* 2021 Jan; 109 (1): 68-73.

# Update

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SEAC Grant

Physician Assistant Students

MPH Students

Dental Hygiene Students

Quantitative Medicine Block



# Thank you

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- For attending our presentation
- For your interest
- We will be happy to entertain your questions