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Building Question Formulation Skills Among Dental Hygiene Students

Jon Eldredge

Christine Nathe

University of New Mexico

Medical Library Association Annual Meeting. New Orleans.

Friday May 6, 2022. 10:30-10:45am



Above: Professor and Director Christine Nathe
Left: Jon Eldredge, Professor and Evidence Based
Practice Librarian

Background

- Dental Hygiene students learn Evidence Based Dentistry skills during their second year in a competency based curriculum
- Growing dissatisfaction among UNM faculty and students with PICO question formulation approach
- Dissatisfaction with PICO reflected in the literature [1-4]
- Students improved question formulation skills using new approach and rubric
- We decided to test the approach and rubric more rigorously

Hypothesis

Dental Hygiene students oriented to the rubric and trained for 25 minutes on the FAC Question Formulation approach will score better by a statistically significant margin than students only oriented for 5 minutes on the rubric.

Methods

- Randomized Controlled Trial
- All 24 Dental Hygiene (DH) students randomized
- Students' identities concealed with 4 digit numbers
- All 24 students took pre-test on first day of class
- No statistical differences between two groups beforehand

Table 1 Characteristics of Participants

	Control	Intervention
Males	1	0
Females	11	12
Average Age	24	24
Final Course Grade	A	A

Methods, continued

- All students introduced to FAC Question Formulation Rubric
- Intervention Group students received question formulation training and search training
- Control group received only search training
- Administered post-tests
- The instructors scored the post-tests with students' identities concealed

Rubric for Evaluating Formulated EBD Questions

Element	Points
Focus	
Identifies and focuses upon the main problem or disease	10
Minimizes “noise” in formulated question by removing unneeded elements	10
Amplify the signal in the question, <i>as applicable</i> , with:	
<ul style="list-style-type: none"> • Semantic qualifiers (Examples: acute/chronic, reversible/irreversible, proximal/distal, sharp/dull) 	5
<ul style="list-style-type: none"> • Scale (Examples: stages and levels of disease or health) 	5
<ul style="list-style-type: none"> • Temporality (Examples: duration of illness; length of treatment; seasonality, etc.) 	3
Describes the population aspects (age, geography, ethnicity, income)	7
Composition:	
Composes question clearly so a targeted answer can be pursued	5
Question accurately reflects contextual details	5
The final formulated question “stands by itself”	15
Possible Categorizations (<i>if applicable</i>):	
Identifies question as diagnosis, treatment, or Prognosis type	5
TOTAL POINTS (out of 70 possible points)	____/70

Results

- Maximum possible score was 50 points
- Average scores on post-test surprised us
 - Control = 41.75
 - Intervention = 43.67
- Paired t-test confirmed no statistical difference

Why did we fail to confirm
the hypothesis?

Results, continued

- Six (6) students in the Control Group scored far better compared to others in the Control Group
- We interviewed these six students
- Four (4) studied with student friends in the Intervention Group
- Intervention Group classmates taught them the FAC approach

Analysis

- Removed four (4) Control Group students who interacted with Intervention Group students
- New analysis showed:
 - Control =27.6
 - Intervention =43.67

Limitations

- Contamination in RCTs like this one are always a threat [5]
- Other explanations?

Conclusions

- Dental Hygiene students oriented to the rubric and trained for 25 minutes on the FAC Question Formulation approach scored better by a statistically significant margin than students only oriented on the rubric.
- Presence of contamination requires further study to confirm hypothesis

Acknowledgement

- We appreciate our Dental Hygiene students participating in our study
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Questions?

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