Oregon TECH

Research Methods II

Assignment: Critical Analysis of Research for Patient Treatment Decisions

Objectives:

In teams of 3-4 students:

1. Determine the Patient Problem, Intervention, Comparison, and Outcome (PICO) for the clinical scenario/question provided in this module.
2. Conduct computerized searches to find research studies to answer clinical questions using the best and most recent evidence.
3. Critically analyze research studies for validity, reliability, statistical significance, and bias.
4. Determine if results in research studies have practical and clinical significance.
5. Determine if research studies and analysis answered the clinical question with a high degree of confidence.
6. Submit conclusions in reports following guidelines in this Module Lecture.

Introduction:

Over the next three weeks your team will practice several key concepts of Evidence-Based Decision Making: conducting searches for specific types of research studies, critically analyzing the studies, and determining how well the research answered the clinical question. Your team will summarize all of this information and submit in a report/template that I will provide.

Repeating the assignment three times will hone your skills in developing PICO questions, researching, analyzing, and arriving at conclusions to answer common clinical treatment questions for your patients. Later in the course you will then have an opportunity to choose your own clinical questions from some of your current patients to repeat this process two more times on an individual basis. The ultimate goal is for you to have confidence and experience to answer clinical questions efficiently and effectively in your future clinical work setting.

Information:

For these next three assignments you will work in a team of 3-4 students. Your team will have one clinical question to answer for each of the three weeks using the same report/template. For each clinical question you will need to find three relevant research studies that help to answer the clinical question.

Application:

Overview of assignment:

1. Determine the Patient Problem, Intervention, Comparison, and Outcome (PICO) for the clinical scenario/question provided
   - Use the P, I, C, O for your search term strategies
   - Conduct computerized searches early in the week so you have time to write your report before the due dates at 1:00 pm on Saturdays
   - Remember you can enlist the aid of an Oregon Tech Librarian for help, but allow enough time for them to respond to your questions
   - Even though I suggest asking the Librarians for help with your searches, never hesitate to ask me for help with the assignment requirements. I'm always happy to provide feedback to assure you if you're on the right track. For example, feel comfortable early in the week to email me your P, I, C, O so I can let you know if you're on the right track. This will help you with the rest of the assignment requirements.
2. Determine the three best research studies that answer the PICO question
3. For each of the three studies your team will complete the information in a separate Table (see example below with notes in red)
4. Your team will then summarize what you learned from the three studies and write a concluding paragraph addressing if the information answered the clinical question with a high degree of confidence

Assignment Outline and Table Requirements:

1. Copy/paste the clinical question

2. State the P-I-C-O

Article #1:

Title of article:	
Type of study:	Case study, Case report, Cohort, RCT, Meta-Analysis, or SR
Level of evidence:	Low, medium, or high level of evidence? Why?
Validity:	Did the test (research) really measure what it was supposed to measure? (Basically we're asking "is there any value or real-life application from this study"?)
Reliability:	Whatever type of testing/measuring tool was used, can you trust that results were consistent? Why or why not? (Remember that reliability is concerned with *accuracy* of measurement)
Statistical significance:	Discuss if the results of statistical analysis of data were unlikely to have been caused by chance, at a predetermined level of probability. If applicable, is the Standard Deviation small? If applicable, Probability (P Value) – less than 0.5?

Clinical significance:	Will the study findings directly influence clinical practice, whether they are statistically significant or not?
	Answers the question - *How effective* is the intervention or treatment, or how much change does the treatment cause?
What are the results of the study?	Note: Do NOT copy/paste the "results" section from the study for your response. You need to answer this question in your own words.
Potential biases:	Discuss potential types of bias (Refer back to article on research bias under Module Two in Course Materials)
My patient:	Were the subjects in the study representative of the patient? Is the treatment feasible in your clinic setting? Share your opinion on how well the evidence answer the clinical question.

Article #2: Repeat using the above Table

Article #3: Repeat using the above Table

3. Conclusion (well-developed paragraph)

Conclude your report by combining the information you gleaned from critically analyzing all three articles. Complete the paragraph by stating how your team would answer the patient for the question they posed to you.

Pitfalls to avoid:

- Stating that results had validity, reliability, or significance because of "author's credentials" or "name of publication"
- Do NOT copy/paste any information from articles into the Table. All information needs to be in your own words or will result in "zero points" for the entire assignment and could result in reporting a breach of Academic Dishonesty (i.e. plagiarism) to Oregon Tech.
- If you are truly using a discerning and critical eye when reading and analyzing research studies, you WILL find bias. In your reports please DO NOT state there "was no bias". Refer back to the "Major Sources of Bias" article found in Course Materials as a guide to helping you detect bias in your research studies.

Module Four Assignment - due Saturday, 1:00 pm, end or Week Four

Clinical question: Your patient Will Treaty has been given the treatment options of a dental implant or a root canal treatment for one of his teeth. He asks you "*how does the survival rate for a dental implant compare to a root canal treatment on a tooth*"?

Module Five Assignment - due Saturday, 1:00 pm, end or Week Five

Clinical question: Your patient Helen Graham is new to your practice. She has generalized moderate periodontal disease. While giving her informed consent you explain you'd really like to treatment plan for 4 quadrants of scaling and root planing in conjunction with using the laser that you have in your clinic. She asks you "*will I end up with increased healing if I let you scrape my teeth and use a laser compared to just scraping my teeth*"?

Module Six Assignment - due Saturday, 1:00 pm, end or Week Six

Clinical question: Your patient Candis Smith has severe arthritis in her hands and just cannot use floss or an interproximal brush. Her toothbrush has a thick handle so she's able to use it just fine, but she worries that brushing alone is not enough to get her teeth and gingiva healthy. She hates the idea of bothering her husband to try and floss for her, but she knows he would if she asked him. She read in her AARP magazine about the benefits of a water pik. She asks you "*will a water pik be just as effective for keeping my gums as healthy as floss*"?

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Individualization:

PLEASE feel comfortable to ask for help from the OIT Librarian by clicking on the Librarian link found on the Discussion Board. I've also included a document outlining the steps involved in finding full-texted articles through the Oregon Tech Library in Course Materials.

Note about teamwork: I do understand the efficiency of students dividing the work to be completed while working with a classmate or two classmates. Ultimately, all team members are responsible for the final product and that it is submitted on time.