

## **E-Learning to Teach Medical Students About Otitis Media: A Randomized Controlled Trial**

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### **Context**

Acute otitis media (AOM) is a leading cause for antibiotic prescriptions in pediatrics. Despite significant efforts to teach medical students, diagnosing AOM remains challenging.

### **Objectives**

Our primary objective was to measure the impact of an e-learning module on medical students' accuracy in diagnosing AOM among children.

### **Methods**

This was a randomized controlled trial performed at a single tertiary care pediatric emergency department (ED). Participants – a convenience sample of third- and fourth-year medical students doing a pediatric rotation – were randomized to an e-learning module or a lecture on AOM. On ED shifts, they were asked to examine at least five patients at risk for AOM, defined as 12 to less than 60-month-old children with fever and/or respiratory symptoms. The primary outcome was diagnostic accuracy defined as the proportion of accurate diagnoses. Secondary outcomes included knowledge test scores and learning modality preference. The primary analysis consisted of the difference in diagnostic accuracies between students randomized to the e-learning module and those randomized to the lecture. The study was powered to have a 90% power to identify an absolute 15% difference in AOM diagnostic accuracies between the groups.

### **Results**

Between May 2017 and September 2018, 201 medical students were randomized. Among them, 83 evaluated at least five children fulfilling the inclusion criteria and were included in the primary analysis. Diagnostic accuracies were 76.5% for the e-learning group and 76.4% for the lecture group (difference of 0.1%; 95%CI: -6.2 to 6.4%). There was no difference between the groups in post-test scores (difference: 0.5/20 points; 95%CI: -0.8 to 1.2/20 points). 62% of participants preferred the e-learning module to the lecture, while 15% had no preference.

### **Conclusions**

This study reported similar AOM diagnostic accuracies for medical students who completed an e-learning module or received a traditional lecture. E-learning was the preferred learning modality.