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INTRODUCTION

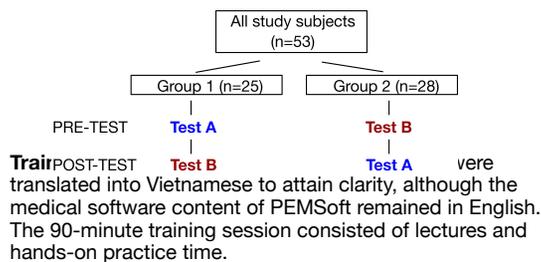
Vietnamese physicians have limited access to current medical references and “decision support” tools, which contributes to preventable morbidity and mortality. Although most Vietnamese hospitals have computer systems, no previous study has evaluated the impact of computer-based medical decision support on Vietnamese physician performance.

A nonprofit organization, “KidsCareEverywhere”, donates decision support software called PEMSoft to public hospitals in the developing world. In September 2009, a KidsCareEverywhere team visited Vietnamese hospitals and installed PEMSoft. With endorsement by the Vietnam Minister of Health, we trained hospital-based pediatricians at the National Hospital of Pediatrics in Hanoi to use the software, then assessed the effect on their clinical decision making.

Our hypothesis was that English language decision support software would improve the accuracy of physician treatment decisions in simulated cases after a single training session.

METHODOLOGY

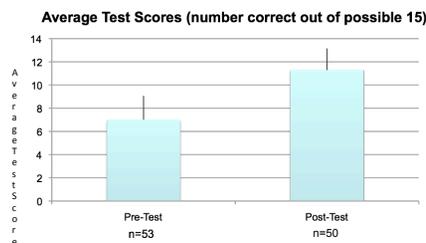
This study was a prospective, randomized, crossover study with a primary outcome measure of change in test scores. Subjects were randomized into two groups and asked to use any familiar references on pediatric emergencies to answer pre-test questions. After the training session, the subjects were allowed to use PEMSoft to answer questions on the crossover post-test.



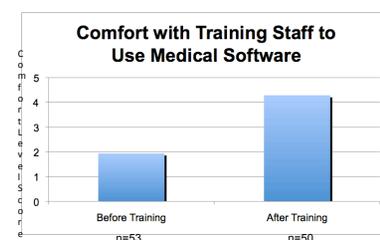
Test content: Both Test A and B were written to cover 3 common pediatric emergency scenarios (seizure, cardiopulmonary resuscitation, shock) with 5 multiple-choice questions per case.

RESULTS

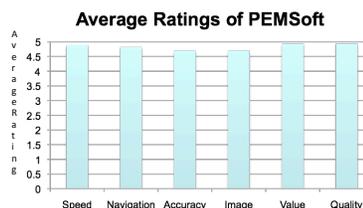
This prospective, randomized crossover study of 53 physicians demonstrated a 61% improvement on test scores, assessing common pediatric emergencies ($p < 0.0001$). The average Pre-Test Score was 7.02 (SD = 2.05), and the average Post-Test Score was 11.3 (SD = 1.86).



In exit and entrance questionnaires, subjects described their comfort level with training staff to use medical software, on a Likert Scale of 1 to 5 (1=Not Comfortable, 5=Extremely Comfortable). Before the training the average comfort level was 1.9, and after the training the average comfort was 4.3.



In a PEMSoft training session in Danang, 17 subjects ranked features of PEMSoft using a Likert Scale, 1 to 5 (1=Poor, 2= Acceptable, 3=Neutral, 4=Good, 5=Excellent).



LIMITATIONS/DISCUSSION

1. We relied on English and Vietnamese materials. Inaccurate translation may have influenced the understanding of the cases and the usability of the software.
2. We could not standardize the pre-test reference materials and may have biased the pre-test results.
3. Participants potentially shared information during testing.
4. Variable computer skills may have impacted the subjects' ability to use PEMSoft and answer the post-test questions.
5. While the questions were constructed to reflect illnesses and injuries in Vietnam, they were not rigorously validated.

Despite these limitations, our results are significant and we are optimistic about the application of this study. English language decision support software appears to offer an effective clinical tool for Vietnamese physicians. Vietnam is a fertile site for this form of information support because of recent dramatic increases in computer availability and the familiarity of physicians with English medical terminology.

CONCLUSIONS

1. A brief training session on PEMSoft improved the accuracy of simulated clinical decision making by Vietnamese physicians in common pediatric emergencies.
2. Vietnamese physicians learned to use PEMSoft for treatment decisions in a single 90 minute training session.
3. Physicians' evaluations from a PEMSoft training in Danang, a non-study site, indicated that the subjects found the software fast, accurate, easy to navigate, and valuable to their practices, suggesting they are competent in computer skills, and ready for more software tools to assist clinical practice.
4. Future Vietnamese software projects should assess the true frequency of use of decision support in real clinical settings and its effects on actual patient outcomes.

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