

11-2012

Efficacy of Smartphone Technology on Improving Asthma Control and Compliance

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Recommended Citation

Nelson, Dustin; Macks, Lauren; Paine, Gregory; Poursoltan, Forouzan; Mekonnen, Tirhas; and Hartzler, Melody L., "Efficacy of Smartphone Technology on Improving Asthma Control and Compliance" (2012). *Pharmacy and Nursing Student Research and Evidence-Based Medicine Poster Session*. 1.

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Dustin Nelson; Lauren Macks; Gregory Paine; Forouzan Poursoltan; Tirhas Mekonnen; Melody Hartzler, Pharm.D., AE-C

STATEMENT OF THE PROBLEM

Background

Asthma is the fifth most costly disease in the U.S., estimated to cost over \$50 billion annually. This large cost is due to the large number of hospitalizations, ER visits, and doctor's office visits. Improving patient adherence to asthma medications would decrease these costs significantly by preventing most hospital and doctor's office visits.¹ AsthmaSense® is a free to download smartphone application available on both iTunes and Android marketplaces. AsthmaSense® will allow patients to record when they take their medications, as well as send them reminders to take their medications.

Significance of the Problem

- Poor medication compliance results in asthma triggers and severe symptoms
- Asthma leads to 5,000 emergency room visits and 11 deaths every day
- Asthma costs \$18 billion annually in hospitalizations and lost earnings
- Many asthma patients are not compliant with their medications
- Impoverished areas are hit the hardest by asthma²

OBJECTIVES

To determine if AsthmaSense® is more effective in improving asthma control and medication compliance than hand-written journals.

HYPOTHESES

H₀: There is no statistically significant difference between AsthmaSense® and hand-written journals in improving patient asthma control and medication compliance.

H_A: There is a statistically significant increase in asthma control and medication compliance in patients who use AsthmaSense® as compared to patients who use hand-written journals.

REFERENCES

1. Reducing cost resources page. Asthmapolis Web site. <http://asthmapolis.com/our-solution/#payers>. Accessed September 24, 2012.
2. Hagood K. Medication compliance key to controlling asthma. *Birmingham Medical News*. Birmingham Medical News Web site. <http://birminghammedicalnews.com/news.php?viewStoryPrinter=1368>. Accessed November 5, 2012

ACKNOWLEDGEMENTS

Aleda M. H. Chen, Pharm.D., Ph.D.

PROPOSED METHODS

Study Design

- Pretest and Post-tests will utilize the Asthma Control Test (ACT)
- Pretest will be given at baseline
- Post-tests at 3 and 6 months

Sample

- Convenience sampling of asthma patients at local doctor's offices, clinics, and universities
- Patients must be taking at least 1 medication for asthma

Data Collection

- AsthmaSense® application and hand-written journals will collect compliance data
- The ACT will be administered using an iPad in the clinics and doctor's offices

Measurement

- The ACT will be used to measure the level of control a patient has over their asthma
- Compliance will be measured using the AsthmaSense® application and hand-written journals

PROPOSED ANALYSES

Quantitative

- SPSS software
- Compare average ACT scores between experimental and control groups
- Compare average medication compliance between the experimental and control groups

PROJECT TIMELINE

Summer 2013
Enrollment begins

Summer 2014
Data collection ends

Winter 2014
Analyses and conclusions completed

LIMITATIONS

- Patient reliability in recording their medication use
- Generalizability of study to asthma population

FUTURE DIRECTIONS

Future studies with larger samples would be recommended.