

Improving Control of Asthma Symptoms in Pediatric Patients Through the Utilization of an Electronic Medication Reminder App

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PROBLEM STATEMENT

- There are approximately six million children across the United States diagnosed with Asthma
- Approximately 24% of asthma exacerbations and 60% of hospitalizations can be attributed to poor compliance of inhaled corticosteroids
- Adherence rates for children with severe/moderate asthma is only 55%
- Adherence rates for any degree of asthma ranges between 30-70%
- Electronic medication reminders have shown to be an effective measure to increase adherence rates to daily prescribed medications

PROJECT PURPOSE

- Improve the control of asthma symptoms by increasing medication adherence through the utilization of Medisafe
- **Clinical Question:** In children between the ages of twelve to sixteen years old with a diagnosis of persistent asthma, does utilizing a mobile phone reminder app for daily inhaled medication, compared with usual care, lead to improved control of asthma symptoms?

MODEL/NURSING THEORY

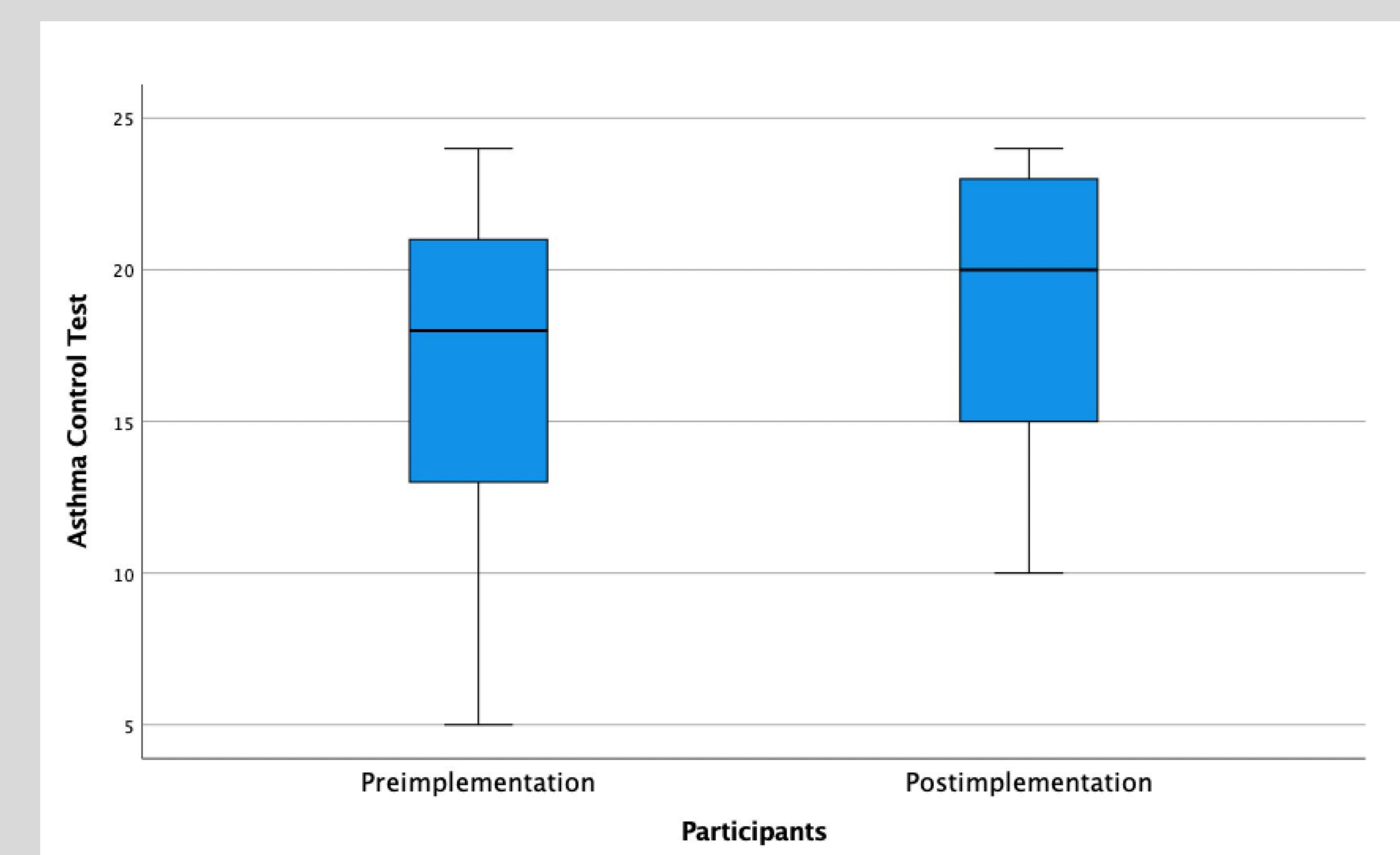
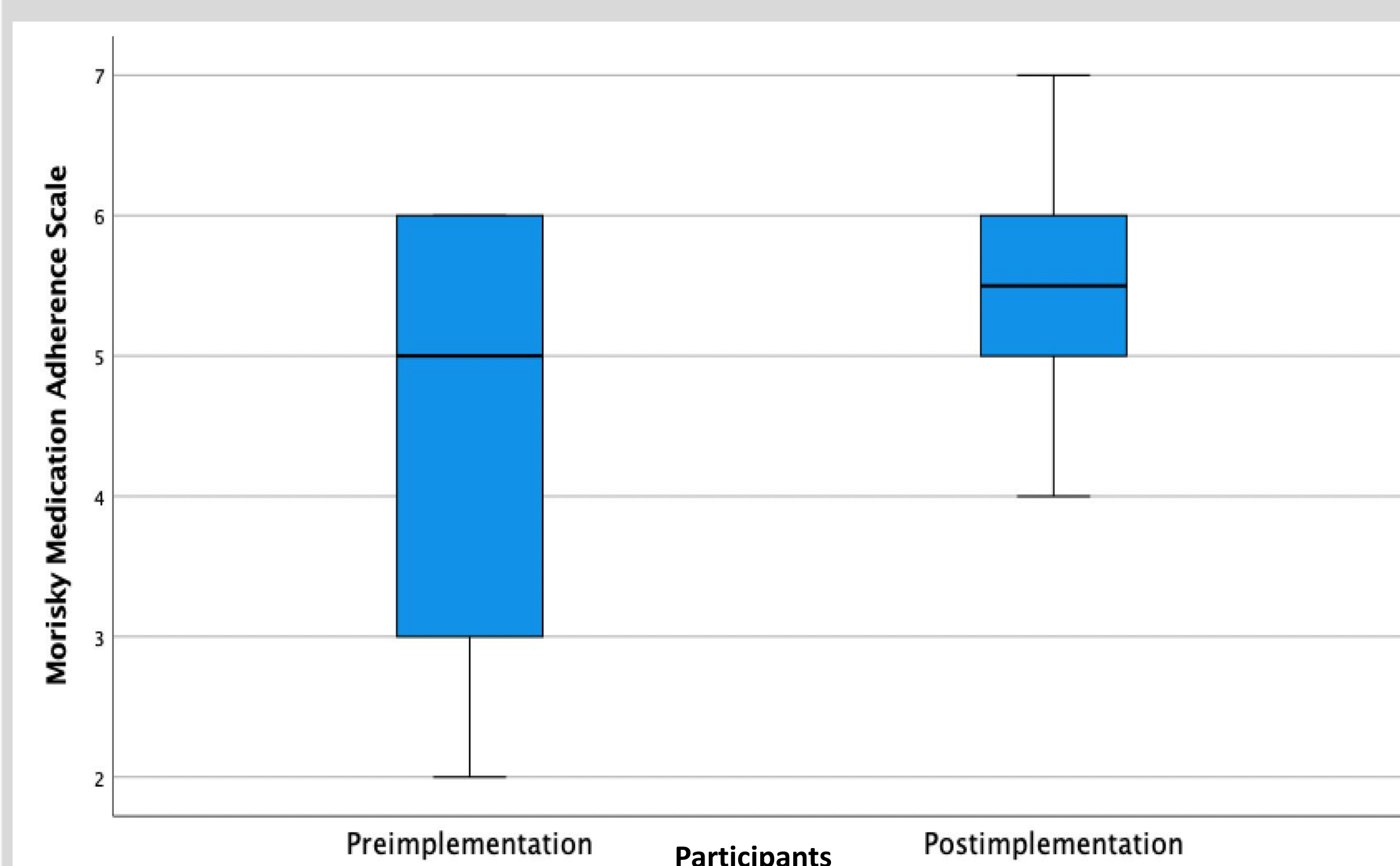
- Quality Improvement model utilized: Plan-Do-Study-Act (PDSA) Cycle
- Albert Bandura's self-efficacy theory

METHODS

- **Subjects (Participants)**
 - Inclusion: 12-16 years old, diagnosis of persistent asthma, & prescribed daily maintenance medications
 - Exclusion: Acutely ill at time of clinic visit
- **Setting**
 - Pediatric pulmonology outpatient clinic
- **Instruments/Tools**
 - Electronic medication reminder app: Medisafe
 - Tools: Asthma Control Test (ACT) & Morisky Medication Adherence Scale (MMAS-8)
 - ACT measures control of asthma symptoms
 - MMAS-8 measures adherence to medication
- **Intervention and Data Collection**
 - Medisafe was utilized for 12-16 weeks
 - Pre-intervention & post-intervention ACT & MMAS-8 scores were measured
 - Wilcoxon signed rank (WSR) test was utilized to measure effectiveness

RESULTS

- **Morisky Medication Adherence Scale:**
 - WSR: significantly affected by using Medisafe ($W(8)=21$, $p >0.05$, two tailed test)
 - $P = 0.039$
- **Asthma Control Test:**
 - WSR: significantly affected by using Medisafe ($W(11) = 21$), $p >0.05$, two tailed test)
 - $P = 0.010$



DISCUSSION

- The use of Medisafe had a significant impact on ACT and MMAS-8 results when comparing pre and post intervention scores
- The use of an electronic medication reminder app could significantly improve the control of asthma symptoms and increase medication adherence when used consistently
- Further studies should be completed using a larger sample size and analyzing compliance of using the app over a longer period of time

IMPLICATIONS FOR ADVANCED PRACTICE NURSING

- Electronic medication reminder apps are an effective tool to implement in outpatient care settings
- Education on the benefits of an electronic medication reminder app should be provided to adolescent patients with a diagnosis of asthma
- Various free apps available and easy to use

REFERENCES



Medication reminder apps are an effective tool for increasing medication adherence and improving asthma control