

School Nurse-Led Asthma Intervention Program for Elementary Students Living with Asthma

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INTRODUCTION

- 6.1 million children have asthma
- 3.3 million children experience exacerbation of symptoms
- Asthma exacerbation rates increased 10% from 2014 to 2016.
- Primary reason of school absence.
- Asthma costs \$56 billion annually.
- Asthma is not a curable disease.
- it can be controlled.



RATIONALE FOR THE STUDY

- Knowledge and skillsets are crucial elements for symptom management.
- The National Asthma Education and Prevention Program guidelines emphasize that an effective asthma management plan should extend to educating school-age children.
- Asthma related studies usually addressed only parental concerns about asthma management.
- An inadequate number of studies on school-based asthma interventions for elementary school-age children.
- Experimental and quasi-experimental designs are needed on asthma management among school-age children.
- Bridge the gap by delivering an age-appropriate asthma intervention that increases awareness of self-management preparing students living with asthma.



THEORETICAL FRAMEWORK

- **Orem's self-care theory**
- This theory centers on the individuals' self-care knowledge.
- The individuals should be as independent as possible.
- If there is a disproportion between self-care needs and self-care abilities for self-management of health, the individuals need nursing intervention.
- Engaging in self-care basics is a vital element for self-management of the disease and wellbeing.
- Individuals must have knowledge of present and potential health conditions to promote self-care behaviors.
- There is a movement for future nursing research in transitioning self-management from the family level to the individual level.



PURPOSE

- To determine the effectiveness of a theoretically based school nurse-led asthma intervention in a sample of elementary school aged children between the ages 7- 12.
 - asthma self-management,
 - symptoms,
 - daily activities,
 - school absences.



HYPOTHESES

- H1:** Children living with asthma, who have participated in the nurse-led asthma intervention, will report better asthma self-management and will demonstrate a higher mean number of usages of peak flow meters than children, who received usual asthma care.
- H2:** Children, who have participated in the nurse-led asthma intervention, will fewer asthma symptoms than children, who received usual asthma care
- H3:** Children, who have participated in the nurse-led asthma intervention, will have less school absenteeism than children, who received usual asthma care.
- H4:** Children, who have participated in the nurse-led asthma intervention, will report fewer mean interruptions of daily activities than children, who received usual asthma care.



RESEARCH QUESTION

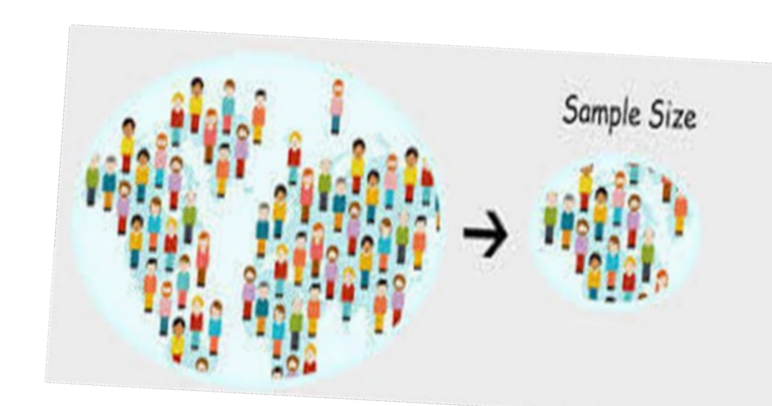
- Do elementary school-age children living with asthma, who participate in six school nurse-led weekly 30-minute group interventions report better asthma management, more use of peak flow meters, decreased school absenteeism, and less interruption of daily activities than those children, who receive usual asthma care?

STUDY DESIGN

- **An experimental method**
- A randomized, two-group repeated measures design (pre-test, post-test, and follow-up test design).
- The intervention sessions was implemented for the randomly assigned treatment group.
- The randomly assigned control group continued to receive their usual asthma care.
- **The setting of the study will be a public Independent School District serving a diverse population.**
- The study protocol has been approved by the Texas Woman's University.
- Permission was obtained from the school district and administrators of the selected schools.

POPULATION AND SAMPLE

- **Inclusion criteria**
- English speaking children diagnosed with asthma aged seven to 12 years who will assent to participate and whose parents will give consent.
- **Exclusion criteria**
- Children with other disabilities or chronic comorbid conditions;
- severe cerebral palsy, oxygen dependent conditions, and cystic fibrosis
- **Effect size**
- **0.25 with the power of 0.80 and alpha level of 0.05**
- **86 participants + 15% = 98.**



DATA COLLECTION

- Send a recruitment flyer with the school newsletter.
- Post the flyer on the school websites and around the school building.
- Attend to school fairs to distribute the flyer
- **Inform the parents and children**
 - the purpose of the study,
 - the inclusion criteria,
 - the voluntary nature of participation,
 - requirements for participants,
 - possible risks and benefits,
 - availability of study outcomes,
 - the intervention times and duration,
 - the data collection periods.
- **Answer parents' and children's questions before obtaining an informed consent and assent.**



INSTRUMENTS RELIABILITY & VALIDITY

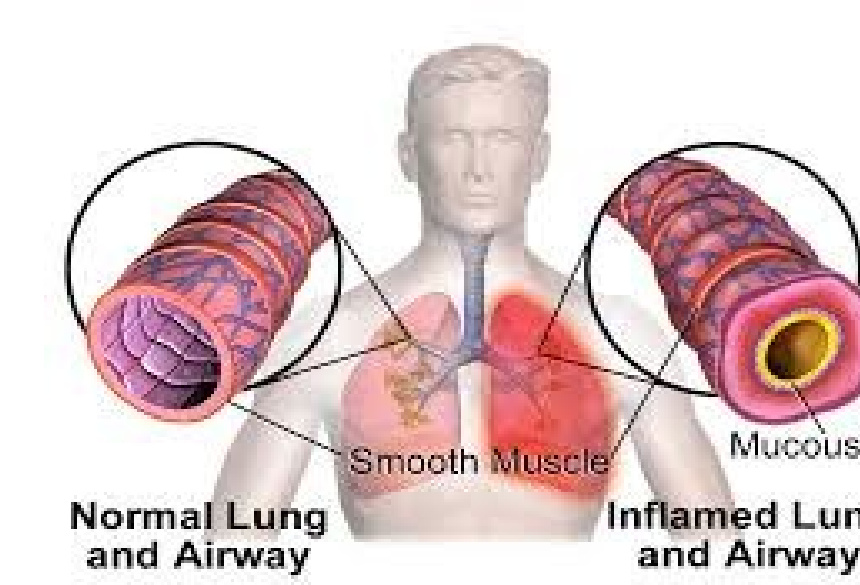


- **Asthma Control Questionnaire (ACQ)**
- 91 asthma clinicians and NAEPP committee members scored each symptom for its significance in evaluating.
- Intraclass correlation coefficient (ICC) is reported as .90.
- The tool was validated for children six years of age and adults.
- Scaling is a seven-point scale weighted equally.
- **The Pediatric Asthma Quality of Life Questionnaire (PAQLQ(S))**
- The PAQLQ(S) is a 23-item tool in measuring three domains.
- The questionnaire is a valid and reliable tool, and ICC is reported as .89.
- The tool was validated for children 7-17 years old.
- Scaling is a seven-point scale weighted equally.

INTERVENTION

School nurse-led asthma intervention consisted of six weekly 30-minute group lessons

- 1) asthma disease and its pathophysiology,
- 2) description of the peak flow meter and usage,
- 3) identification of asthma symptoms and implementation of an Asthma Action Plan (AAP),
- 4) asthma medicines, demonstrating correct techniques for using medicines and spacers,
- 5) recognition and controlling asthma triggers and helpful breathing exercises,
- 6) discussion of individualized choices and establishment goals for self-management.



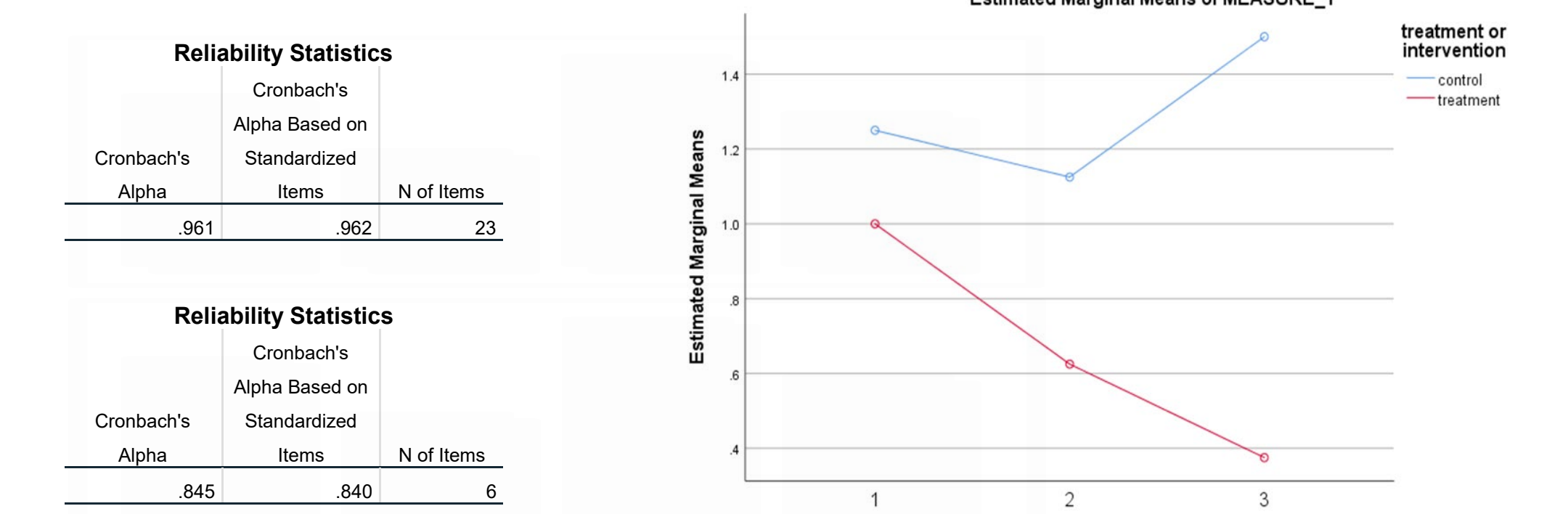
DATA TREATMENT

- Statistical Package for Social Sciences (SPSS) version 25
- Repeated measures ANOVA
- Examine the hypotheses and outcome changes over six weeks of intervention and follow-up at 12 weeks



PILOT STUDY RESULTS

- N: 16 Treatment = 8, Control: 8
- A statistically significant effect on asthma symptoms
- Wilk's Lambda = .43, F (2, 13) = 8.31, p = .005.
- No significant effect for nocturnal coughing (p = .057).
- Significant effect on the use of a PFM and asthma management.
- None of the subjects used PFM before intervention, after intervention all treatment subjects used PFM 5+ times weekly.
- Significant effect on activity limitation scores
- Wilk's Lambda = .54, F (2, 13) = 5.56, p = .018,
- Missed school days 7 days in treatment, and Usual care 10 days.



STRENGTHS & LIMITATIONS

- The outcomes were measured only for a 12-week period.
- The sample was drawn from one school of the region.
- The subjects' parents' thoughts and experiences were not included.

IMPLICATIONS

- Constant school nurse led asthma intervention program.
- Deliver essential learning steps and provide a continuity of care for the elementary school children.
- School age children are capable to learn and manage their asthma.
- School nurses are critical to increase awareness, knowledge, and skill to manage.



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