

# The Effects of a Yoga Intervention on Quality of Life, Anxiety, and Pulmonary Function in a Pediatric Population

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The purpose of this study was to explore the pulmonary function, quality of life, and anxiety levels in a rural youth pediatric population living with and without asthma. Yoga and mindfulness interventions were implemented with the population in response to an analysis of data collected. Movement and relaxation therapies, including yoga, are relatively easy and inexpensive to implement and may prove beneficial as preventative and complementary treatment in rural communities. This study aimed to optimize strength, flexibility, stress management, and confidence in the population using a yoga and mindfulness intervention.

The instruments for preliminary data collection included a demographic survey with a self-reported asthma diagnosis metric, the Youth Quality of Life-Short Form (YQOL) and the Generalized Anxiety Disorder 7-item scale (GAD-7). Pulmonary function testing was done with an EasyOne® Air Spirometer; however, it was difficult to obtain reliable readings because the environment was loud and some participants were too young to understand the breathing directions. Pediatric spirometry testing may be more successful when done in a private room with visual aids.

The target population included 16 participants, all both African American and female. The age range was 5 to 11 years (mean = 7.56, SD = 2.266), and the grade range was kindergarten through 6th grade (mean = 2nd grade, SD = 2.007). The percentage of study participants who self-reported a diagnosis of asthma was 47%, which is well above the national and Alabama state average (Figure 1). The GAD-7 is scored on a scale of 0 to 15; as shown in Figure 2, the mean score in our population was 9.2, and the standard deviation was 3.936. The distribution of scores on the GAD-7 placed half of participants in the moderate to severe anxiety categories, 38% and 12%, respectively (Figure 2). Mild anxiety scores were reported in 44% of participants, while 6% report-

ed no anxiety (Figure 2). Though not significant, the mean GAD-7 score was 3.37 points and trended higher in participants with self-reported asthma ( $F = 1.020$ ,  $p = 0.331$ ) (Figure 3). The range of the YQOL was 120-150. The mean for YQOL score was 141.29 (range 120-150), and the standard deviation was 8.965 (Figure 4). Interestingly, though not statistically significant, youth living with asthma had higher overall YQOL-SF scores than youth without asthma (142.29 with asthma [ $n = 7$ ], 140.29 without asthma [ $n = 7$ ]). Overall, the YQOL-SF scores indicated a high quality of life across the population studied.

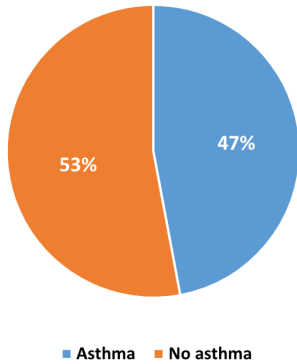
After baseline data were collected, the yoga intervention took place four times over a 6-week period and was taught by a Registered Yoga Teacher (RYT 200HR). Each 45-minute session included 10 minutes of breath work, 25 minutes of active postures, and 10 minutes of relaxation. Individual sessions focused on topics including strength, flexibility, stress, and confidence. The yoga intervention was completed in a dance studio, and because of COVID-19 precautions, participants remained on separated mats and wore masks. Masks presented a small barrier to assessment of breathing. Therefore, to overcome this challenge, tactile and visual strategies were incorporated. The addition of more game-like activities between breathing exercises is recommended for similar studies in the future, especially when the population includes children ages 7 and younger. In the United States, complementary treatments including relaxation and movement therapies have become increasingly popular, but there is still much to explore regarding the efficacy of therapies in rural populations.

## Statement of Research Advisor

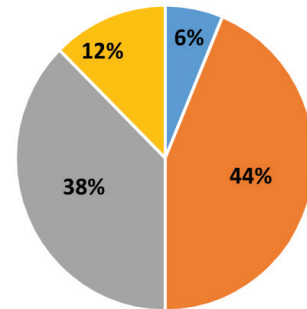
Emily Claire Herring was an exceptional undergraduate research fellow. She completed a thorough review of the literature and identified all proposal components for submission to the Institutional Review Board of Au-

burn University. While in the community setting, Ms. Herring was well prepared for data collection and intervention and bonded with the participants and family. As a team, we analyzed the data and prepared for dissemination. Ms. Herring won the college award for this poster presentation with the Auburn Research Student Symposium 2021.

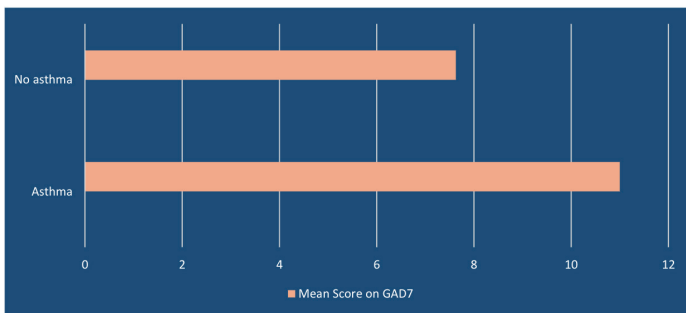
-Linda Gibson-Young, Nursing



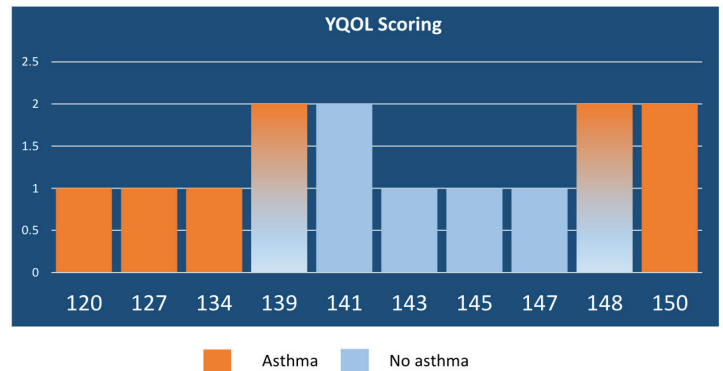
**Figure 1.** Participants who self-reported a diagnosis of asthma and participants who did not self-report an asthma diagnosis.



**Figure 2.** Percentage of participants with mild, moderate, and severe anxiety as classified by the GAD7 Survey.



**Figure 3.** Comparison of participants self-reported asthma data with mean scores on the GAD7 survey. Participants who self-reported an asthma diagnosis reported scores on the GAD7 that correlate to more severe anxiety, although these data are not statistically significant.



**Figure 4.** Participant scores on the Youth Quality of Life Survey and self-reported diagnosis of asthma.