The Effect of Inhaled Lemon Essential Oil on Cognitive Test Anxiety among Sophomore Nursing Students  

Catherine E. Johnson, PhD, RN, CNE  
Westfield State University

BACKGROUND

The demands of nursing courses increase from semester to semester. It is critical that nursing faculty can assess cognitive test anxiety and recommend safe, cost-effective interventions. One such intervention is aromatherapy, the practice of using essential oils for specific outcomes which are quantifiable on the human mind, body, and spirit. Essential lemon oil (citrus limon) has been proven to increase cognitive functioning, memory, attention levels, and cognitive test anxiety among nursing students.

PURPOSE

The purpose of this randomized, experimental study was to evaluate the effect of inhaled essential lemon oil (Citrus limon) on cognitive test anxiety among sophomore nursing students. Several studies have been conducted in nursing education to examine a variety of test anxiety management strategies (Brodersen, 2017; Quinn & Peters, 2017).

MATERIALS AND METHODS

A quantitative, randomized, pretest, posttest study was conducted to assess the effect of inhaled lemon essential oil (aromatherapy) on cognitive test anxiety among sophomore nursing students at a four-year, public university in New England. The study was approved by the Institutional Review Board, and written consent was obtained by each study participant before any data collection. Each student performed a smell test for any allergies (sneezing, coughing, wheezing) to Citrus limon based on the research design. There were no reported adverse reactions to Citrus limon during the smell test or on the study day.

Instrument

The Cognitive Test Anxiety Scale (CTAS) by Cassady (2001, 2004) is a valid and reliable survey instrument which has been administered for nearly 20 years. It was selected for this study as it specifically measures the worry domain of test anxiety, is appropriate for college students, and has only been administered twice with undergraduate nursing students (Johnson, 2014; Duty et. al, 2016). The CTAS was adopted from the Test Anxiety (Attitude) Inventory by Sarason (1984) and Spielberger (1980). The major difference between the two scales is that the CTAS focuses on the aspect of cognitive test anxiety and academic performance in college students. The CTAS is a 27-item instrument with a 4 point response scale: 1 - not at all like me, 2 – only somewhat like me, 3 – quite like me and 4 – very much like me.

Essential oil Delivery Device

The essential oil delivery system was a personal, hand held nasal inhaler, similar to a Vick’s™ inhaler. The inhaler cover is made from medical grade plastic and a cotton wick is inserted into the cover. Several drops (7-8) of lemon essential oil were dropped on the cotton wick, and a base piece was placed on the end. In contrast to a large room diffuser, the advantage to this system was that there was no need to have separate classrooms during the study, and the experimental group of students had control over how many inhalations they took during the exam.

RESULTS

The overarching research question was: What effect does inhaled lemon essential oil have on the level of cognitive test anxiety scores among sophomore nursing students? There was not a statistically significant difference in the average CTAS scores between pre-test and post-test within the control group, t(15) = 0.72; p = 0.49. In the experimental group, there was not a statistically significant difference in the average CTAS score between pre-test and post-test within those students who received aromatherapy, t(14) = 2.01; p = 0.064. In comparing both groups at the 95% confidence interval for the average, change in CTAS score (post – pre) by study group, there was not a statistically significant difference in the average change in CTAS scores between the two groups, t(29) = 1.35; p = 0.19. All statistical analyses were performed with SPPS for Windows, version 21, two-sided with a 5% ∞ level.

CONCLUSIONS

Cognitive test anxiety is prevalent in nursing education, and will continue to be a pervasive barrier in nursing education as a result of high-stakes exams and clinical demands. This study reinforces the need for more studies in nursing education with the CTAS and aromatherapy as a safe, simple and effective intervention to reduce cognitive test anxiety.

CTA may not be fully managed until nursing faculty can successfully assess and implement innovative solutions. Aromatherapy practices are safe, easy to administer, and practical in many academic settings. If students can experience self-care interventions in their nursing programs, they may be more apt to embrace and promote holistic practices in their roles after graduation.