Effects of Aromatherapy on Stress Levels in BSN Students: A Pilot Study

Cynthia Pipkins, PhD, RN, Lamar University
Nancye McAfee, PhD, RN, Lamar University
J. T. Seaman, MSN, PMHNP-BC, RN, Lamar University
Naelyn Carruth, BSN, Colorado
Jessica Myers, BSN, Texas
Art of Aromatherapy

- **Mind-Body Connection**
  - Memory/concentration (Higley & Higley, 2018)
  - Enhance alertness and diminish anxiety (Ilmberger et al. 2001; Hekmatpou et al., 2017)

- **Essential Oil (Peppermint)**
  - Increased attention, performance and mental acuity (Zielinski, 2018).
  - “...ease stress, exhaustion and irritability” (Miller, 2015, p. 5).
Nursing Students and Aromatherapy

- **Significance to Nursing Students**
  - Stress
  - Mental alertness (Morris et al., 1995; Lehrner et al., 2000; Ilmberger et al. 2001)

- **Gap in Research**
  - Lack of research with nursing students

- **Purpose**
  - Determine the baseline stress level and evaluate the effectiveness of aromatherapy on physiological (stress level) and psychological factors (heart rate/respiratory rate) in nursing students.
Specific Aims

1. Determine the baseline stress level (Perceived Stress Scale [PSS-10])
2. Evaluate the effectiveness of aromatherapy (peppermint) on physiological factors/biophysical markers (heart rate, respiration rate) and psychological factors (Perceived Stress Levels [PSL]) of nursing students.
Watson's Theory of Caring Concepts and Major Study Variables: Conceptual Model

- Stress (PSS, PSL)
- Biophysical Marker (HR, RR)

Aromatherapy (Caring-Healing Environment)

- ↓ Stress
- ↓ HR
- ↓ RR

Person

- AI
- Breathing

Projected Outcomes (Self Caring-Healing)

Conceptual model depicting pertinent Watson's Theory of Caring concepts and the major variables applied in this study. PSS = Perceived Stress Scale, PSL = Perceived Stress Level, HR = Heart Rate, RR = Respiratory Rate, and AT= Aromatherapy (adapted from Watson, 2008).
Methodology

• **Design**
  • Cross-sectional pilot study

• **Setting**
  • School of Nursing in SE Texas

• **Sample**
  • Convenience sample of baccalaureate nursing students (n=60) enrolled in a nursing course and attending class during data collection were possible participants with (n=57) completing all components of the study
Data Collection

- Aromatherapy
  - Survey
- Survey Packets
  - Informed Consent
  - Demographics
  - Perceived Stress Scale (PSS-10) [Cronbach’s $\alpha = 0.85$] (Siqueira Reis et al., 2010).
  - Biomarkers: Heart Rate, Respiratory Rate, and Perceived Stress Level (Karvounides et al. 2016).
Demographics

Figure 1. Student Participant Demographics

Student Age (n=57)
- 20-24: 68%
- 25-29: 18%
- 30-34: 5%
- 35-39: 7%
- > 40: 2%

Student Gender (n=57)
- Females: 86%
- Males: 14%

Student Race (n=57)
- White: 65%
- Black: 19%
- Hispanic: 9%
- Other: 7%
Specific Aim 1

- The PSS mean score ($M = 2.008$) revealed the students were "sometimes" stressed over the last month.

- The PSL score ($M = 4.7$) as currently “moderately” stressed (see Figure 2).

Figure 2. Perceived Stress Level

Figure 2. Modified from the NPRS from Krebs, Carey, & Weingberger (2007).
Specific Aim 2

Table 1

Pre/Post Intervention Biophysical Markers and Perceived Stress Level (n=57)

<table>
<thead>
<tr>
<th>Aromatherapy Intervention</th>
<th>Pre-Intervention</th>
<th>Post-Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time 1 (M)</td>
<td>Time 2 (M)</td>
</tr>
<tr>
<td>HR</td>
<td>91.9</td>
<td>81.3</td>
</tr>
<tr>
<td>RR</td>
<td>16.8</td>
<td>16</td>
</tr>
<tr>
<td>PSL</td>
<td>4.7</td>
<td>4.5</td>
</tr>
</tbody>
</table>

*Note.* HR = Heart Rate; RR = Respiratory Rate; PSL (Perceived Stress Level).
Nursing Implications

- Aromatherapy can decrease:
  - Psychologically: perceived stress levels
  - Physiologically: biomarkers (HR and RR)

- Clinically supports the use of aromatherapy as an stress management intervention

- Creates a “caring-healing environment” conducive for learning
Limitations and Recommendations

Limitations
- One setting
- Sample size
- Cross-sectional Design
- Generalizability

Recommendations
- Multi-site data collection
- Diverse setting
- Larger sample
- Explore other essential oils
Conclusions

• Stress management intervention for nursing students
• Clinically significant decrease in biomarkers and psychological factors
• Further studies (replication, experiential learning)
References


