

Aromatherapy: Reducing Anxiety and Nausea in the Perioperative Setting

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Abstract

Aims: The aim of this project is to educate care providers in the use of aromatherapy to reduce the symptoms of nausea and/or anxiety in the perioperative setting and introduce protocols for the documentation of aromatherapy use.

Methods: The setting for this project was a rural outpatient surgery center. All nurses and anesthesia providers were invited to participate. Participation was voluntary. Pre-education and post-education surveys were distributed to assess the participants' initial knowledge of aromatherapy and the use of the electronic health record for documentation of the use of aromatherapy. Post-education surveys were distributed to assess improved knowledge of aromatherapy and documentation of aromatherapy. Chart reviews during implementation were used to collect data on documentation of aromatherapy.

Design: Primary outcome measures included improved knowledge in the use and benefits of aromatherapy as well as improved knowledge regarding the use of the electronic health record for documentation of aromatherapy. The secondary outcome measure was the use and documentation of aromatherapy in the unit. For comparison, a retrospective chart review was completed. Additional secondary outcomes included patient endorsement of nausea and/or anxiety relief with the use of aromatherapy.

Results/Findings: 15 care providers participated in this project, and 71% of healthcare participants who completed the aromatherapy educational program demonstrated significant improvement ($p = <.001$) in knowledge of aromatherapy. There was no significant increase in the documentation of aromatherapy. Due to limited documented data, changes in patient anxiety and nausea were inconclusive.

Conclusion: The aromatherapy education program was successful in enhancing aromatherapy knowledge; however, there was no increase in aromatherapy documentation. It is unknown whether this lack of documentation is due to the lack of provider compliance with documentation, lack of patient acceptance of the use of aromatherapy during their surgical visit, or impact of COVID-19 pandemic.

Impact: Improved knowledge of aromatherapy administration is a positive step in the use of this noninvasive therapy, which does not contain the side effects of conventional pharmacologic interventions.

Keywords: aromatherapy, essential oils, peppermint oil, lavender oil, perioperative care, healthcare education

Aromatherapy: Reducing Anxiety and Nausea in the Perioperative Setting

Aromatherapy is defined as the use of plant-based essential oils for mental, physical, and spiritual treatment and healing (Beyliklioglu & Arslan, 2019). Essential oils may be used to increase relaxation, aid digestion, reduce insomnia, and treat nausea and anxiety; however, this therapy is often overlooked by healthcare providers (Slater, 2021). Essential oils are used worldwide to enhance mood and reduce anxiety. The perioperative surgical experience can be improved through aromatherapy (Trambert et al., 2017). By offering aromatherapy as a choice to patients, patients can become active participants in their care.

Aromatherapy is increasingly selected as a complementary and alternative therapy for anxiety management, stress reduction, and nausea reduction in healthcare settings (Jaruzel et al., 2019). Patients may experience anxiety-reducing benefits without anxiolytic chemicals found in medications. Aromatherapy is low risk, cost-effective, and noninvasive (Wotman et al., 2017). Essential oils have proven to be beneficial for patient care. The patient needs little physical help to participate in aromatherapy, there is no need for additional equipment, and aromatherapy does not require extra healthcare providers for effective implementation.

Patients in healthcare settings experience various symptoms, with anxiety and nausea being two of the most common. Nausea is a common symptom experienced by postoperative patients (Briggs et al., 2016). Patients often elect to use peppermint oil rather than medication to reduce postoperative nausea and vomiting (Karsten et al., 2020). Anxiety negatively affects the body and results in health consequences, such as delayed healing and increased postoperative pain (Jaruzel et al., 2019). Aromatherapy is commonly administered in healthcare settings to evoke a calming mood for patients (Hosseini et al., 2016). Through aromatherapy administration, patient outcomes and overall satisfaction with healthcare encounters can be improved.

Nature of the Problem

Education surrounding the use of complementary and alternative therapies is limited in many medical programs (Siedlecki, 2021). A 2015 analysis of medical school curriculums in the United States

(US) indicated that about 50% of medical schools offer at least one educational course for complementary and alternative therapies (Cowen & Cyr, 2015). Evidence shows medical professionals are likely to use alternative therapies in their practice if it was recommended by faculty and staff during their undergraduate or graduate education (Siedlecki, 2021). Healthcare providers' use of complementary and alternative therapies is largely influenced by the education they received and their knowledge of such therapies.

When educating healthcare providers on the use of electronic documentation, it is important to educate on how to document and why the documentation is necessary (Baumann et al., 2018). Complete and concise documentation in the electronic health record allows for effective communication among members of the healthcare team and is essential for the delivery of safe patient care.

Treatment of Nausea and Anxiety in the Perioperative Setting

Pharmacological therapies are used in the perioperative setting for treatment of nausea and anxiety, but they are not without undesirable side effects and increased costs (Johnson et al., 2016). Midazolam is a benzodiazepine medication typically given to patients in perioperative settings to reduce anxiety (Bailey, 2010). Adverse side effects of midazolam, such as nausea, vomiting, and slowed postoperative awakening, can occur (Jaruzel et al., 2019). Increased anxiolytic medications are also associated with confusion and fatigue, affecting the patient's ability to actively participate in discharge planning and education regarding postoperative care (Wotman et al., 2017).

Antiemetic drugs, such as ondansetron and promethazine, are commonly administered to patients experiencing postoperative nausea and vomiting (PONV) (Pierre & Whelan, 2013). Adverse side effects of these medications can range from headaches to cardiac rhythm changes (Pierre & Whelan, 2013). These side effects can limit patient ability to actively participate in their post-operative care and have been linked to increased hospital stays, resulting in an increased need for hospital staff, increased costs for the patients, and increased costs to the healthcare facilities (Stea et al., 2014).

Aromatherapy in the Perioperative Setting

Aromatherapy is a complementary or alternative therapy that can be used to control anxiety and nausea in preoperative and postoperative settings without increasing risks or cost to the patient (Wotman et al., 2017). A variety of essential oils have been proven effective to treat nausea and anxiety in surgical patients.

Lavender essential oil has been extensively researched for the treatment of anxiety in multiple settings, to include patients undergoing surgical procedures. The mechanism of action of lavender oil is possibly connected to a component of the oil called linalool, which has been shown to modulate the activity of cyclic adenosine monophosphate (cAMP) in the brain (Stea et al., 2014).

Peppermint oil has been used for relief of digestive symptoms since ancient times. There is mention of peppermint oil to relieve digestive symptoms in writings from ancient Greece, Rome, and Egypt (National Center for Complementary and Alternative Health [NCCIH], 2020). Researchers have identified inhibition of increased gastric motility through release of serotonin and substance P as a possible mechanism of action (Stea et al., 2014).

Rationale

Given the lack of formal education regarding alternative therapies that is offered to nurses and healthcare providers, increasing the knowledge of nurses and anesthesia providers regarding aromatherapy administration is needed to increase the use of this therapy in outpatient settings (Siedlecki, 2021). Without proper education, healthcare providers may not consider aromatherapy to be a useful method of controlling nausea or anxiety in the perioperative setting (Siedlecki, 2021).

Concurrent with the need for knowledge about aromatherapy is the need to recognize the necessity of documentation of treatment with aromatherapy. Accurate documentation is fundamental to the provision of care, as it allows healthcare providers and the healthcare system to remain informed of critical information related to the medical story of the patient's journey through the unit and the system (Mathioudakis et al., 2016).

Theoretical Framework

Change theory is a three-stage model used to create change in an environment by replacing prior learning with new learning. The three stages are unfreezing, change, and refreeze (Petiprin, 2020). Unfreezing is the process of discovering how to relinquish previous patterns. Change, the second stage, can involve a change in feeling, behavior, or thought to a more productive or influential process. The final stage is refreezing the mind to make the change an established process and standard operation (Petiprin, 2020). Change theory supports the need to understand how healthcare providers feel toward complementary and alternative therapies and their knowledge surrounding aromatherapy safety and use. During this project, nurses and anesthesia providers were responsible for implementing aromatherapy within the outpatient surgery unit.

For this project, nurses and anesthesia providers were educated via an online education program on aromatherapy and hospital policy regarding documentation of the use of aromatherapy. This education promoted the need to expand understanding of the underlying causes of anxiety and nausea, the outward appearance or verbal expression of anxiety, information on essential oils and specifically lavender and peppermint essential oils, aromatherapy safety, and specific essential oils' effects on the body. Healthcare provider participants were encouraged to use aromatherapy with essential oils for their first-line treatment of nausea and anxiety instead of anxiolytics and antiemetic medications.

Purpose

This quality improvement (QI) project aims to educate healthcare providers on the use of aromatherapy and its importance in the assessment and treatment of anxiety and nausea in the perioperative setting. A secondary goal of this study was to improve documentation of aromatherapy using the existing protocol for aromatherapy documentation in the unit's electronic health record (EHR).

Literature Review

Aromatherapy is the process of inhaling or applying essential oils to the skin (National Center of Complementary and Integrative Health [NCCIH], 2021). Through inhalation, neurons relay signals to the brain for interpretation and receptor stimulation. When essential oils are inhaled, the inhaled aroma

affects the olfactory receptors. These receptors transmit signals to the olfactory bulb and then the limbic system and amygdala, the brain's emotional center (Johns Hopkins Medicine, n.d.). The limbic system is directly connected to parts of the brain that controls autonomic functioning, anxiety, aggression, fear, hormone balance, memory, reward, and addiction (Rajmohan & Mohandas, 2007). Psychological and physiological behaviors can be affected through aromatherapy.

Aromatherapy use has increased among the general population worldwide, indicating the importance of healthcare providers becoming knowledgeable about this therapy. The role of the nurse in the perioperative setting is to assess, advocate, and educate patients and their families (Siedlecki, 2021). There is limited data documenting providers' feelings toward aromatherapy. The available data indicates most providers are interested in administering aromatherapy and discuss this with their patients; however, they are not confident in their ability to do so (Pearson et al., 2019). This feeling of inadequacy may be related to the lack of formal education healthcare providers receive; they are less likely to initiate complementary and alternative therapies with their patients if they have not received formal education for administration of alternative therapies (Siedlecki, 2021). Healthcare providers' personal use of essential oils has been proven to increase their positivity and willingness to engage in training and offer aromatherapy to patients (Pearson et al., 2019).

Patient safety increases with proper EHR documentation by healthcare providers (Baumann et al., 2018). Electronic health records include safety warnings, medication documentation, drug interactions, allergy alerts, and real-time patient updates for all providers involved in patient care (Baumann et al., 2018). Research has shown documentation by nurses and other healthcare providers has steadily decreased as the required amount of documentation has increased (Bøgeskov & Grimshaw-Aagaard, 2018). Nurses have reported increased frustration and struggle with digital documentation. This frustration has been linked to lack of technical experience, poorly functioning documentation programs, lack of time, lack of communication for documentation guidelines, and uncertainty regarding required documentation (Bøgeskov & Grimshaw-Aagaard, 2018).

Anxiety is a common symptom among patients in healthcare settings. Anxiety is especially prevalent among surgical patients (Beyliklioglu & Arslan, 2019). Pre-surgical patients may experience anxiety-producing emotions, such as fear of reactions to anesthesia, death, lack of control, pain, separation from family, and loss of social experiences after surgery. Preoperative anxiety can have wide-ranging effects on the patient both before surgery and after the operative procedure (Jaruzel et al., 2019). Various detrimental consequences can result from unassessed, untreated, or undertreated anxiety. Preoperative anxiety may even affect postoperative recovery (Hekmatpou et al., 2017).

Stress and anxiety can result in tachycardia, slow-healing wounds, increased risk of infection, arrhythmias, hypertension, increased pain, difficulty controlling postoperative pain, higher levels of anesthetic medications, higher incidence of postoperative nausea and vomiting, increased length of stay in hospitalized patients, destruction of the thyroid gland and cognitive functions, hyperglycemia, and suppression of the immune system and inflammatory responses (Hekmatpou et al., 2017; Hosseini et al., 2016; Jaruzel et al., 2019).

Patient satisfaction is decreased when anxiety is experienced before surgical procedures (Hekmatpou et al., 2017). Conversely, lower levels of anxiety before surgical procedures can result in positive effects postoperatively (Jaruzel et al., 2019). Faster recovery, reduced medication administration during anesthesia (and postoperatively), early discharge, reduced infection, decreased medical cost, and decreased mortality due to reduced sympathetic nervous system stimulation can be the result of adequate anxiety assessment and intervention (Hekmatpou et al., 2017).

Lavender and lavender-sandalwood essential oils were used in studies that resulted in significantly decreased anxiety levels following an aromatherapy intervention (Beyliklioglu & Arslan, 2019; Hosseini et al, 2016; Wotman et al ,2017; Jaruzel et al., 2019). While patients endorsed anxiety was reduced, there was no significant change in vital signs. In 2017, orange essential oil use was implemented in an emergency department for patients with limb fractures to reduce anxiety, resulting in significant anxiety reduction among the control group (Hekmatpou et al., 2017). Aromatherapy has also been

implemented in multiple studies to reduce anxiety in women undergoing breast biopsy and surgery (Trambert et al., 2017).

Post-operative nausea is one of the most common causes of patient dissatisfaction in the postoperative setting (Pierre & Whelan, 2013). Post-operative nausea can cause discomfort to the patient through increased surgical site pain, vomiting, or reduced willingness to cough and breathe deeply to reduce pneumonia risk (Briggs et al., 2016). Surgical patients have been found to prefer peppermint essential oil over medication to reduce postoperative nausea and vomiting (Karsten et al., 2020). Peppermint essential oil is one of the oldest and most beneficial essential oils for soothing the digestive system (NCCIH, 2020). Peppermint oil has been shown to reduce nausea in patients after cardiac surgery (Maghami et al., 2020).

While there is research regarding the use of aromatherapy in perioperative areas to decrease anxiety and nausea in surgical patients, there is limited information regarding which specific oils effectively control anxiety (Trambert et al., 2017). Among studies reviewed, various essential oils were used, with lavender being the most common. There was conflicting evidence regarding the effectiveness of orange and peppermint essential oils (Jaruzel et al., 2019).

Methods

This was a three-month, quality improvement project that implemented aromatherapy in the context of a doctorally-prepared nurse practitioner student designed and managed project conducted in an outpatient perioperative center in rural North Carolina. Data was obtained through survey questions administered online by the principal investigator (PI) and through patient chart reviews.

Participation

A convenience sample of 15 nurses and anesthesia providers were recruited from the outpatient surgery center to participate in the educational program. Inclusion in this study required participants to work in the outpatient clinic and provide direct patient care. Participation by providers was voluntary.

Chart reviews of patients receiving aromatherapy was limited to patients undergoing orthopedic procedures. Limiting the project to patients undergoing orthopedic procedures was selected due to

extensive research available on the use of aromatherapy in the treatment of nausea and anxiety for patients undergoing orthopedic surgical procedures.

Patients reviewed for the project were required to be at least 18 years of age and English-speaking at the time of the outpatient orthopedic surgery. Patients less than 18 years of age and patients with comorbid conditions affecting the respiratory tract, e.g., asthma, COPD, or patients who identified as having an allergy to aromatherapy products through chart review or patient statement were excluded.

Intervention

The aim of this project was to increase provider use of aromatherapy to relieve nausea or anxiety in a perioperative unit and to improve documentation of the use of aromatherapy. An educational program was created by the principal investigator (PI) providing education about the use of aromatherapy for treatment of nausea and anxiety in the perioperative unit and the documentation of the use of aromatherapy. The project used pre- and post-education questionnaires delivered via Google Forms™ to assess the healthcare participants' knowledge of the use of aromatherapy for relief of nausea and anxiety. Chart reviews by the PI were utilized to measure use and documentation of aromatherapy pre- and post-education.

Education

An asynchronous education program was provided to the participating healthcare providers detailing the use of aromatherapy to relieve nausea and anxiety, as well as detailing documentation of aromatherapy administration. The educational presentation created by the PI was available for participants to access at their convenience, using a VOIP protocol. The existing aromatherapy protocol, already in place in the EHR of the outpatient surgery center, was presented and reviewed. The importance of each healthcare provider in the perioperative unit adopting and using the existing protocol for use and documentation of aromatherapy was emphasized.

Educational materials included information about anxiety and nausea, the impact of anxiety and nausea on patients in the perioperative setting, how to measure patient anxiety, how to measure patient nausea, a review of aromatherapy with peppermint oil for nausea and lavender oil for anxiety, the

physiologic response to aromatherapy on nausea and anxiety in the perioperative setting, the means of administering aromatherapy, and instructions for proper aromatherapy documentation in the EHR.

Documentation

The existing aromatherapy protocol, already in place in the outpatient surgery center's EHR system, was presented and reviewed. The importance of each healthcare provider's role in adopting and using the existing protocol for documentation of aromatherapy in the perioperative setting was emphasized.

Implementation by providers

Upon completion of the educational program, nurses could administer aromatherapy in the perioperative unit without a physician or advanced practice provider order. All equipment and essential oils used in the project were provided by the facility.

Nurses obtained verbal consent from patients, assessed anxiety and/or nausea levels before aromatherapy administration, and documented patient assessment and aromatherapy patient education in the EHR. Thirty minutes after aromatherapy administration, nurses reassessed the level of anxiety and/or nausea and documented reassessment in the EHR. Analog visual anxiety and nausea scales (see Appendices A and B) were laminated and placed in all patient rooms and patient care areas to enable patients to quantify the level of nausea and/or anxiety.

Electronically documented process measures included the reason for use of aromatherapy, obtaining verbal consent, a pre-intervention score using the designated visual analog scale, a post-intervention score using the designated visual analog scale, the type of essential oil used, essential oil dilution, the carrier oil used, the application method, any adverse reactions, and aromatherapy patient education.

Measures

A retrospective chart review was conducted for the three months prior to project implementation to record use of aromatherapy for nausea and/or vomiting and documentation of aromatherapy prior to project implementation.

Provider Knowledge

Provider knowledge is defined as the participant's self-reported level of understanding regarding aromatherapy administration and documentation. This data was obtained from online surveys completed by providers prior to participation in the educational program and again, after viewing the education program. Survey responses were analyzed to compare healthcare providers' knowledge level before and after the aromatherapy education. A total score was calculated for each participant for the pre- and post-education surveys.

Following the presentation of the educational curriculum, the participants completed an anonymous online post-education survey. Survey responses were used to determine the level of provider's knowledge of aromatherapy after viewing the educational intervention.

Aromatherapy Documentation

Documentation of aromatherapy involves use of the existing protocol in the current EHR platform used by the facility. Documentation of aromatherapy use was obtained via chart review of all orthopedic patients' who met inclusion criteria during the implementation period. Demographic data, including age, race, and gender of patients receiving aromatherapy during the implementation period, was collected during chart reviews.

Patient Anxiety

Patient anxiety is defined as the patient's stated level of anxiety in the pre-operative setting. Documentation was obtained via retrospective chart review of all patients scheduled for orthopedic surgery and who met inclusion criteria. Providers used the 10-point visual analog scale to document levels of anxiety.

Patient Nausea

Patient nausea is defined as the patient's stated level of nausea in the pre-operative or post-operative setting. Documentation was obtained via retrospective chart review of all patients scheduled for orthopedic surgery and who met inclusion criteria. Providers used the visual FACES scale

to document the patient experience of nausea. Nausea levels obtained pre-intervention were categorized as “pre” and nausea levels obtained post-intervention were categorized as “post”.

Process Measures

Prior to administering aromatherapy, the healthcare provider noted patient complaints of symptoms of nausea and/or anxiety and assessed patient symptoms, allergies, and possible contraindications to aromatherapy. Patients were asked to give verbal consent to initiate aromatherapy. Aromatherapy was administered using two-three drops of essential oil on a cotton ball placed in a designated container for the patient to hold to their nose and inhale for three-four minutes. Nurses documented the reason for intervention, verification of verbal consent, pre-intervention nausea and anxiety scores using the designated tools, the type of essential oil used, the essential oil dilution percentage and the carrier oil used for dilution.

If the patient desired, the cotton ball could be refreshed with two-three drops of the selected essential oil every four hours. Nurses reassessed and documented post-intervention scores, using the designated tool, within 30 minutes of the initial aromatherapy intervention.

Aromatherapy containers were removed from patient space by patient request. To reverse or reduce aroma, nurses offered coffee beans to inhale and reduce sensory reactions; they recorded intervention in the EHR.

Patient education about aromatherapy was documented in the existing Education Teaching Record (ETR) of the facility. Documentation in the ETR includes patient/family identified learning needs, patient/family response to education, and the teaching method.

Analysis

Data reflecting pre-education and post-education survey scores for participants were analyzed using independent *t*-testing to determine mean knowledge scores. To ensure the *t*-test was appropriate, the analysis was repeated with the Mann-Whitney test, and the results were found to be identical to the independent *t*-test. Due to lack of identification of participants on the surveys, paired *t*-testing could not be utilized. Chi-square testing was used to determine the mean of nurse documentation in the electronic

health record over the three-month chart review period. All data was collected and analyzed using the Intellectus Statistics™ electronic software.

Ethical Considerations

The project was reviewed and approved by the Lenoir-Rhyne University Institutional Review Board (IRB) and the larger hospital system owning the outpatient surgery clinic. Participation was voluntary and participants could leave the project at any time. Completion of surveys implied consent.

Data was collected via a password protected online survey system before and after participant education to minimize participant burden. All participants were anonymous, minimizing bias in participant answers. The data was collected and stored using the Intellectus™ Statistics program.

The secondary outcome measure consisted of a chart review to evaluate nurse documentation of essential oil administration. The data was saved using the password protected Intellectus Statistics™ software.

A duplicate data set will be stored on a password-protected external drive to ensure safety in the event of damage to the original information. Data will be stored for five years after project completion and then destroyed.

There was no funding for this data collection. The facility used for implementation has established tools in the EHR for aromatherapy documentation and documentation of patient symptoms, including anxiety and nausea.

Results

Primary Outcomes

A two-tailed Mann-Whitney two-sample rank-sum test was conducted to examine whether there were significant score differences between pre-education and post-education surveys. Fifteen pre-education surveys were returned by the participants. Eleven post-education surveys were returned from the same participant group. The result of the two-tailed Mann-Whitney two-sample rank-sum test was significant based on an alpha value of 0.05, $U = 22.5$, $z = -3.26$, $p = .001$. The mean rank for pre-education surveys was 9.50, and the mean rank for post-education surveys was 18.95. This

distribution score suggests the pre-education survey was significantly different from the distribution of score for the post-education survey. The median for pre-education ($Mdn = 70.00$) was significantly lower than the median for post-education ($Mdn = 100.00$).

Table 1*Two-Tailed Mann-Whitney Test for Score by Pre- and Post-education*

Variable	Mean Rank		U	z	p
	Pre	Post			
Score	9.50	18.95	22.50	-3.26	.001

The result of the two-tailed independent samples t -test was significant based on an alpha value of 0.05, $t(17.31) = -5.02$, $p < .001$, indicating the null hypothesis can be rejected. This finding suggests the mean score was significantly different between the pre- and post-education scores.

Table 2*Two-Tailed Independent Samples t -Test for Score by Pre- and Post-education*

Variable	Pre		Post		t	p	d
	M	SD	M	SD			
Score	76.00	15.49	97.27	4.67	-5.02	<.001	1.86

Note: $N = 26$. Degrees of Freedom for the t -statistic = 17.31. d represents Cohen's d .

Secondary Outcomes

Of the 381 patient charts reviewed during the implementation period, four charts had documented aromatherapy use. One documented use was within three months before education, while three documented uses took place in the three months after education. Patient demographics obtained from individual electronic health records for the four patients include three Caucasian patients and one African American patient. All four patients were females ranging in age from 24–60. Three patients experienced nausea and one experienced anxiety. Peppermint essential oil was used for nausea, and lavender essential oil was used for anxiety. All charts had appropriate documentation of the essential oil used and the reason for the use of aromatherapy. However, charts contained incomplete documentation of patient consent and

patient education. Two patients had appropriate numerical rating documentation using the visual analog or FACES scales, while the other two charts were missing documentation for nausea scale. The only patient in the pre-intervention group had incomplete data in the EHR. No score or aromatherapy scale was used for the pre-aromatherapy administration, with the post-aromatherapy documentation being charted as “nausea decreased,” indicating the peppermint essential oil use resulted in diminished nausea experienced by the patient. One female in the post-intervention group who received aromatherapy for nausea had a pre-aromatherapy administration score of “5” and a post-aromatherapy administration score of “0” after the use of peppermint essential oil. One female in the post-intervention group was given aromatherapy for anxiety had a pre-aromatherapy administration score of “7” and a post-aromatherapy administration score of “6” after the use of lavender essential oil.

Discussion

Aromatherapy is a complementary and alternative therapy increasing in popularity in healthcare settings and used to reduce nausea and anxiety (Jaruzel et al., 2019). In previous studies, patients have been shown to prefer aromatherapy over medications (Karsten et al., 2020). Although aromatherapy is increasing in popularity, little information is available regarding provider knowledge of aromatherapy safety and proper administration in healthcare settings. This QI initiative aimed to assess and enhance provider knowledge of aromatherapy in an outpatient surgical setting where an aromatherapy protocol was previously established.

The use of asynchronous online education providing healthcare workers with evidence-based practice, facility protocols, nausea and anxiety scales, and electronic health record documentation led to a significant increase in healthcare provider knowledge of aromatherapy. The education provided in this project can be disseminated to other units within hospital facilities that share the same EHR platform.

Knowledge of aromatherapy administration can be enhanced for all healthcare providers throughout the hospital system, as the aromatherapy protocol is available in all healthcare units throughout the organization. Units within the hospital with access to aromatherapy use include radiology, mammography, cardiology, medical-surgical, intensive care, and the emergency department.

For future studies, in-person education may better emphasize the importance of documentation in the EHR by using hands-on training and active documentation on a sample patient EHR. This type of experience can enhance learning and memorization of steps for documentation. Due to the current COVID-19 pandemic, in-person education was not an option for this project.

Educating healthcare providers on current evidence-based practices and facility protocols increases knowledge, however, the increase in healthcare provider knowledge of aromatherapy did not translate into a significant increase in aromatherapy documentation in the EHR. This project can further benefit healthcare providers through incorporating assessments of healthcare providers' feelings toward aromatherapy use. Assessing providers' perceptions of aromatherapy could help evaluate their willingness to participate in increasing knowledge and their willingness to offer aromatherapy to patients.

Future research could be performed after the subsidence of the COVID-19 pandemic. The COVID-19 pandemic had a significant impact on the amount of testing, education and documentation required by the administration of the unit. These changes led to increased time spent with each patient and increased documentation requirements of nurses and anesthesia providers.

Limitations

The limitations of this study include incomplete participation from all participants (incomplete surveys). All participants came from one outpatient surgery center in western North Carolina. A lack of documentation of aromatherapy in the EHR limited the ability of the PI to analyze aromatherapy effects on patient nausea and anxiety appropriately.

This project is generalizable to outpatient surgery and other units within a hospital setting that allows aromatherapy administration for patients. This facility had a current aromatherapy policy; however, to recreate this project, an aromatherapy policy must be in place or created to ensure patient and healthcare provider safety and to ensure process measures remain consistent throughout the replication process.

Documentation in the electronic health record may be limited due to the COVID-19 pandemic, which requires a mandatory mask mandate on all healthcare providers, patients, and visitors in all hospital

settings, including outpatient surgery. This project only evaluated aromatherapy used in orthopedic patients. Future studies may benefit from reviewing various surgical patient populations for comparison.

The mandatory mask mandate for patients required by the government and healthcare facilities during the COVID-19 pandemic limited the use of aromatherapy by creating a barrier for inhalation of the essential oils.

Conclusion

The aromatherapy educational program provided an outpatient surgery center with the opportunity to enhance provider knowledge and improve patient care through the administration of aromatherapy. The program for aromatherapy education successfully enhanced knowledge and was well received by the staff involved in the multidisciplinary approach to complementary and alternative medicine. Although enhanced provider knowledge of aromatherapy and documentation was proven, there was no increase in the amount of aromatherapy documented. It is unknown whether this lack of documentation is due to the lack of provider compliance with documentation or due to a lack of patient willingness to use aromatherapy during their surgical visit. More research on aromatherapy in the surgical setting must be conducted to optimize patient safety, satisfaction, and postoperative outcomes.

Conflict of Interest Statement

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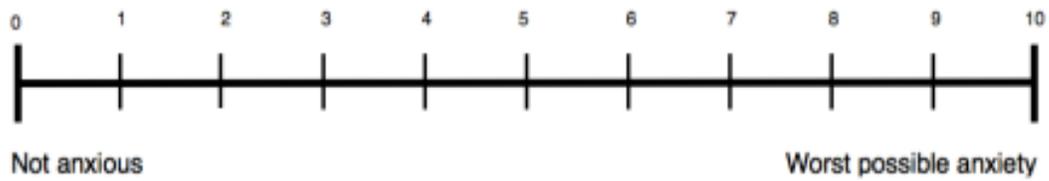
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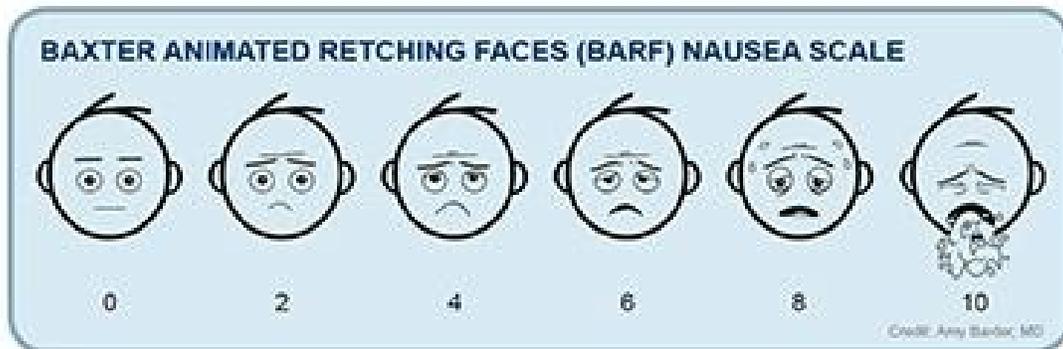
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Appendix A
Anxiety Scale



Adapted from (Traer-Martinez, 2019)

Appendix B
Nausea Scale



Adapted from LaTour, K. (2018, October 10).