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Essential Oils for Sleep among Cardiac Rehabilitation Patients

TEXAS HEALTH HARRIS METHODIST HOSPITAL
FORT WORTH, TEXAS

APRIL 26, 2017

PODUM PRESENTERS:
Brenda McDonnell, BSN, RN, CCAP, PCCN-K
Patricia Newcomb, PhD, RN, CPNP



 


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Why is sleep restorative?

- Neuron metabolism results in the accumulation of waste products in interstitial space surrounding cells of the brain.
- Brain cells are vulnerable to toxic effects of waste proteins.
- CSF circulates through the brain interchanging with interstitial fluid and removes waste proteins.
- Increased volume of interstitial fluid during sleep helps CSF clean waste proteins from the brain.

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Relationship between sleep and cardiovascular morbidity

- Poor quality sleep has been linked to cardiovascular morbidity globally.
- Evidence indicates that many heart failure (HF) patients who are discharged with sleep problems still have sleep problems one year later.
- Persistent sleep problems in cardiac patients is associated with all cause and cardiovascular re-admissions.
- Data from Rotterdam cohort study shows that over time clinical heart failure (but not objective cardiac dysfunction as measured by echocardiography) increases the risk for poor sleep quality.


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Essential Oils as a potential intervention for poor sleep quality


Weak evidence supports the use of some essential oils for sleep improvement.



Lavender
Lavandula hybrid var. Super





Bergamot
Citrus bergamia




Ylang-ylang
Cananga odorata

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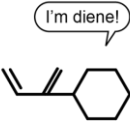



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Essential Oil Chemistry




Before Organic Exam




I'm diene!

After Organic Exam

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Essential Oil Chemistry

- It is the chemistry of an essential oil that determines its therapeutic properties.
- Essential oils, like all organic compounds, are made up of hydrocarbon molecules and can further be classified as terpenes, **alcohols**, **esters**, aldehydes, ketones, and phenols.
- Alcohols and Esters** are two of the major functional groups that are key to the therapeutic effects of the selected study oils.

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Essential Oil Chemistry

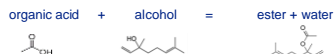
- **Linalol is an alcohol molecule** that acts as a hypnotic by inhibiting the chemical bonding of glutamate receptors in the cerebral cortex of the brain.
- A study on mice showed that linalol had depressant effects when the glutamate receptors were inhibited through binding.
- These receptors are responsible for the glutamate-mediated postsynaptic excitation of neural cells and when linalol inhibits binding a sedative effect is produced.

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Essential Oil Chemistry

- **Esters** are formed when an organic acid and an alcohol combine.



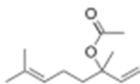
- Even though the method of action for esters is not fully understood, they are considered aromatically and therapeutically desirable.
- Esters are commonly accepted in the aromatherapy community as regulators of the nervous system and essential oils that contain esters are thought to be the most relaxing, balancing, and calming.

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Essential Oil Chemistry

Lavandula x intermedia
 (Lavandin Super)
 (Acetic acid + Linalol = Linalyl acetate)

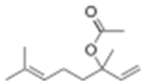


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Essential Oil Chemistry

Citrus bergamia
(Bergamot)
(Acetic acid + Linalol = Linalyl acetate)

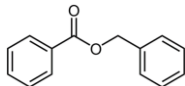


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Essential Oil Chemistry

Cananga odorata
(Ylang ylang)
(Benzoic acid + Benzyl alcohol = Benzyl benzoate)



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Essential Oil Chemistry


	<i>L. intermedia</i> Super	<i>C. bergamia</i>	<i>C. odorata</i>
Linalol	37.12%	10.63%	6.26%
Esters	30.37%	30.12%	57.93%

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Essential Oil Chemistry



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Purpose of the Study

- Compare the sleep quality of cardiac rehabilitation patients who inhale an essential oil mixture, including lavender, bergamot, and ylang-ylang, as part of their bedtime routine to the sleep quality of the same patients when they are not exposed to the essential oil mixture.

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Design and Methods

- Randomized, double-blind, cross-over study
- Sample of 43 outpatient cardiac rehabilitation patients
- Random allocation to treatment and placebo groups
- Placebo consisted of aromatic vehicle oils of the same color as the treatment

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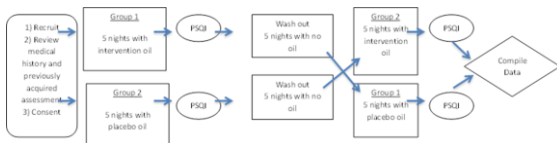
Design and Methods

- Cotton balls infused with the treatment or placebo mixture were placed in black mesh bags.
- Participants placed the bags at their bedside for 5 nights as part of their normal bedtime routine.
- After a one week wash-out period the participants crossed-over to the alternate group.

Measurement

- Pittsburgh Sleep Quality Index (PSQI)
- Good evidence for validity and reliability in the literature
- Well established and used frequently in sleep studies
- Lower PSQI scores indicate better sleep quality
- PSQI administered at the end of the treatment week and at the end of the placebo week
- Mean PSQI global scores after treatment and placebo conditions were compared using student's t-test

Diagram: Design, Method, and Measurement



43 Participants Analyzed

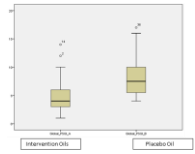
Gender:	12 Female	31 Male
Age:	Ranged from 43 years to 85 years with an average of 67 years.	
Sleep Time:	65% went to bed between 10pm and 11pm (7% went to bed later than 11pm).	
Time to Fall Asleep:	Ranged from 0-90 minutes at baseline with an average of 20 minutes.	
Hours of Sleep:	Ranged from 4-9 hours with an average of 7 hours.	

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Results: Quality of Sleep

- The mean PSQI global score when receiving the intervention oil was 4.9 and the mean PSQI global score when receiving placebo was 8.



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Results: Quality of Sleep

- Sleep quality during treatment was significantly better than sleep quality during placebo.

	Essential Oil Treatment	Placebo
Mean PSQI score	4.9	8
t-value for difference		-6.386
P value for difference		0.0001
Effect size (Cohen's d)	1.00 (Very large effect)	
Mean difference	3.1	
CI of the difference	2.12 to 4.08	

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Results: Hours of Sleep

- No significant difference between hours of sleep between the two conditions.

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Conclusion


- Effect of essential oil mixture on sleep quality was substantial.
- The quality of sleep, rather than sleep duration, was affected.
- Essential oils may be an inexpensive and effective nursing intervention and complimentary medicine to improve sleep among cardiac rehab patients.

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What questions do you have?



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References

- Buckle, J. (2015). *Clinical aromatherapy essential oils in healthcare* (3rd ed). St. Louis, MO: Elsevier.
- Chen HM, Clark AP. Sleep disturbances in people living with heart failure. *J Cardiovasc Nurs* 2007; 22: 177-85.
- Goel, N., Kim, H., Lao, R.P. (2005). An olfactory stimulus modifies nighttime sleep in young men and women. *Chronobiology International*, 22(5), 889-904.
- Johnsson P, Srostrom A, Sanderman R, Jaarsma T. The course of sleep problems in patients with heart failure and associations to rehospitalizations. *J Cardiovasc Nurs* 2015; 30: 403-10.
- Paparrigopoulos T, Tzavara C, Theleritis C, Soldatos C, Tountas Y. Physical activity may promote sleep in cardiac patients suffering from insomnia. *Int J Cardiology* 2010; 143:209-11.
- Rezaee, R., Hosseinzadeh, H. (2013) Saffron: from an aromatic natural product to a rewarding pharmacological agent. US National Library of Medicine National Institutes of Health. Retrieved on May 21, 2015 from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3637901/>

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References

- Stewart, D. (2005). *The chemistry of essential oils made simple*. Marble Hill, MO: Care Publications.
- The Society for Cardiovascular Angiography and Interventions (SCAI) (2014, November15). Sleep and cardiovascular disease. Retrieved from http://www.secondscount.org/healthy-living/healthy-living-detail?cid=828f98c1-4cb1-4e03-8af3-2e433847be3ff_VTFPHBIOU
- Wood, K. (2003, March). The promise of aromatherapy: Essential oils have been shown in clinical trials to soothe some chronic ills brought on by old age. *Focus on Caregiving*, 29(3), 47-48.
- Xie L, Kang H, Xu Q, Chen MJ, Liao Y, Thiyagarajan M, et al. Sleep drives metabolite clearance from the adult brain. *Science*, 342: 373-77.
- Zuurbier LA, Luik AI, Leening MJ, Hofman A, Freak-Poli R, Franco OH, Stricker BH, Tiemeier H. Associations of heart failure with sleep quality: the Rotterdam Study. *J Clin Sleep Med* 2015;11(2):117-121.
- Recipe for essential oil mixture is proprietary

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