

The Influence of Jasmine Essential Oil Through Foot Submersion and Inhalation Method in Elderly Sleep Quality and Quantity

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Keywords: Jasmine Essential Oil, Foot Submersion Method, Inhalation Method, Sleep Quality, Sleep Quantity, The Elderly.

Abstract: The elderly undergo the circadian function alteration, with the result that they get disruption of the sleep and wake-up regulation. Jasmine essential oil is used as one of the non-pharmacological interventions for insomnia. The aim of this research is to know the difference of Jasmine essential oil through foot submersion and inhalation method in the elderly sleep quality and quantity. The used research design was quasi experiment. The number of 21 respondents was obtained with the design of total sampling. Then, the respondents were divided into three groups foot submersion, inhalation, and control group. The data collections of the elderly sleep quality and quantity used PSQI questionnaire. The dependent variables were the elderly sleep quality and quantity; the independent variable was the use of Jasmine essential oil in foot submersion and inhalation method. The obtained data were analyzed with chi-square test, significance level $p=0,05$. The result of statistical test using Chi-square test is $p=1,00$ which means there is no difference of Jasmine essential oil given through foot submersion and inhalation method for the elderly sleep quality and quantity. For the other researchers, they can research about the role of peer group in the guidance of the elderly's psychology as an effort to fulfill the sleep need.

1 BACKGROUND

In elder, the ability of organs and systems within the body decrease, with the result that function deterioration is occurred (Santoso & Andar 2009). One of the main disruptions in elderly is insomnia which is defined with inability to get sleep inspite of having will to sleep (Beare & Micey, 2006). According to the gaining of initial data in UPT PSLU Pasuruan, the number of 25 elders got disturbance of sleep quality and quantity.

In 2009, elder in Indonesia numbered 20.547.541 (U.S Census Bureau International Data Base, 2009 dalam KPPA, without year). Having 11,4% of elder among the societies, East Java included in 5 province with the greatest number of elders in Indonesia (BPS SUSENAS, 2007 in KPPA, without year).

Sleep disturbance in elder belonged to 50% of 65-year-old people or elder who live in their own house and 66% people living in long-term care facilitation. Collecting initial data in UPT PSLU Pasuruan was obtained total of 62% (25 from 40

elders who were interviewed) with disturbance of sleep quality and quantity, twenty-one elders (52%) with long sleep latency, and 47% (19 elders) owning sleep fragmentation or night awakening. Elder with sleep quantity less than 6 hours was 60% (24 elders).

Internal factors leading sleep pattern disruption are psychological stress, nerve development, and health; moreover, external factors predisposing sleep pattern disturbance are environmental change and social function (Widiarti, et al., 2011).

The advantage of sleep is to restore the body function until optimum functional level (Beare & Micey, 2006). Person with inadequate sleep can get effect as forgetfulness, confusion, disorientation, mood influence, neurocognitive function, and homeostasis (Fismer & Pilkington, 2012).

One of the non-pharmacological interventions for sleep disturbance is the use of essential-oil aroma (Cuellar, et al., 2007). Essential oil of aromacare has main effect through skin and sense of smell (inhalation) (Johannessen, 2013). Essential oil can be used through foot submersion and inhalation (Fismer & Pilkington, 2012).

The application of essential oil in foot submersion with warm water can decrease core body temperature (Liao, et al., 2013). Warm sensation in the skin can activate anterior preoptic hypothalamic, the key of sleep regulation (Liao, et al., 2013). Essential oil used through skin can enter the pores, and it will be distributed to whole the body vessels (Tahir 2009 in Nuryanah, 2010).

Jasmine has benefit for insomnia (Smith, 2011). Jasmine essential oil affects in alfa and delta wave biorhythm; therefore, it causes calmness, harmony, and sleep sensation (Pitman, 2004).

In the implementation of giving Jasmine essential oil to gain the elder sleep quality and quantity, Roy's adaptation theory was used in this theoretical approach. This theory guides individual to maintain and enhance adaptive behaviour, as well as to change from ineffective to effective behaviour (Stanhope & Lancaster, 2004). These aims can be achieved with nurse's effort to change, manipulate, or block the stress producing stimulus in patient. The nursing intervention helps client get more effective coping with reducing strees (Basavanthappa, 2007).

2 METHODS

This study was held on December 10th- 23th 2014 in UPT PSLU Pasuruan. Research design used quasy experiment with pre-post test design. In this research, the number of 21 elders was divided into three groups—intervention group of foot submersion, inhalation intervention group, and control group. Group distribution used matching based on age classification according to WHO—elderly (60-74 years old) and old (75-90 years old). Pretest and posttest data in those groups were elder sleep quality and quantity. This population was all of the elders with insomnia in the number of 21 elders.

Quantity of sample was 21 people. Total sampling was used in sampling technique. Inclusion criteria were sixty to ninety years old, SPMSQ value at 0-2 (normal mental function), cooperative manner, and the willingness to sign for informed consent. Elder having medical hystory of asma and using other types of essential oil for handling insomnia came as exclusion criteria.

Dependent variables were elder sleep quality and quantity; likewise, independent variables were the using of jasmine essential oil through foot submersion method and inhalation method. Research instruments applied PSQI questionnaire (*The Pittsburg Sleep Quality Index*) for measuring sleep quality and pattern in adult, sleep quantity

observation sheet, and standard of operational procedure of giving jasmine essential oil through foot submersion and inhalation.

Every group had been giving intervention of giving jasmine essential oil through foot submersion or inhalation for 10 days. The intervention was implemented with coming to every dormitory of respondents at 5-7 PM.

The posttest result of foot submersion and inhalation group was analyzed with statistical test of Chi-square to identify the difference jasmine essential-oil influence between through foot submersion and inhalation on elder sleep quality and quantity. Significant level in this study was 5% ($\alpha = 0,05$). If only there were $p<0,05$, H_1 was accepted. However, $p\geq 0,05$ meant that H_1 was rejected.

3 RESULTS

The statistic result of post intervention using Chi-square was $p=0,100$ with significant level of 0,05, by that H_1 was rejected. This described that there was no difference of influence on sleep quantity of elder given with jasmine essential oil between through foot-submersion and inhalation method.

From Chi-square statistic test of post intervention, the result showed $p=0,100$ with significant level of 0,05 which meant $0,100>0,05$; accordingly, H_1 was rejected. In mean, there was no difference of influence on sleep quality of elder given with jasmine essential oil between through

Table 1: Identification of The Difference of Jasmine Essential Oil Influence Between Through Foot Submersion and Inhalation.

No	Identification of The Difference of Jasmine Essential Oil Influence Between Through Foot Submersion and Inhalation	Chi-square Statistic Test result of Post Intervention
1	The Difference of Jasmine Essential Oil Influence Through Foot Submersion on elder sleep quantity	$p=0,100$
2	The Difference of Jasmine Essential Oil Influence Through Foot Submersion on elder sleep quality	$p=0,100$

foot-submersion and inhalation method.

4 DISCUSSION

After comparing the influence of both the groups with using Chi-square, p value was 1,00 indicating that there was no difference of influence on sleep quantity of elder given with jasmine essential oil between through foot-submersion and inhalation method.

In the same test for another dependent variable, Chi-square statistic test demonstrated p=1,00, so that there was no difference of influence on sleep quantity of elder given with jasmine essential oil between through foot-submersion and inhalation method.

Investigation purposed to know elder's sleep quality in each respondents within both the groups got information that respondent lacking sleep quantity also suffered lack of sleep quality. This case was caused as sleep quantity was involved in the component of PSQI score count.

Elder's circadian rhythm underwent both aging process and sleep circle disturbance. Sleep pattern disturbance in elder is caused by internal factors (illness and psychological stress) as well as external factors—environmental alteration and social function. Elder's brain alteration due to aging process induces excitation and inhibition within nerve system. The inhibition function is decrease along with aging process. Frontal cortex also affects sleep regulation device; hence, aging process can lead the alteration of sleep and awakening. The change of sleep and awakening in elder can be triggered by brain alteration involving cell death except frontal cortex, blood flow reduction, and neurotransmitter mechanism alteration as well as synaptic (Widiarti, et al., 2011).

Aging process promotes elder to get sleep disturbance. Sleep deferment, sleep latency, can affect circadian circle alteration in elder (Widiarti, et al., 2011). The research conducted by Pressman and Fry (1988) and Lankford (1994) showed that first NREM sleep level increased in elder. In this stage, elder was often awakened by sound, touch, or light. First NREM sleep level disruption was able to induce sleep fragmentation. Elder suffered reduction of total and depth in the third and fourth sleep level. Nonetheless, this condition was almost not seen in the fourth NREM sleep level. The alteration could affect elder's sleep efficiency (Widiarti, et al., 2011).

From the statistic test, the result showed that there was no difference of influence on sleep quality

and quantity of elder given with jasmine essential oil between through foot-submersion and inhalation method.

Sleep need fulfillment, which included quantity and quality of sleep, was affected by some factors (environment, physical condition, disease, and aging process). Regarding Sister Calista Roy's adaptation theory, that everyone is integrated with whole of his psychology, social component, and constant interaction with his circle. Thus, suppose that someone can interact and achieve stimulus with adaptive coping, there will appear adaptive behaviour and its reverse.

Age factor would influence the success of the giving of jasmine essential oil in elevating elder's sleep quality and quantity, for the simple reason that the elder someone was, the less the biological function, as circadian rhythm function, was.

5 CONCLUSIONS

There was no difference of influence of jasmine essential oil given between through foot submersion and inhalation method in elevating elder's sleep quantity and quality.

REFERENCES

- Amir, Nurmiati, 2007. 'Gangguan tidur pada lanjut usia diagnosis dan penatalaksanaan', *Cermin Dunia Kedokteran*, no. 157, hal. 196-206.
- Arifin, Zainal, 2011. *Analisis hubungan kualitas tidur dengan kadar glukosa darah pasien diabetes mellitus tipe 2 di rumah sakit umum propinsi Nusa Tenggara Barat*, Tesis, Universitas Indonesia. Jakarta.
- Arikunto, Suharsimi, 2006. *Prosedur penelitian: suatu pendekatan praktik*, PT Rineka Cipta. Jakarta, edisi revisi VI.
- Azizah, Lilik Ma'rifatul, 2011. *Keperawatan lanjut usia, Graha Ilmu*. Yogyakarta.
- Badan Perencanaan Pembangunan Nasional, Badan Pusat Statistik & United Nations Population Fund, 2013. *Proyeksi penduduk Indonesia:Indonesia population projection 2010-2035*, Badan Pusat Statistik. Jakarta.
- Balchin, Maria Lis, 2006. *Aromatherapy science*, Pharmaceutical Press. USA.
- Basavanhappa, BT, 2007. *Psychiatric mental health nursing*, Jaypee Brothers Medical Publisher. Jaypee.
- Bastable, Susan B., 2002. *Perawat sebagai pendidik: prinsip-prinsip pengajaran & pembelajaran*, EGC. Jakarta.
- Beare, Patricia G. & Micey Staney, 2006. *Buku ajar keperawatan gerontik*, EGC. Jakarta, edisi revisi VI.

- Bensouilah, Janetta & Philippa Buck, 2006. *Aromadermatology: aromatherapy in the treatment and care of common skin conditions*, Radcliffe Publishing Ltd. United Kingdom.
- Bond, Annie B., 2005. *Home enlightenment practical, earth-friendly advice for creating a nurturing, healthy, and toxin-free home and lifestyle*, Holtzbrinck. USA.
- Budiarto, Eko, 2001. *Biostatistika untuk kedokteran dan kesehatan masyarakat*, EGC. Jakarta.
- Burns, N & Grove, S, 1999. *Understanding nursing research*, W.B. Saunders. Philadelphia, edisi 2.
- Butterworth, Heinemann, 2005. *Nursing models for practice*, Elsevier Limited. China.
- Cuellar, Norma G., Rogers, Ann E. & Hisghman, Virginia, 2007. Evidence based research of complementary and alternative medicine (CAM) for sleep in the community dwelling older adult, *Geriatric Nursing*, vol. 28, no. 1, hal.46-52.
- Chechinel, Valdir & Filho, 2012. *Plant bioactives and drug discovery: principles, practice, and perspectives*, John Wiley & Sons Inc. Canada.
- Christensen, Paula J & Janet W. K., 2009. *Proses keperawatan aplikasi model konseptual*, EGC. Jakarta, edisi 4.
- Devereux, Charla, 2002. *Aromatherapy: essential oils and how to use them*, An Eddison-Sadd Eddition. United States.
- Efendi , Ferry & Makhfudli, 2009. *Keperawatan kesehatan komunitas: teori dan praktik dalam keperawatan*, Salemba Medika. Jakarta.
- Fismer, Kate Louise & Pilkington, Karen, 2012. Lavender and sleep: a systemic review of the evidence, *European Journal of Integrative Medicine*, hal. e436-e447.
- Guyton, Arthur C, 2012. *Fisiologi manusia dan mekanisme penyakit*, EGC. Jakarta, edisi 3.
- Guyton, 2007. *Buku Ajar Fisiologi kedokteran*, EGC. jakarta.
- Hajibagheri, Ali, babaii, Atye & Hajbaghery, Mohsen Adib, 2014 Effect of rosa damascene aromatherapy on sleep quality in cardiac patients: a randomized controlled trial, *Complementary Therapies in Clinical Practice*, vol. 20, hal. 159-163.
- Harper, David G., Stopa, Edward G., MvKee, Ann C., Satlin, Andrew, Fish, David, Volicer, Ladislav, 2003. Dementia severity and lewy bodies affect circardia rythm in Alzheimer disease, *Neurobiology of Aging*, vol. 25, hal. 771-781.
- Hasan, Iqbal, 2006. *Analisis data penelitian dengan statistik*, Bumi Aksara. Jakarta.
- Hidayat, A.A. 2006. *Pengantar kebutuhan dasar manusia*, Salemba Medika. Jakarta.
- Hidayat, A. Aziz Alimul, 2007. *Metode penelitian keperawatan dan teknik analisis data*, Salemba Medika. Jakarta.
- Hidayat, A. Azis Alimul, 2008. *Pengantar kebutuhan dasar manusia: aplikasi konspe dan proses keperawatan buku 2*, Salemba Medika. Jakarta.
- Hidayat, A.A., 2006. *Pengantar kebutuhan dasar manusia*, Salemba Medika. Jakarta.
- Johannessen, 2013. Nurses experiece of aromatherapy use with dementia patients experiencing disturbed sleep patterns. An action research project, *Complementary Therapies in Clinical Practice*, vol. 19, hal. 209-213.
- Kementrian Pemberdayaan Perempuan dan Perlindungan Anak, tanpa tahun, *Penduduk lanjut usia*, Kementrian Pemberdayaan Perempuan dan Perlindungan Anak, diakses 9 September 2014, <<http://menegpp.go.id/v2/index.php/datadaninformasi/kependudukan?download=9%3Apenduduk-lanjut-usia>>.
- Kozier et al., 2010. Buku Ajar Fundamental Keperawatan: Konsep, Proses dan Praktik, EGC. Jakarta.
- Kristyarini, Dyah & Erva Elli Kristanti, 2011. Pengaruh rendam air hangat pada kaki terhadap kuantitas tidur pada lansia yang mengalami gangguan tidur di panti Wredha Santo Yoseph Kediri, *Asuhan Kesehatan Jurnal Penelitian Akademi Kesehatan Rajewesi Bojonegoro* 5 (3), hal 30-34.
- Kurnia, Anggraini Dwi, et al., 2009. Aromaterapi bunga laveneder memperbaiki kualitas tidur pada lansia, *Jurnal Kedokteran Brawijaya*, Vol. XXV, No. 2, Agustus 2009, hal 83-86.
- Lanywati, E., 2001. *Insomnia, Gangguan Sulit Tidur*, EGC. Jakarta.
- Lavabre, Marcel, 199., *Aromatherapy workbook*, Healing Arts Press. Canada.
- Liao, Wen-Chun, 2002. Effects of passive body heating on body temperature and sleep regulation in the elderly: a systematic review, *International Journal of Nursing Studies* 39, hal. 803-810.
- Liao, Wen-Chun, Wang, Lee, Kuo, Ching-Pyng, Chyi Lo & Chiu, Ming-Jang, 2013. Effect of a warm footbath before bedtime on body temperature and sleep: an experimental crossover trial, *International Journal of Nursing Studies*, vol. 50, hal. 1607-1616.
- Maas, Paula & Deborah Mitchell, 1997. *The natural health guide to headache relief: the definitive handbook of natural remedies for treating every kind of headache pain*, Pocket Books, New York.
- Martin, Ingrid, 2007. *Aromatherapy for massage practitioners*, Lippincot William & Wilkins. United States of America.
- Maryam, R.Siti, Mia Fatma Ekasari, Rosidawati, Ahmad Jubaudi, Irwan Batubara, 2008. *Mengenal usia lanjut dan perawatannya*, Salemba Medika. Jakarta.
- Notoatmodjo, Soekidjo, 2010. *Metodologi penelitian kesehatan*, Rineka Cipta. Jakarta.
- Nursalam, 2008. *Konsep dan penerapan metodologi penelitian ilmu keperawatan: pedoman skripsi, tesis, dan instrumen penelitian keperawatan*, Salemba Medika. Jakarta, edisi 3.
- Nursalam, 2013. *Metodologi penelitian ilmu keperawatan: pendekatan praktik*, Salemba Medika. Jakarta.
- Nuryanah, 2010. *Perbandingan efektivitas kompres air hangat dan aromaterapi jasmine terhadap penurunan tingkat nyeri menstruasi (disminore) pada siswi SMP GIKI 2 surabaya*, Skripsi, Surabaya. Universitas Airlangga.

- Pitman, Vicki, 2004. *Aromatherapy: a practical approach*, Nelson Thornes. United Kingdom.
- Prasaja, Andrean, 2009. *Ayo Bangun : dengan bugar karena tidur yang bera*, Mizan. Jakarta.
- Raymann, Roy J.E.M, Dick F. Swaab, Eus J.W. Van Someren, 2007. Skin temperature and sleep –onset latency: changes with age and insomnia, *Physiology & Behaviour* 90, hal. 257-266.
- Roepke, Susan K. & Israel, Sonia Ancoli, 2010. Sleep disorder in the elderly. *Indian J Med res* 131, February 2010, pp 302-310.,
- Saeki, Y., 2000. The effect of foot-bath with or without the essential oil of lavender on the autonomic nervous system: a randomized trial, *Complementary Therapies in Medicine*, vol. 8, hal. 2-7.
- Santoso, Hanna & Andar Ismail, 2009. *Memahami krisis usia lanjut: uraian medis & pedagogis-pastoral*, Gunung Mulia. Jakarta.
- Sugiyono, 2007. *Metode penelitian kuantitatif kualitatif dan R&D*, Alfabeta. Bandung.
- Sugiyono, 2010. *Statistika untuk penelitian*, Alfabeta. Bandung.
- Smith, Jacki, 2011. *Conventary magic with candles, oils, and herbs*, Red Wheel/Weir LLC. USA.
- Smyth, Carole, et al., 2007. The Pittsburgh sleep quality index (PSQI), *The Hartford Institute for Geriatric Nursing*, Issue Number 6.1.
- Stanhope, M., & Lancaster, J., 2004. *Community and public health nursing*, Mosby Inc. St. Louis, 6th ed.
- Tarwoto, & Wartonah, 2010. *Kebutuhan dasar manusia dan poses keperawatan tarwoto dan wartonah*, Salemba Medika. Jakarta, edisi 4.
- Tomey, Ann Marriner & Martha R. Alligood, 2006. *Nursing theorists and their work seven editor*, Mosby Elsevier. St. Lous Missouri.
- Wavy, Wong Wai Yi, 2008. *The relationship between time management, perceived stress, sleep quality and academic performance among university student*. Thesis, Hongkong. Hong Kong Baptis University.
- Widiarti, Dwi, Fruriolina Ariani, Anastasia Onny Tampubolon & Ramona P. Kapoh (ed.), 2011. *Asuhan keperawatan geriatrik: diagnosis NANDA, kriteria hasil NOC & intervensi NIC*, EGC. Jakarta.
- Wilson, Roberta, 2002. *Aromatherapy for vibrant health and beauty*, Roberta Wilson date. United States.