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Independent-Nursing Activities: Aromatherapy, Hand Massage, and Music Therapy for Insomnia Elderly

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Abstract. The elderly are an age group presenting a substantial risk of experiencing sleep problems. About 81.6% of the elderly from the author's previous research showed poor sleep quality contributed to various diseases. The current approaches regarding sleep hygiene in society are keen to start mostly with an alternative or complementary therapy rather than consuming sleeping pills. Previous studies showed the possibility of strengthening productivity by combining three-intervention of nursing to relax the body and stimulate the brain's waves for sleeping. **Method:** This case study aimed to analyze the application of evidence-based practice as the primary intervention in dealing with Insomnia elderly at one of the social institutions in 2019. The procedure was a combination of aromatherapy, hand massage, and music therapy for 30-minute each repetition five times a week for five weeks at the same time for three women with sleep disorders: a Chinese senior (Mrs. S, 79 y/o), a wheelchair user (Mrs. N, 76 y/o), and well-spoken elderly (Mrs. A, 60 y/o). The therapy was measured subjectively and objectively amid participants' opinions, achievement of nursing outcomes, and the Pittsburgh Sleep Quality Index (PSQI) instrument within three periods. **Result:** The assessment in PSQI showed a significant-decreasing score for each participant: (1) 19-9-6, (2) 13-9-5, and (3) 18-10-5, respectively, during the pre-mid-post assessment. This modified intervention was provided to enhance the effectiveness of therapy from the previous study such as the lengthy duration, frequency, and scheduling. **Conclusion:** Social institutions as a form of service for the elderly can encourage nurses or nursing students to apply this combined intervention to overcome the problem of Insomnia. The recommendation is to continue playing passive music at night as a bedtime ritual regularly performed each day. The benefits are reducing pre-bedtime (sleep onset latency), improving sleep quality, and allowing older people to be better and more productive during the day.

Keywords: Aromatherapy, Elderly, Massage, Music Therapy, Sleep Quality

Introduction

The percentage of the elderly in the world has increased and Indonesia is ranked 74th with an elderly population of 8.2%, projected to be 19.2% by 2050 (HelpAge International, 2015). Statistical data also shows an increase in Life Expectancy (UHH) in Indonesia, namely from 68.6 years to 70.8 years (period 2004–2015), and is estimated in 2030–2035 to 72.2 years (Kemenkes RI, 2016). Prolonged insomnia can put the elderly at higher risk of accidents and many difficulties in social or family matters. The main problem for the elderly is the fulfilment of health service needs so efforts are needed to improve, prevent, and maintain health in addition to healing and recovery efforts (PMK No. 25 of 2016). The decline in sleep quality is one of the complaints that is often

experienced by the elderly in social institutions. Potter et al., (2013) mention that about 20–50% of reports annually in the world of sleep disorders and about 17% with severe conditions. Based on the author's previous research, there are 81.6% of the elderly living in social institutions –PSTW has poor sleep quality (p = 0.001) (Annisa & Wati, 2020).

The manifestations of sleep changes in the elderly showed in the N stage –NREM (non-rapid eye movement) and R stage –REM (rapid eye movement). Stage R experiences shortening (easy awakening and risks nocturia), stage N1 undergoes lengthening (difficulty starting sleep), stage N3 decreases progressively (sleep is reduced), and stage N4 decreases to almost nothing (difficulty sleeping well) (Hanifa et al., 2016; Miller, 2012; Touhy & Jett, 2014). The intervention of elderly sleep disorders can be done with nonpharmacological and pharmacological approaches (Sarikaya & Oguz, 2016). With nonpharmacological methods, complementary, or other alternative therapies can be carried out to prevent and overcome the sleep problems of the elderly.

A series of these types of nonpharmacological interventions can be facilitated by nurses according to one of the guidelines compiled by Bulechek, Butcher, & Dochterman (2013), namely the Nursing Intervention Classification (NIC). Nightingale also emphasizes the importance of developing environments for healing, such as music therapy, aromatherapy with essential oil, hypnotherapy, and others like massage therapy, acupuncture, or cupping (Widyatuti, 2008). To overcome the problem of insomnia in the elderly, the author applies one of the evidence-based practices of nursing, namely hand massage with essential aromatherapy and music therapy (Choi, 2015).

This three-modified therapy is combined for sleep-promoting of the elderly person. First, massage therapy can usher in emotional effects through the touch of the hand because it is quite easy to do as well as activating most of the cerebral cortex (Choi, 2015). Hand massage therapy is supported by the theory of comfort (progressively lowered stress threshold theory or PLST) as a mechanism to reduce the stress response by inhibiting the endocrine system in producing stress hormones (Harris & Richards, 2010). Second, aromatherapy is well-known in complementary therapies for its ability to stimulate blood circulation in muscles and other tissues, promote relaxation, and reduce stress (Snyder & Lindquistx, 2009 in Choi, 2015). Third, passive music therapy has been shown to improve the quality of sleep of the elderly given during resting, sitting, or lying down positions as a lullaby (20.00–21.00) which contains melodies and relaxation rhythms, such as the sound of water (Sarikaya & Oguz, 2016). Therefore, the use of deep sleep music can stimulate brain wave resonance (delta) and be supported by the effect of hand massage with aromatherapy so that the elderly enter deep sleep quickly.

Several studies have shown the benefit of each method in enhancing sleep quality in the elderly. This case report will describe a case of using a combined intervention: aromatherapy, hand massage, and music therapy, to ensure the effectiveness of therapy from the previous study such as the lengthy duration, frequency, and scheduling. It will be proven by lowering the sleep score in the Pittsburgh Sleep Quality Index (PSQI) instrument during the intervention, indicating sleep quality.

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Case Presentation

We reported a case of three female-observed patients with insomnia, aged 60-79, who lived in the DKI Jakarta social institution. The patients have been opted by using purposeful sampling as screened in the previous study to be managed deeply by the clinical student (author). Two patients lived in the same room, while one lived in a different one and they were pointed as the most communicative person from the two rooms that the author assigned. All patients had similar sleeping problems as described in **Table 1**. The patients were assessed with the tool of Pittsburgh Sleep Quality Index (PSQI) followed by the intervention of this modified therapy: a combination of aromatherapy, hand massage, and music therapy, for 30 minutes each repetition five times a week for five weeks at the same time (between 11 AM and 2 PM). The purpose was to increase the feeling of comfort before going to bed physically and psychologically and to stimulate delta wave resonance, affecting the client's sleep pattern later. The sleep categories and investigational characteristics are shown in **Table 2**.

Intervention or Clinical Examination

Implementing of this modified therapy, which combines aromatherapy, hand massage, and music therapy, can provide a therapeutic effect on clients by suppressing stress and increasing relaxation. Choi (2015) carried out this study by combining music therapy and aromatherapy hand massage twice a week for 20 minutes each for a period of four weeks. The oil used consists of a mixture of chamomile, lavender, and jojoba extracts in a ratio of 2mL:2mL:100mL (sequentially).

Preparation

Hand massage was done with three techniques: effleurage, friction, and petrissage on the wrist, palm, back of the hand, and fingers (**Figure 1**). The music offered to clients consists of two songs; relaxing sleep music-nature sounds and baby bedtime music. However, the authors modified the intervention based on the results of further discussion, such as increasing the duration of massage to 30 minutes, the frequency of five times a week, and repetition for five weeks. The evaluation was carried out at the fourth and fifth week with PSQI screening.

Table 1. Sleep Assessment of The Clients

Sleep Difficulty(s)	Mrs. S	Mrs. N	Mrs. A	Reason(s)
Waking up at night	Yes	Yes	Yes	Noise, mattress movement, voiding sensation, or pain
Trouble sleeping well	Yes	Yes	Yes	
Difficulty getting to sleep	Yes	Yes	Yes	
Sleepy in the morning or afternoon	Yes	Yes	Yes	

Application

While doing this intervention, the authors used Nitrile gloves to maximize oil absorption for the client's skin. Music played according to the agreement with the client, namely relaxing sleep music-nature sounds. Music therapy will be more effective if it is done for more than three weeks (Wang et al., 2014). The results of the five-week trial showed that there was a change in PSQI scores in clients. The author believes that this is

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due to the modification in the procedure from the previous study. ***First***, therapy took 30 minutes instead of 20 minutes. ***Second***, the therapy was given five times a week instead of twice a week. ***Third***, therapy continued until the fifth week, which should have been sufficient for four weeks. In addition, this PSQI measurement tool was better used in the elderly with good cognitive status and needs to be observed directly by nurses to validate the answers to each item. This was done because the subjectivity of the measuring instrument is quite high.

Challenge

The difficulties encountered during the intervention were related to the sleeping environment. It was influenced several times by other elderly people's screams, nursing student visits, the presence of ants in the bed, and the condition of clients with acute health problems (diarrheic, hyperthermia, and ineffective airway clearance). These challenges may have an impact on the therapy's optimization.

Figure 1 Guideline for The Modified Intervention

Ethical consideration: The participants in this study have understood and agreed to the use of personal data related to the writing of scientific articles. The participants also gave

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informed consent consciously regarding the use of the data obtained for the preparation of articles to be published in scientific journals.

Results

Interpretation of sleep quality before and after therapy was obtained by following the PSQI scoring guidelines from the University of Pittsburgh including good sleep quality (total score of 5) and poor sleep quality (total score >5). The decrease in PSQI scores from 4 to 10 points occurred after intervention in those clients for five weeks with a frequency of five times per week at the same time span. This is in line with the research of Sarikaya & Oguz, (2016) which showed a change in PSQI scores after music therapy was carried out in the elderly in nursing homes: showed with Standard Deviations (SD) mean of 4.41±1.60 from 5.19±1.75. Researchers Park, Chun, & Kwak (2016) proved that hand massage therapy with essential oils can improve sleep quality. Other studies have also shown the effectiveness of therapy in reducing anxiety thereby promoting a sense of comfort in the elderly (Choi, 2015).

Table 2. Client PSQI Evaluation Results

Category(s)	Score		
	Pre-Intervention	End of Week 4	End of Week 5
Sleep Duration			
Mrs. S	3	0	0
Mrs. N	1	1	0
Mrs. A	3	1	0
Sleep Disturbances			
Mrs. S	3	2	2
Mrs. N	2	1	1
Mrs. A	3	2	1
Sleep Latency			
Mrs. S	3	2	1
Mrs. N	3	2	1
Mrs. A	3	2	1
Daytime Dysfunction			
Mrs. S	2	1	0
Mrs. N	2	1	0
Mrs. A	2	1	0
Habitual Sleep Efficiency			
Mrs. S	2	0	0
Mrs. N	0	0	0
Mrs. A	1	0	0
Subjective Sleep Quality			
Mrs. S	3	1	0
Mrs. N	2	1	0
Mrs. A	3	1	0
Use of Sleeping Medication			
Mrs. S	3	3	3
Mrs. N	3	3	3
Mrs. A	3	3	3
Total Score			
Mrs. S	19	9	6
Mrs. N	13	9	5
Mrs. A	18	10	5

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Discussion

We divided the deep understanding from the survey above into four categories as stated in the origin journal of the PSQI instrument. In the next step, we do correlations between human physiology facts and real-time conditions from public elderly facility care.

Analyzing Based on PSQI Instrument

The analysis of changes in the quality of sleep in the elderly based on the PSQI score can be analyzed through a ***seven-item component approach***. The first category of the instrument is ***sleep duration***. Q4 items that represent this component are related to the total sleep time of the elderly at night. The evaluation of the superior intervention showed a decrease in scores on the sleep duration component by 2-3 points with an average sleep duration of 7 hours. Tel research at the Turkish family health center proved that there was a change in sleep duration of 5–7 hours (mean 6.2 hours a day) with 78% of the elderly experiencing sleep disorders and 73.3% having poor sleep quality (Tel, 2013).

Sleep duration is related to the size of the risk of death in the elderly. Research by Dehghankar, Ghorbani, Yekefallah, Hajkarimbaba, & Rostampour (2018) in Iran found that 84.5% of the elderly with poor sleep quality had a chronic physical illness ($p < 0.001$). This is evident in the three clients who have hypertension or arthritis. The cohort study conducted by da Silva et al., (2016) with a comprehensive meta-analysis proves that sleep duration of fewer than 6 hours (short sleep duration) or more than 10 hours (long sleep duration) is associated with an increase in all causes of death, such as cardiovascular disease, diabetes, obesity, and poor health status. poor (95% CI (Confidence Interval)). Research by Annisa & Wati (2020) obtained an overview of sleep duration with a mean of 1.15 and SD of 1.132, namely < 6 hours and 5 hours (95% CI and $p = 0.001$) which were considered quite good. Therefore, adequate sleep is one of the targets in promoting healthy sleep for the elderly.

The second category is ***sleep disturbance*** which is represented by items Q5b–Q5j. This statement is related to the trigger for the elderly to not get a good night's sleep. Therapeutic evaluation describes a decrease in the score of the sleep disturbance component by as much as 1-2 points with an average night-time awakening frequency of less than once a week. The same condition was found by Annisa & Wati (2018) with a description of the sleep disturbance component with a mean of 1.53 and an SD of 0.574. These results mean that the average elderly experience sleep disturbances once or twice a week. This category relates to the elderly's difficulty in initiating sleep, waking at night, bowel habits, difficulty breathing during sleep, noise, temperature, nightmares, symptoms of relapsing disease, and other reasons. According to Adis Data Information BV (2007), sleep disturbances in the elderly in nursing homes often occur due to the institution's environment, such as limited bedtime rituals, effects of light and noise, minimal exposure to light during the day, and physical activity.

The author also asked the client's opinion regarding sleep which is considered the impact of the aging process. Based on the theory of ageing in the elderly, circadian rhythm disorders of the advanced sleep phase (ASP) type do cause changes in sleep time to 18.00–21.00 and awakening at 02.00–05.00 (American Academy of Sleep Medicine, 2015). This is one of the authors' targets in doing therapy for clients. Stimulation of sleep pattern adaptation by adjusting the physiological changes of the elderly is expected to be

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able to meet their sleep needs. The sleep diary documentation showed that the client reported that she has experienced severe drowsiness which has even appeared since 18.00 WIB. This condition is different from before sleep therapy which is assessed by the client to be a positive achievement.

The next client reported the frequency of BAK at night. The elderly is at risk of experiencing nocturia due to adaptation of the urinary system during their sleep cycle, in contrast to the case of DM. When the elderly enter the REM sleep phase, urine production increases while the duration of the R wave is shortened which triggers the urge to urinate and a state of wakefulness from sleep (Miller, 2012). With education on voiding habits and fluid restriction before going to bed, the client admitted that the frequency of awakening is reduced. The author also motivates the elderly to reduce their coffee and tea consumption, encouraged them to sunbathe on the terrace, and accompanied them for walks in the morning (9-10 AM) or in the afternoon (4-5 PM). This was done to stimulate the secretion of the hormone melatonin and promote sleep at night for the elderly to be more restful.

Other complaints from the elderly included issues with room temperature and noise. Temperatures that are too hot or cold can also cause discomfort in the elderly while sleeping. Biological changes such as decreased vascularity and sweat glands result in an imbalance in the body's thermoregulation of the elderly (Tabloski, 2014). In addition to light and temperature factors, the elderly also had an elevated level of sensitivity to sound. Miller (2012) stated that low-intensity sound is often the cause of the incidence of the elderly waking up at night. Sarikaya & Oguz (2016) research in a Turkish nursing home concluded that passive music therapy during bedtime positively affects the sleep quality of the elderly (SD 5.19±1.75 to 4.41±1.60; $p = 0.03$). This is in line with the research of Shum et al., (2014) recommended light music playback, low, and without lyrics as an effective intervention in the elderly to improve sleep quality. Therefore, the author also applied music therapy to improve the sleep quality of the elderly during the intervention.

The next sleep disorder is the condition of the disease and physical activity. The disease process can cause discomfort, which puts you at risk for sleep disturbances. Tel (2013) explains that the elderly who do not have physical illness show good sleep satisfaction. The first client (79 y/o) has hypertension, gastritis, and arthritis. Meanwhile, the rest of clients have arthritis. The data obtained by Annisa & Wati (2018) describes that osteoarthritis, hypertension, and gastritis have the highest proportions experienced by the elderly in social institution of DKI Jakarta. Osteoarthritis in the waist and knees can cause sleep disturbances due to pain in the elderly (Tabloski, 2014). With massage therapy, the third client (60 y/o) admitted that her hands were no longer stiff, her fingers could be bent except for the middle and index fingers.

The third category is ***latent sleep***, represented by items Q2 and Q5a related to the duration of time before falling asleep. Based on the theory, sleep activity is regulated by the hypothalamus by stimulating the reticular activation system which will affect a person's sleep or wake state (Guyton & Hall, 2016). Annisa & Wati's research (2018) at a social institution showed sleep latency scores with a mean of 1.93 and SD of 1.078, meaning that the elderly cannot sleep even though they have been lying down for 30 minutes 1-2 times a week. Difficulty initiating sleep in the elderly is indeed influenced by the ageing process, namely the lengthening of the N1 stage (Miller, 2012). As a result of this prolonged sleep latency, the elderly are more likely to take naps during the day to

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compensate for insufficient sleep at night. After the superior intervention, the client performed a change in sleep latency score of 2 points which means that she could fall asleep within 15–30 minutes. This is supported by the client's subjective statement, in which she stated that she fell asleep more easily after the therapy than before

The next four categories related to ***daytime dysfunction*** (items Q8 and Q9), ***efficiency of sleep habits*** (items Q1 and Q3), ***subjective sleep quality*** (items Q6), and ***use of sleeping pills*** (items Q7). The research data of Annisa & Wati (2018) describes the mean and SD values, respectively, of 1.59 and 0.879; 0.04 and 0.311; 1.15 and 0.677; 0.86 and 1.229. The final evaluation of the flagship intervention showed that the elderly had excellent sleep quality. The effect of drowsiness can be expected from the administration of medication in the elderly. However, documentation during therapy showed that the effectiveness of the use of passive music, hand massage, and the aroma of essential oils could stimulate the improvement of sleep patterns in the elderly. This is evidenced by the research of Harris & Richards (2010) that the tactile stimulus in massage results in excess secretion of the hormone cortisol which affects the secretion of corticotropin from the hypothalamic-pituitary axis. As a result, corticotropin suppresses cortisol production and promotes body relaxation. Thus, this intervention can be an alternative for nurses to overcome the problem of insomnia so that dependence on sleep stimulus drugs can be minimized.

Consideration

The cultural approach to transcultural nursing is assumed to be more suitable for the elderly living in social institutions or nursing homes. This is considered from the diversity of certain ethnic groups and beliefs that the elderly may adopt in their daily lives. Nursing care for insomnia certainly requires ongoing caring from nurses or students practicing at the institution. Based on the application for five weeks, the effectiveness of the intervention that is assumed to be the most prominent is music therapy. This may be influenced by physiological functions of the body where audio is the most sensitive aspect during sleep. In addition, the use of music with the rhythm of delta waves can stimulate the resonance of sleep waves in the client's brain. Thus, the client fell asleep faster than usual. This result can be considered by the institution to play passive music at night as a lullaby for the elderly.

Modifications in this case study were attempted to increase the therapeutic effect of previous studies, such as increasing the duration of therapy to 30 minutes, five times a week between 11 AM and 2 PM, for five weeks. In addition, the authors used PPE (nitrile examination gloves) to maximize oil absorption on the client's skin only. Other recommendations include the use of headphones as a substitute for earphones and the facilitation of essential oil diffusers for the comfort of the elderly. Evaluation of the three managed clients showed an increase in sleep quality as evidenced by a change in the score of the PSQI component to 'zero' (category of duration, dysfunction, efficiency, sleep quality) and client subjectivity. To continue the intervention that has been carried out, this procedure can be applied by nurses or practitioners in nursing homes while providing nursing care for the elderly with sleep problems (such as insomnia).

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Conclusion

Complementary and alternative therapies that nurses can do are hand massage with aromatherapy and music therapy. Other activities include sleep education, sleep environment management, and the promotion of sleep improvement. This modified intervention conducted by the author can increase the body's relaxing effect and stimulate delta waves in the brain so that you can fall asleep. Considering the effectiveness of therapy, passive music has been shown to be beneficial in the elderly after a five-week trial. Cultural (bedtime ritual) and spiritual (Murottal Quran) approaches must be done to provide services to the elderly. Thus, the institution can optimize the central audio set facility to play music at night as a lullaby for all residents.

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References

Adis Data Information BV. (2007). Sleep-promoting medications should be used with caution in elderly nursing home residents. Drugs and Therapy Perspectives, 23(4), 10–13. https://doi.org/10.2165/00042310-200723040-00004

American Academy of Sleep Medicine. (2015). Advanced sleep-wake phase - Overview and facts. Sleep Education. http://sleepeducation.org/sleep-disorders-by-category/circadian-rhythm-disorders/advanced-sleep-wake-phase/overview-facts/

Annisa, M., & Wati, D. N. K. (2018). Hubungan sleep hygiene dengan kualitas tidur pada lansia di Panti Sosial Tresna Werdha DKI Jakarta. [Bachelor's thesis, Universitas Indonesia].

Annisa, M., & Wati, D. N. K. (2020). The relationship between sleep hygiene and sleep quality among residents of an elderly care institution in DKI Jakarta. UI Proceedings on Health and Medicine, 4(1), 89–97. https://doi.org/10.7454/uiphm.v4i1.258

Azri, M. A., Dahlan, A., Masuri, M. G., & Isa, K. A. M. (2016). Sleep quality among older persons in institutions. Procedia - Social and Behavioral Sciences, 234, 74–82. https://doi.org/10.1016/j.sbspro.2016.10.221

Bulechek, G. M., Butcher, H. K., & Dochterman, J. M. (Eds.). (2013). Nursing interventions classification (NIC) (6th ed.). Elsevier.

Choi, N. (2015). The effects of hand massage using aroma essential oil and music therapy on anxiety and sleeping for elderly women in the sanatorium. International Journal of Bio-Science and Bio-Technology, 7(5), 151–158. https://doi.org/10.14257/ijbsbt.2015.7.5.14

da Silva, A. A., de Mello, R. G. B., Schaan, C. W., Fuchs, F. D., Redline, S., & Fuchs, S. C. (2016). Sleep duration and mortality in the elderly: A systematic review with

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meta-analysis. BMJ Open, 6(2), 1–13. https://doi.org/10.1136/bmjopen-2015-008119

Dehghankar, L., Ghorbani, A., Yekefallah, L., Hajkarimbaba, M., & Rostampour, A. (2018). Association of sleep quality with socio-demographic characteristics in elderly referred to health centers in Qazvin, Iran. A Journal of Clinical Neuroscience and Psychopathology, 20(3), 227–232. https://doi.org/10.5350/Sleep.Hypn.2017.19.0154

Guyton, A. C., & Hall, J. E. (2016). Textbook of medical physiology (13th ed.). Elsevier Inc.

Hanifa, A., Agustini, E. N., & Karyadi. (2016). Hubungan kualitas tidur dan fungsi kognitif pada lanjut usia di Panti Sosial Margaguna Jakarta Selatan [Skripsi, Universitas Islam Negeri Syarif Hidayatullah]. http://repository.uinjkt.ac.id/

Harris, M., & Richards, K. C. (2010). The physiological and psychological effects of slow-stroke back massage and hand massage on relaxation in older people. Journal of Clinical Nursing, 19, 917–926. https://doi.org/10.1111/j.1365-2702.2009.03165.x

HelpAge International. (2015). Population ageing maps. http://www.helpage.org/global-agewatch/population-ageing-data/population-ageing-projections/

Kemenkes RI. (2016). Situasi lanjut usia (lansia) di Indonesia: 29 Mei – Hari Lanjut Usia Nasional. Pusat Data dan Informasi, Kementerian Kesehatan RI.

Miller, C. A. (2012). Nursing for wellness in older adults (6th ed.). Wolters Kluwer, LWW.

Park, H., Chun, Y., & Kwak, S. (2016). The effects of aroma hand massage on fatigue and sleeping among hospice patients. Open Journal of Nursing, 6(7), 515–523. https://doi.org/10.4236/ojn.2016.67054

Potter, P. A., Perry, A. G., Stockert, P. A., & Hall, A. M. (2013). Fundamentals of nursing (8th ed.). Elsevier Inc.

Sarikaya, N. A. (2016). Effect of passive music therapy on sleep quality among elderly people living in nursing home. Journal of Psychiatric Nursing, 7(2), 55–60. https://doi.org/10.5505/phd.2016.05900

Shum, A., Taylor, B. J., Thayala, J., & Chan, M. F. (2014). The effects of sedative music on sleep quality of older community-dwelling adults in Singapore. Complementary Therapies in Medicine, 22(1), 49–56. https://doi.org/10.1016/j.ctim.2013.11.003

Tabloski, P. A. (2014). Gerontological nursing (3rd ed.). Pearson Education, Inc.

Tel, H. (2013). Sleep quality and quality of life among elderly people. Neurology, Psychiatry and Brain Research, 19(1), 48–52. https://doi.org/10.1016/j.npbr.2012.10.002

Touhy, T. A., & Jett, K. F. (2014). Ebersole and Hess' Gerontological nursing & healthy aging (4th ed.). Elsevier.

Um, S.-B., & Um, J.-S. (2015). Metropolitan urban hotspots of chronic sleep deprivation: Evidence from a community health survey in Gyeongbuk Province, South Korea. Geospatial Health, 9(1), 1–10. https://doi.org/10.4081/gh.2015.382

Wang, C., Sun, Y., & Zang, H. (2014). Music therapy improves sleep quality in acute and chronic sleep disorders: A meta-analysis of 10 randomized studies. International

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Journal of Nursing Studies, 51(1), 51–62. https://doi.org/10.1016/j.ijnurstu.2013.03.008

Widyatuti. (2008). Terapi komplementer dalam keperawatan. Jurnal Keperawatan Indonesia, 12(1), 53–57. Retrieved from http://jki.ui.ac.id/index.php/jki/article/download/200/311

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