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Effects of Back Massage and Facial Massage on Sleep Quality in Critically Ill Patients

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□ ABSTRACT □

Introduction: Sleep disturbance is common among patients in intensive care units (ICUs). Changes in clinical practice to promote sleep in the ICUs have been sporadic. The European Respiratory Society and the European Society of Intensive Care Medicine recognize that massage therapy may improve quality of sleep.

Goal: This study was conducted to identify the effects of back and face massage on sleep quality in ICU patients.

Material and Methods: A sample of 45 patients in intensive care units in Al-Assad University Hospital and Alwatani Hospital were recruited in the study**.** Both the massage and control participants were evaluated for sleep quality by Groningen sleep quality scale, 1 hour after administration of the protocol.

Results: The effectiveness of back and face massage, as quality of sleep, is significantly improved (p=0.000) in the experimental back and face massage groups (mean score 3.9981), and (mean score 4,4043) respectively, than in control group (mean score – 0.8117).

In **conclusion**, our data suggest that back and face massage therapy is effective in improving the quality of sleep in ICU patients.

Keywords: Massage therapy, Sleep quality, Critical care units, back massage, face massage

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تأثير تدليك الظهر وتدليك الوجه على نوعية النوم عند مرضى الحالات الحرجة

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□ ملخّص □

المقدمة: يعد اضطراب النوم من الاضطرابات الشائعة في وحدات الرعاية المركزة، والتغيرات التي حدثت في الممارسة السريرية الموجهة لدعم النوم في وحدات الرعاية المركزة متفرقة، ميزت جمعية الجهاز التنفسي الأوروبية والجمعية الأوروبية للطب والعناية المركزة أن العلاج بالتدليك قد يحسن نوعية النوم. **الهدف:** قد أجريت هذه الدراسة لتحديد تأثير تدليك الظهر وتدليك الوجه على نوعية النوم في مرضى الحالات الحرجة. **طرائق البحث وأدواته:** أجري البحث على عينة قوامها 45 مريضاً في وحدات الرعاية المركزة في مستشفى الأسد الجامعي والمستشفى الوطني. تم تقييم نوعية النوم في المجموعتين التجريبيتين والمجموعة الضابطة باستخدام مقياس نوعية النوم Groningen بعد ساعة من تطبيق السياسة. **النتائج:** أوضحت النتائج فعالية تدليك الظهر وتدليك الوجه، إذ تحسنت نوعية النوم بشكل ملحوظ (** P = 0.000) في المجموعة التجريبية التي تلقت تدليك الظهر والمجموعة التجريبية التي تلقت تدليك الوجه بقيمة متوسطة (3,9981) و (4,4043)على التتابع، أكثر من المجموعة الضابطة التي لم تتلق التدليك وتركت لروتين المشفى. **الاستنتاجات:** تقترح معلومات الدراسة أن تدليك الظهر وتدليك الوجه علاجان فعالان في تحسين نوعية النوم في مرضى الحالات الحرجة.

الكلمات المفتاحية: العلاج بالمساج، نوعية النوم، وحدات الرعاية المركزة، المساج الظهري، مساج الوجه.

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Introduction:

The concept of comfort is central to the art of nursing. It is very important to identify the ways through which patients can achieve comfort. Sleep is a basic human need. [(1)]. It is a natural state of bodily rest observed in humans. [(2)]. Sleep has been intuitively and scientifically validated as a vital biological function for both physical and psychological rejuvenation and restoration in order to heal and recover from illnesses. Human beings spend one- third of their life in essential restorative sleep to maintain mental acuity, physical, and psychological sense of wellbeing. [(3)] Sleep is absolutely essential for the patients to survive from critical illness and reclaim their quality of life.

Sleep disturbance is common among patients in intensive care units (ICUs). The impact of acute illness and its treatment, pain, stress, environmental noise, disruption of light/dark cycle, and caregiver interruptions can all contribute to critically ill patients' inability to get adequate, restful sleep. Occurring at a time when sleep needs are greatest, sleep disturbance is a significant stressor for persons experiencing acute illness. Furthermore, sleep disruption has been implicated in the development of the iatrogenic delirium syndrome known as ICU psychosis. [(4, 5)]

Fragmented sleep causes fatigue, confusion, irritability, aggressiveness, decreased pain tolerance, and altered respiratory function that can prolong weaning from the mechanical ventilator with the result of an exorbitant expense from extended hospital stay. Poor sleep quality has emerged as an indicator for adverse clinical outcomes and decreased quality of life in performing daily living activities. [(6, 7)]The process of achieving comfort is based on the patient's need to live with illness or injury, and it remains central to the role of nursing. It is very important to identify the ways by which patients can achieve comfort. Identifying and treating patient's sleep pattern disturbance is an important aspect of giving care to the patients. [(8)]

The mainstay of treatment for sleep disturbance has been sedative-hypnotics, although these compounds may have adverse effects including rebound insomnia, falls, tolerance and withdrawal, and delirium. [(9)] While still largely unexamined in the ICU, the use of complementary and alternative therapies to promote sleep in this setting may offer a promising alternative to the pharmacologic approach. In fact, recent clinical practice guidelines from the American College of Critical Care Medicine on the use of sedatives and analgesics in critically ill adults advocate the use of nonpharmacologic methods to promote sleep. [(10)]

Changes in clinical practice to promote sleep in the ICUs have been sporadic. A multidisciplinary approach is recommended to incorporate assessment of sleep disruption, healing environment, appropriate pharmacologic management, education, and behavior modifications in order to reduce the detrimental impacts on the critically ill patients. [(11)] Critical care nurses are in the unique position to implement guidelines for effectively minimizing sleep disturbances with their 24 hours bedside vigilance. The complementary and alternative therapies presented as possible nursing interventions to promote sleep in critically ill patients are massage, music, relaxation techniques, aromatherapy, therapeutic touch, environmental interventions, and alternative sedatives. [(12)]

Massage therapy is a technique that promotes the manual mobilization of several structures from both muscle and subcutaneous tissue, by applying mechanical force to tissues. This mobilization improves lymph movement and venous return; reduces swelling; and mobilizes muscle fibers, tendons and skin. Thus, massage therapy may be used to promote muscle relaxation and to reduce pain, stress and anxiety, [(13)] which help patients improve their quality of sleep and speed recover. The European Respiratory Society and

the European Society of Intensive Care Medicine recognize that massage therapy may improve quality of sleep. [14]

Sleep-onset and sleep maintenance insomnia correlate well with anger, depression and anxiety. [15] Many massage studies report sleep as one of the benefits derived from massage or a reduction in sleep latency. [16, 17] Rather than specifying sleep induction as the main study variable. One research found that massage, amongst other complementary therapies, promoted sleep among critically ill patients in an intensive care unit.[10]

Facial massage is said to be effective against insomnia, but there is a dearth of research evidence to support this. The only research studies that do so are those carried out by workers in Tohoku University, Japan, [18, 19] in the context of cosmetic facial treatments. In a study of the psychological effects of 'esthetic' facial massage with cosmetic treatments. [18] researchers observed that higher subjective scores in both 'general deactivation' and 'deactivation-sleep factors' instruments used to measure the dependent variable, were obtained by the experimental group compared with the control group who only received a foundation treatment without massage. Two years later, a more objective follow-up study and the only one that examined a direct link between facial massage and sleep was conducted. [19]

Research important and goals

To worsen the matter, research that addressed the consequences of poor sleep quality in the critically ill patients and sleep promotion strategies to screen, evaluate, and manage sleep disturbances in the ICU setting is limited and lacking adequate evidence-based clinical efficacy. [11]. On the other hand, no studies were compared the effects of back and facial massage on sleep quality in ICU. Critical care nurses who present at the patients' bedside 24-hours a day are in the best position to manipulate the ICU environment to ensure minimal sleep disruption for the patients under their care. This study is an attempt to address this gap in the literature and to findan effects of back and face massage on sleep quality in ICU patients.

Material and Methods

Research Setting

The study was conducted at intensive care units in Al-Assad University Hospital and Alwatatni Hospital. A quasi experimental design was adopted to compare theeffectiveness of back massage and facial massage in quality of sleep among critically ill patients.

Research Sample

A sample of 45 patients that met the inclusion criteria were recruited in the study by convenient sampling technique. Inclusion criteria included conscious patients of both genders between 18- 65 years of age; they had > 5 points on the PSQI, [20] and had no contraindication of back massage or facial massage. We excluded. Subjects excluded were those who had a medical diagnosis of Parkinson's or Alzheimer's disease, major depressive disorder, asthma, seizures, or a primary sleep disorder; those who used hypnotics, sedatives, antidepressants, anticholinergics, antihistamines, tranquilizers, or melatonin for sleep; patients who had a body mass index (BMI) 35 kg/m2, history of regular alcohol consumption. Patients were assessed 1 hour after administration of the protocol. Patients were divided to three groups: control group, experimental back massage group, and experimental facial massage group. All patients provided written informed consent.

Tools and Techniques:

The instrument has two parts as discussed below:

1. Demographic and clinical variables: Demographic variables such as age, sex, marital status, occupation, education and clinical variables included patient's diagnosis, afternoon sleep (number of hours) and usual sleep pattern at night (number of hours).

2. Groningen sleep quality scale: [21] The 15 statements of the tool describing the patient's sleep quality in the last night were evaluated. These statements are related to patient's feeling about the difficulty in falling asleep, duration of sleep, sleep fragmentation, and early morning awakening. This instrument contained 4 statements with positive scoring, 11 statements with negative scoring; first statement had no scoring.

Methods

Patients were divided to three groups: control group, experimental back massage group, and experimental facial massage group.

1. Group 1 (n = 15) received a routine nursing care with a 6-minute rest period at bedtime for three consecutive days.
2. Group 2 (n = 15) received a 20-minute effleurage back massage at bedtime
3. Group 3 (controls, n = 15) received 20-minute effleurage back massage at bedtime

These were a 20-min back massage and a 20-min facial massage (10 min per side) with baby oil for lubrication. This intervention was performed around 7 PM, 2-3 hours before sleep. Both, the massage and control participants were evaluated for sleep quality by Groningen sleep quality scale, 1 hour after administration of the protocol.

Results and Discussion

Results

Table 1: Demographic and clinical characteristics of participants from the control and experimental groups.

	Control (n = 15)	Back M (n = 15)	Face M (n = 15)	P
Male, n (%)	11 (73.3)	12 (80)	10 (66.6)	1.00
Age, yrs	60 ± 8,2	63 ± 9,1	61,9 ±8,9	0.27
BMI, kg/m2	28.5 ، 4.1	25.9 ، 2.8	26,8 ± 3,4	0.02*
Night sleep minutes	258	383	316	0.54

Demographic, clinical, and sleep characteristics of the participants are presented in Table 1. The majority of them were male, with a mean age of 60 ± 8,2 years in control group and 63 ± 9,1in experimental back massage group, and 61,9 ±8,9 1in experimental face massage group. With no significant differences existed in the characteristics between the groups, except for BMI, which was significantly higher in the control group. The total sleep time of participants during the study period was obtained from their sleep diaries and was similar between groups, with averages per night of min, 258 min and 385 min ، 316 min in the control and the MT groups, respectively (p =0.54).

Table 2: effectiveness of back massage and face massage

Groningen sleep quality scale				
	M	SD	t- values	P values
Control group	- 0,8117	2,61782	-7,957	0,0000**
Back massage	3,9981	0,79811		
Control group	- 0,8117	2,61782	-8,591	0,0000**
Face massage	4,4043	0,81120		

Table 2 illustrate the effectiveness of back massage, as quality of sleep is significantly improved (**p=0.000) in the experimental back massage group (mean score 3,9981), than in control group (mean score - 0,8117). The table shows the effectiveness of face massage, as quality of sleep is significantly improved (**p=0.000) in the experimental face massage group (mean score 4,4043), than in control group (mean score - 0,8117).

Table3: Assessment of overall quality of sleep in control and experimental groups

	Excellent sleep		Good sleep		Poor sleep	
	Pretest	Post test	Pretest	Post test	Pretest	Post test
Control group%	0	3,3	10	3,3	90	93,3
Back massage group%	0	23,3	26,7	73,3	73,3	3,3
Face massage group%	0	24,3	25,7	74,3	74,3	1,3

Table 3 shows that overall quality of sleep improved in experimental group with the intervention of back massage; 73.3 percent subjects had good sleep (slept for more than 5 hours at night), and the intervention of face massage; 74.3 percent subjects had good sleep, whereas sleep quality deteriorated in the control group and 93.3 percent subjects had poor sleep without the intervention of back or face massage.

Discussion

Sleep fragmentation and deprivation are commonly observed in ICU. Sleep deprivation is a stress condition, which causes the inappropriate activation of the hypothalamic-pituitary-adrenal axis. This activation results in an increase in cortisol release, [22] the worsening of the immune system, and a predisposition to inflammation and infection. [24] Furthermore, sleep deprivation may increase sympathetic nervous system activity and blood pressure. [23, 24] All of these factors may impact patient recovery.

This study evaluated the effects of back and face massage in ICU patients. The results indicate that back and face massage improved the sleep quality of the massage groups participants in comparison with those patients in the control group. Sleep effectiveness was significantly higher in the back and face massage group participants during all the study period.

Patients randomized to the control group had a significantly higher BMI than those in the massage therapy groups. However, both groups had a mean BMI in the overweight range (28.5 kg/m2 and 25.9 kg/m2 in the control and massage therapy groups, respectively. Therefore, an imbalance in participant BMI had no influence on the results of the present study.

We found that several participants had complaints of daily somnolence and poor quality of sleep during ICU stay. This observation is consistent with previous findings that showed that poor sleep is common in patients awaiting surgical procedures. [25] This poor quality of sleep is likely caused by pain, stress, and anxiety. [26]

In our study, we observed that all participants reported having a certain degree of sleep disorder which significantly decreased. Back and face massage promoted improvement in sleep effectiveness, indicating that it had a positive influence on sleep, because massage therapy promotes muscle relaxation, decreases pain, stress, anxiety, and induces sleep. [27] Similar to our findings, Tsay and colleagues [28] found that massage therapy improved sleep quality in patients with end-stage renal disease. Field and colleagues, [15] observed that massage therapy decreased anxiety and depressed mood and increased the number of sleep hours in patients with fibromyalgia. Thus, previous literature supports our finding that massage therapy improves sleep and recovery in ICU patients.

A previous studies has shown that massage therapy promotes a significant decrease in cortisol levels from the baseline (averaging 31%) and increase in active neurotransmitters, such as serotonin (averaging 28%) and dopamine (averaging 31%). [29] Massage therapy may also promote the following: parasympathetic activation,3,22 which causes reductions in heart rate, blood pressure, and breathing; increases in the release of hormones (e.g., endorphins) and decreases in stress levels. [30]

Our study shows that overall quality of sleep improved in experimental group with the intervention of face massage (good sleep), whereas sleep quality deteriorated in the control group (poor sleep) without the intervention of face massage. Facial massage decreases anxiety and can improve a negative mood This study is supported by those of Joseph et al. [31] Following myofascial trigger-point massage therapy, there was increase in relaxation response and overall reduction in defence-arousal (stress) response and parasympathetic activity increased which in turn improves sleep.

Our study shows that overall quality of sleep improved in experimental group with the intervention of back massage (good sleep), whereas sleep quality deteriorated in the control group (poor sleep) without the intervention of back massage. These findings are supported by Richard et al. on critically ill patients, who with 6 minutes back massage slept one hour longer than the patients in control group. The authors concluded that back massage is useful for promoting sleep. [10]

The finding also supported by study of the effect of massage therapy on sleep quality post coronary artery bypass graft surgery (CABG) patients. The intervention group received neck, shoulder, and back massages by the same physiotherapist for three days 2 to 3 hours prior to bedtime. Participants kept a sleep diary and were evaluated each morning after intervention. The authors concluded that back massage therapy significantly improved sleep quality and recovery from fatigue. [27]

Conclusion and recommendation

In conclusion, our data suggest that massage therapy is effective at improving the quality of sleep in ICU patients. Back massage is perceived by patients as soothing, relaxing and effective sleep-inducing measure. Nurses can use this therapeutic and cost effective art to improve quality of sleep of ICU patients. Improved sleep quality would reduce many ICU complications, reduce length of hospital stay and improve quality of life. Back and facial massage are procedures that could easily be incorporated into the competencies for clinical specialists to give their practice a more caring and holistic flavor.

References:

1. POTTER PA, Perry AG. *Fundamentals of Nursing* (2012). St Louis: Mosby Publishers.
2. ROEHER TA, Roth T. *Sleep and pain: interaction of two vital function* (2005). Retrieved on 24 Sept 2007 from http://www.ncbi. nlm.nih.gov
3. PATEL M., Chipman J., Carlin BW, Shade D. *Sleep in the Intensive Care Unit Setting*. Critical Care Nursing Quarterly (2008) *31*(4): 309-318.
4. TEMBO A C, Parker V. *Factors that impact on sleep in intensive care patients.* Intensive and Critical Care Nursing (2009) *25*, 314-322.
5. ELLIOTT R, McKilney S, Cistullip P. *The quality and duration of sleep in the intensive care setting: an integrative review.* InternationalJournal of Nursing Studies (2011) 48, 384-400.
6. BURKHALTER H, Sereika S M, Engberg S, Wirz-Justice A, Steiger J, De Geest S. *Validity of 2 sleep quality items to be used in a large cohort study of kidney transplant recipients.* Progress in Transplantation (2011) 21(1): 27-35.
7. RICHARDSON A, Crow W, Coghill E, Turnock C. *A comparison of sleep assessment tools by nurses and patients in critical care.* Journal of Clinical Nursing (2007) 16: 1660-1668.
8. LITTLE A, Ethier C, Ayas N, Thanachayanont T, Jiang D, Mehta S. *A patient survey of sleep quality in the intensive care unit.* Minerva Anestesiologica (2012) 78(4): 406-414.
9. McDOWELL JA, Mion LC, Lydon TJ, Inouye SK. *A nonpharmacologic sleep protocol for hospitalized older patients.* J Am GeriatrSoc (1998) 46:700– 5.
10. RICHARDS K, Nagel C, Markie M, Elwell J, Barone C. *Use of complementary and alternative therapies to promote sleep in critically ill patients.*Crit Care NursClin N Am (2003) 15(3):329–40.
11. MATTHEWS, E E. *Sleep disturbances and fatigue in critically ill patients*. American Association of Critical-Care Nurses (2011) 22: 204-224.
12. FONTANA C J, Pittiglio L I. *Sleep deprivation among critical care patients.* Critical Care Nursing Quarterly (2010) 33(1): 75-81.
13. ANDERSON PG, CutshallAM. *Massage Therapy - A comfort intervention for cardiac surgery patients.* Clinical Nurse Specialist (2007) 21:161-5.
14. GOSSELINK R, Bott J, Johnson M, Dean E, Nava S. *Physiotherapy for adult patients with critical illness: recommendations of the European Respiratory Society and European Society of Intensive Care Medicine Task Force on Physiotherapy for Critically Ill Patients.* Intensive Care Medicine (2008) 34:1188-99.
15. FIELD T, Diego M, Cullen C, Hernandez-Reif M, Sunshine W, *Douglas S. Fibromyalgia pain and substance P decreases and sleep improves following massage therapy.* J ClinRheumatol (2002) 8 (2):72–6.
16. FIELD T, Hernandez-Reif M, Diego M, Fraser M. *Lower back pain and sleep disturbances are reduced following massage therapy.* J Bodyworks MovTher (2007) 11(2):141–5.
17. RICHARDS KC. *Effect of a back massage and relaxation intervention on sleep in critically ill patients*. Am J Crit Care (2008) 7:288–99.
18. YAMADA Y, Hatayama T, Hirata T, Maruyama K, Abe T, Suzuki YA. *Psychological effect of facial estherapy.* Tohoku Psychol Folia (1996) 45(1–4):6–16.
19. JODO E, Yamada Y, Hatayama T, Abe T, Maruyama K. *Effects of facial massage on the spontaneous EEG.* Tohoku Psychol Folia (1998) 47(1–4):8–15.

20. CAROLE Smyth. The *Pittsburgh Sleep Quality Index (PSQI).* Best Practices Care to Older Adults (2012) 6:1. website at http://www.sleep.pitt.edu/content.asp?id=1484&subid=2316
21. SIROUS J, Farzam G, Arsia T, Jamshid L, *High-altitude sleep disturbance: Results of the Groningen Sleep Quality Questionnaire survey.*Sleep Medicine (2008) 9 (4): 446–449.
22. LEPROULT R, Copinschi G, Buxston O, Van Cauter E. *Sleep loss results in an elevation of cortisol levels the next evening.* Sleep (1997) 20:865-70.
23. VAN LEEUWEN WM, Lehto M, Karisola P, Lindholm H, Luukkonen R, Sallinen M, et al. *Sleep restriction increases the risk of developing cardiovascular disease by augmenting proinflammatory responses through IL-17 and CRP*. PLoS One (2009) 4:4589.
24. LUSARDI P, Zoppi A, Preti P, Pesce RA, Piazza E, Fogari R. *Effects of insufficient sleep on blood pressure in hypertensive patients: A 24-h study.* Am J Hypertens. (1999) 12:63-8.
25. REDEKER NS, Hedges C. *Sleep during hospitalization and recovery after cardiac surgery.* J CardiovascNurs (2002) 7:56-68.
26. EDE´ll-GUSTAFSSON UM, Hetta EJ, Are´n GB, Hamrin EK. *Measurement of sleep and quality of life before and after coronary artery bypass grafting: a pilot study.*Int J NursPrat (1997) 3:239-46.
27. NEBRASS, F B, Feltrim M I, Souza S A, Ykeda D S, Lorenzi-Filho G. *Effects of massage therapy on sleep quality after coronary artery bypass graft surgery.* Clinics (2010) 11: 1105-1110.
28. TSAY SL, Rong JR, Lin PF. *Acupoints massage in improving the quality of sleep and quality of life in patients with end-stage renal disease.* J AdvNurs (2003) 42:134-42.
29. FIELD T, Hernandez-Reif M, Diego M, Schanberg S, Kuhn C. *Cortisol decreases and serotonin and dopamine increase following massage therapy.*Int J Neurosci (2005) 115:1397-413.
30. MOYER CA, Rounds J, Hannum JW. *A meta-analysis of massage therapy research.* Psychol Bull (2004) 130:3-18.
31. DELANEY JPA, Leong K, Watkins A, Brodie D. *The short term effect of myofascial trigger point massage therapy on cardiac autonomic tone in healthy subjects.* Journal of Advanced Nursing (2001) 37(4): 364-71.