

Effectiveness Of Jacobson's Progressive Muscle Relaxation Techniques on Enhancing Sleep Quality and Psychological Well-Being Among Veterinary Medical Final Year Students.

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Abstract

Background: Sleep has importance in human health. Lack of sleep is a major problem nowadays. Veterinary medical students are exposed to a significant level of pressure due to academic demands. Poor sleep quality has been found to affect not only academic performance but also psychological well-being. The National Sleep Foundation recommends 7 to 9 hours of sleep for young adults [18-25 years old] and 7 to 8 hours of sleep for adults [26-64 years old]. According to the research sleep quality and psychological well-being has a strong association. Poor sleep quality is associated with poor psychological well-being. Jacobson's Progressive Muscle Relaxation Techniques can enhance sleep quality. Proper sleep can help to enhance psychological well-being. The study aimed to determine the effect of Jacobson's Progressive Muscle Relaxation Techniques in enhancing sleep quality and psychological well-being

Method: 40 subjects suffering from sleep quality are included and divided into experimental groups (Group A) [n=20] and control groups (group B) [n=20]. Experimental groups are to undergo JPMR one time a day for 2 weeks. Control groups are to undergo their routine before sleep. Pre-test and post-test values of sleep quality and psychological well-being were measured using sleep quality developed by Pittsburgh Sleep Quality was used and psychological well being by Ryff, C. D psychological well being

Results: Study results revealed that sleep quality and psychological well-being were significantly increased among the study group after the intervention ($p = 0.001$).

Conclusion: This study concluded that two weeks of Jacobson's Progressive Muscle Relaxation Technique was effective in enhancing sleep quality and psychological well being Hence, JPMRT should be incorporated to improve sleep and psychological well-being

Keywords: sleep quality, JPMR, psychological well-being

Introduction

Sleep is nothing but the body's reset cycle. In other words, sleep is a complex biological process that helps to process new information and feel rested. Sleep is also defined in physiology that sleep is a state of

unconsciousness. Sleep states alternate between REM (rapid eye movement) and non-REM sleep. Good hygiene and sleep are essential parts of everyday life and humans spend one-third of their lifetime sleeping. Sleep disturbance interfered with physical function and results in fatigue; depression, irritability impaired cognitive functions and negative psychological well-being. Poor sleep quality is a symptom, and it is featured by difficulty in falling and remaining asleep. Extensive research has shown that sleep quality has become an increasing public health focus, and poor sleep quality leads to an increased risk of mental problems. including depression and anxiety.

Common sleep disorders include insomnia (difficulty falling and/or staying asleep), hypersomnia (excessive daytime sleepiness), and sleep apnea (airflow is limited while sleeping, causing low oxygen saturation and disrupted sleep). Many important physiological changes take place in all body systems and organs during sleep, but with insufficient sleep, physical and mental health problems ensue. Changes in sleeping patterns or difficulty sleeping: Insomnia is one of the most significant and common signs of disturbed mental health. Mood swings or irritability: Veterinarians are usually calm and patient, thanks to their profession. Mood swings or lack of patience is a big sign when it comes to the deteriorated mental health of veterinarians. In one study, 88% of practising veterinarians who responded stated that veterinary medicine is very stressful, 66% stated that they had clinical levels of depression, and 20% reported seriously considering suicide. Veterinary students are not exempt from these problems. A survey of veterinary students revealed a bevy of wellness problems: headaches, sleep disturbance, overly busy thinking, inability to concentrate, increase or decrease in food intake, procrastination, depression, feeling overwhelmed, and chronic tiredness. Veterinary students, therefore, fall into a doubly at-risk category of both being students in a medical education program and being in the field of veterinary medicine. However, almost no information is available about the sleep health of veterinary students. The lone available study in this area revealed that >50% of students reported getting less than the recommended amount of sleep as well as having significant daytime sleepiness. In that study 28% of students reported having trouble sleeping, 42% rated their sleep quality as fair or poor, and 68% reported driving while drowsy.

JPMR

Progressive muscle relaxation (PMR) is a well-known technique for reducing muscle tension. It entails a series of exercises that involve tensing and relaxing muscle groups (Khanna et al., 2007). It was created in the early 1920s by American physician Edmund Jacobson and consists of two parts: physical and mental (Pawlow and Jones, 2002). Relaxation improves concentration, increases the feeling of control, improves the ability to block inner talk, decreases the cardiac index, lowers blood pressure, warms or cools body parts, and creates a pleasant mental state. Progressive muscle relaxation works because when your muscles are fully relaxed, it's natural for your body to move from an alert state to a resting state. When you encourage each muscle group to relax – in tandem with slow, diaphragmatic breathing As a result, Progressive Muscular Relaxation offers long-term effects that the improve patient's quality of life (Sharma et al., 2013; Varvogli and Darvini, 2011). Relaxation techniques have numerous physical, biological, and psychological advantages. Progressive muscle relaxation is based on the observation that muscles relax easier from a high-tension posture than from a low-tension state. Muscle tension associated with headaches and body problems, for example, is a type of moderate residual tension that goes unnoticed by people for days. PMRT has also been shown in numerous trials to improve feelings of self-control (Chen et al., 2009;

Molassiotios, 2000). Progressive muscle relaxation restores the nervous system to its active state. Relaxation improves blood circulation, promotes endorphin secretion, and reduces tension and anxiety induced by the formation of a positive attitude due to increased brain activity and helps to sleep better. These exercises lower one's heart rate and blood pressure, slow and deepen breathing, and create an increased sense of well-being. Research has shown that these changes help us fall asleep, demonstrating that relaxation techniques can help reduce the symptoms. The researcher also stated that PMR is most effective when practised for a single session of 25 to 30 minutes. The goal of this study is to see how efficient progressive muscle relaxation is to enhance sleep quality and psychological well-being.

HYPOTHESES

There will be no significant difference between the severity of sleep and psychological well-being in the pre-test and post-test after administering Progressive Muscle Relaxation Techniques.

Methods and Materials :

Data collection method

The survey was carried out by providing the printed form of a questionnaire to the respondents. Data was collected from 100 participants for this study from Chennai district. From these 100 participants, 40 of the participants were eligible to participate in this study and met with the inclusion and exclusion criteria. The two groups included 20 participants in the experimental group and 20 group participants in the control group.

Criteria for selecting samples

Inclusion criteria:

Veterinary medical final year students.

Both males and females.

Has never undergone progressive muscle relaxation techniques before.

Able to undergo progressive muscle relaxation technique.

Exclusion criteria:

Diagnosed with Mild and Moderate level sleep quality and psychological well-being problems.

Participants without severe sleep problem and psychological well-being

Instruments used :

Sleep Quality

The SQS was developed by Pittsburgh Sleep Quality Using a four-point, Likert-type scale, respondents indicate how frequently they exhibit certain sleep behaviours (0 = "few," 1 = "sometimes," 2 = "often," and 3 = "almost always"). Scores on items belong to factors 2 and 5 (restoration after sleep and satisfaction with sleep) and are reversed before being tallied. Total scores can range from 0 to 84, with higher scores denoting more acute sleep problems.

Psychological well-being

The Psychological well-being scale was developed by Ryff, C. D., Almeida, D. M., Ayanian, J. S., Carr, D. S., Cleary, P. D., Coe, C., ... Williams, D. (2010). Scoring: The Autonomy subscale items are Q15, Q17,

and Q18. The Environmental Mastery subscale items are Q4, Q8, and Q9. The Personal Growth subscale items are Q11, Q12, and Q14. The Positive Relations with Others subscale items are Q6, Q13, and Q16. The Purpose in Life subscale items are Q3, Q7, and Q10. The Self-Acceptance subscale items are Q1, Q2, and Q5. Q1, Q2, Q3, Q8, Q9, Q11, Q12, Q13, Q17, and Q18 should be reverse-scored. Reverse-scored items are worded in the opposite direction of what the scale is measuring. The formula for reverse-scoring an item is: $((\text{Number of scale points}) + 1) - (\text{Respondent's answer})$. To calculate subscale scores for each participant, sum respondents' answers to each subscale's items. Higher scores mean higher levels of psychological well-being.

Experimental group :

The participants identified severe sleep problems and psychological well-being. Were given Jacobson's progressive muscle relaxation techniques According to ACSM guidelines, participants participated in a structured exercise program on alternate days of a week for 2 weeks under supervision. Every session started with warm up for 5. 10 minutes where participants were made to do stretching exercises and slow pace walking The participants performed a progressive muscle relaxation technique for 30 minutes. Participants were made to lie in a supine position on a treatment table with a quiet and comfortable environment Participants were advised to close their eyes and slow down their breath and relax. Once they were relaxed, they were instructed to tense a muscle group for 57 seconds and advised to feel the contraction of muscle, after that they were instructed to relax the muscle group for approximately 20-30 seconds.

Then the subjects were taught how to relax and contract 16 muscle groups sequence as follows, muscles of the right side hand and forearm, right side biceps, left-side hand and forearm, left biceps muscle, forehead, eyes, cheeks. nose, neck and throat region, chest, shoulders, back, abdomen and stomach, right side thigh, right calf, right foot, left side thigh, left call and left foot. After the session ended the participants were asked to open their eyes and remain in that position for a few seconds to become alert.

Control group

Participants were advised to use their routine before sleeping. After a 2 weeks period of training was completed, both the group participants were asked to answer sleep quality scale and psychological well-being Pre and Post intervention were analysed and compared between the groups.

Administration of progressive muscle relaxation training for participants.

Progressive Muscle Relaxation Exercise PMR can be practised in a comfortable position sitting or lying down in a place that you will be undisturbed for 10-15 minutes. Focus your attention on each of the groups of muscles in the list below and work through them one muscle group at a time. Tense each muscle group and notice how that muscle feels when it is tensed. Hold this tension for five seconds while breathing in. Then, release and relax that muscle all at once. Pay close attention to the feeling of relaxation when releasing the contracted muscle. Practice tensing this same muscle group one or two more times but using less and less tension each time. This helps build awareness of tension in the body and improves the ability to differentiate between tension and relaxation in certain muscle groups. Experiment with saying the word "RELAX" each time you release a muscle group to deepen the feeling of relaxation in the mind and body.

Hands : Clench each fist separately (right & left), feel the tension in the fist and forearm respectively for 5 seconds. Release the fist, relax and feel relaxation for 10 seconds.

Arms: Bend each arm separately (right & left) up at the elbow and tense the biceps. keeping the hand relaxed, feel the tension for 5 seconds. Release the arm, relax and feel relaxation for 10 seconds. Straighten the arm separately (right & left) and tense the triceps leaving the lower arms supported by the chair with the hands relaxed, feel tense for 5 seconds. Relax and feel relaxed for 10 seconds.

Facial muscles :Wrinkle your forehead; try to make your eyebrows touch your hairline which produces tension, feel the tension for the 5 seconds. Release the eye brows, relax and feel relaxation for 10 seconds. Close your eyes and screw the muscles around the eyes for 5 seconds. Release, relax and feel relaxation for 10 seconds.

Tense the jaw by biting the teeth together, feel the tension in the jaw muscles for 5 seconds. Release, relax. and feel relaxation for 10 seconds.

Press the tongue hard and flat against the roof of mouth with lips closed, notice tension in throat and feel it for 5 seconds. Release, relax and feel relaxation for 10 seconds.

Neck and shoulder : Push the head back as far as it will go (against a chair), feel the tension for 51 seconds. Bring the head to its position, relax and feel relaxation for 10 seconds Bring the head down and press the chin down onto the chest for 5 seconds. Bring the head to its position, relax and feel relaxation for 10 seconds. Tense Shoulder by tightening and shrinking shoulders (Shrug your shoulders up to your ears), feel the tension for 5 seconds. Release, relax and feel relaxation for 10 seconds.

Chest : Take a deep breath, completely filling the lungs, hold the breath for a few seconds and passively exhale. Relax and feel relaxed for 10 seconds.

Stomach : Pull in the stomach and tense the stomach muscle for 5 seconds. Release: the stomach, relax and feel relaxation for 10 seconds.

Back : Arch your back away from the chair and feel tension for 5 seconds. Relax and feel relaxed for 10 seconds.

Thighs and buttocks :Tense both thigh muscles and buttocks by squeezing muscle together and feel tensing for 5 seconds. Release the muscles, relax and feel relaxation for 10 seconds

Lower legs : Point toes towards your head, producing tension in calf muscles, and feel tensing for 5 seconds. Relax and feel relaxed for 10 seconds.

Point the toes away from the head, feel the tension for 5 seconds. Relax and feel relaxed for 10 seconds.

Toes : Relax and seconds feel relaxation for 10.

After exercise : Relax the whole body completely. Keep your eyes closed and let yourself remain in the relaxed position. Open your eyes and enjoy renewed energy, feel relaxed and refreshed. Sit up, stretch and stand up slowly. (2 minutes relaxation).

Data analysis:

The collected data were tabulated and analysed using Statistical Package of Social Science (SPSS), version 26.0 .The results are inferred through statistical techniques like Descriptive and Inferential Statistical methods like Mean, standard deviation, t- test, paired t test. Paired t test was used to find out the significance difference between the mean pre-test and mean post test scores.

Results:

Table 1 Comparison between pre and post-test sleep of respondents quality score .

	N	Mean	S. D	t - value	P- value
Pre - test of sleep quality	20	48.65	7.625	7.936	0.001(S)
Post - test of sleep quality	20	26.65	8.586		

S-Significant Source: Primary data

Ho : There will be no significant difference in respondents level of sleep quality in pre- test and post-test after intervention of JPMR.

The above table 1 shows Mean, SD and t-value of the pre-test and post- test of sleep quality. Based on that, it is inferred from the obtained results, the pre-test of sleep quality obtained a mean value of (48.65) and the post-test obtained a mean value of (26.65). The calculated t-value is(7.936), which is significant and there is a significant difference between pre and post test.The P-value is 0.001 also proved that there is a highly significant difference between the pre and post-test of sleep quality. Hence after the intervention, participants have better sleep. Here null hypothesis is rejected and an alternative hypothesis is accepted. So it is concluded that after JPMR respondents have better psychological well-being.

Table 2 Comparison between pre and post-test respondents psychological of well-being score .

	N	Mean	S. D	t- value	P- value
Pre - test of psychological well-being	20	62.90	13.381	-8. 843	0.001(S)
Post - test of psychological well-being	20	95.55	17.108		

S-Significant Source: Primary data

Ho : There will be no significant difference in respondents' level of psychological well-being in pre-test and post-test after intervention of JPMR.

Table 2 reveals Mean, SD and t-value of the pre-test and post-test of psychological well-being. Based on that, it is inferred from the obtained results, the pre-test of psychological well-being obtained a mean value of (62.90) and the post-test obtained a mean value of (95.55). The calculated t-value is (-8.843), which is significant and there is difference between pre and post test. The P-value is 0.001 also proved that there is highly significant difference between the pre and post-test of psychological well-being . Here the null hypothesis is rejected and an alternative hypothesis is accepted. So it is concluded that after JPMR respondents have better psychological well-being.

DISCUSSIONS

The present study has attempted to analyse the effectiveness of Jacobson's progressive muscle relaxation technique on enhancing sleep quality and psychological well-being among medical veterinary medical final year students. Among 100 participants who answered questionnaires 40 participants were identified as severe sleep disturbance . These participants were further divided into two different groups, randomly experimental groups 20 and 20 participants in the control group . Only participants in experimental group were given Jacobson Muscle Relaxation Techniques for a 2 week period . Control groups are to undergo their routine before sleep. . The findings revealed that there will be a significant differences between the pre and post-test of sleep quality and psychological well-being which means that the Jacobson's progressive muscle relaxation technique was effective on enhancing sleep quality and psychological well-being among veterinary final year medical students.

The findings of present study in line with Chun-Xiu Xiao, MS,^a Yan-Juan Lin, MS,^a Ren-Qin Lin, MS,^{b,*} An-Na Liu, MS,^c Gui-Qin Zhong, MS,^b and Cai-Feng Lan, MS^d(2020). This study investigates the effect of progressive muscle relaxation training on negative mood and sleep quality in Coronavirus Pneumonia (COVID-19) patients.

COVID-19 is an emerging infectious disease, and there is still uncertainty about when the outbreak will be contained and the effectiveness of treatments. Considering that this disease is highly contagious, patients need to be treated in isolation. This may lead to psychological symptoms such as anxiety and depression, and even sleep problems.

The outcome of the present study also supports the study conducted by Melissa Conrad Stöppler, MD. (2022) Progressive muscle relaxation (PMR) is a deep relaxation technique that has been effectively used to control stress and anxiety, relieve insomnia, and reduce symptoms of certain types of chronic pain. Progressive muscle relaxation is based upon the simple practice of tensing, or tightening, one muscle group at a time followed by a relaxation phase with release of the tension. Doctors have used progressive muscle relaxation in combination with standard treatments for symptom relief in a number of conditions, including headaches, cancer pain, high blood pressure, and digestive disturbances.

The study conducted by Beyan Talo a, Gülcan Bahcecioglu Turan b (2023) This study aims to evaluate the effects of progressive relaxation exercises applied to patients with epilepsy on patients' depressive symptom severity, quality of sleep, and quality of life.

The study was designed as a randomized controlled interventional study with a control group and pre-and post-test intervention. It was conducted with 70 patients with epilepsy, 35 in the intervention group and 35 in the control group, between November 1, 2021, and April 15, 2022. The patients in the intervention group were required to perform 12 progressive muscle relaxation exercise sessions 3 days a week for a total of 4 weeks. No interventions were made in the control group during the study. The data were collected with a “Personal Information Form,” “Pittsburgh Sleep Quality Index (PSQI),” “Beck Depression Inventory (BDI),” and “Quality of Life in Epilepsy Inventory (QUOLIE -31).” Progressive muscle relaxation exercises decreased depressive symptoms severity and improved sleep and life quality in patients with epilepsy. Progressive relaxation exercises may be recommended as a complementary nursing intervention in treating epilepsy.

Recommendations

- Future studies can be done using an increase in sample size.
- The area of the study can be expanded for other professionals/
- The other psychological interventions and other psychological variables can be implemented along with JPMR.

Conclusion

Sleep has importance in human health. Lack of sleep is a major problem nowadays. Veterinary medical students are exposed to a significant level of pressure due to academic demands. Poor sleep quality has been found to affect not only academic performance but also psychological well-being. According to the research sleep quality and psychological well-being has a strong association. Poor sleep quality is associated with poor psychological well-being. Poor sleep leads to mental health issues and psychological problems. In a profession so emotionally demanding, it's no surprise that the suicide rate for veterinarians or mentally affected individuals is higher than the national average. Factors such as veterinarians not being given the same respect or pay as physicians or surgeons add to the poor mental health of veterinarians. The stigma surrounding mental health issues in the veterinary community is honest and prevents many from seeking help. It needs to change. The study aimed to investigate the effectiveness of Jacobson's progressive muscle relaxation technique on enhancing sleep quality and psychological well-being among veterinary medical final year students. The findings revealed that there will be significant differences between the pre and post-test of sleep quality and psychological well-being which means that the Jacobson's progressive muscle relaxation technique was effective on enhancing sleep quality and psychological well-being among veterinary final year medical students.

Bibliography

1. National Institute for Occupational Safety & Health, “Cdc.gov, 27-Feb-2023. [Online]. Available: <https://www.cdc.gov/niosh/index.htm>. [Accessed: 01-Mar-2023].
2. “New study finds higher than expected number of suicide deaths among U.s. veterinarians,” CDC, 12-Apr-2019. [Online]. Available: <https://www.cdc.gov/media/releases/2018/p1220-veterinarians-suicide.html>. [Accessed: 01-Mar-2023].
3. B. Hesketh and G. Shouksmith, “Job and non-job activities, job satisfaction and mental health among veterinarians,” *J. Organ. Behav.*, vol. 7, no. 4, pp. 325–339, 1986

4. Said, D.; Kyprilou, K.; Bowman, J. Risk factors for mental disorder among university students in Australia: Findings from a web-based cross-sectional survey. *Soc. Psychiatry Psychiatr. Epidemiol.* 2013, 48, 935-944. [Google Scholar]
5. Tao, S.; Wu, X.; Zhang, Y.; Zhang, S.; Tong, S.; Tao, F. Effects of Sleep Quality on the Association between Problematic Mobile Phone Use and Mental Health Symptoms in Chinese College Students. *Int. J. Environ. Res. Public Health* 2017, 14, 185-195. [Google Scholar]
6. Pallos, H.; Gergely, V.; Yamada, N.; Miyazaki, S.; Okawa, M. The quality of sleep and factors associated with poor sleep in Japanese graduate students. *Sleep Biol. Rhythm.* 2007, 5, 234-238. [Google Scholar]
7. Roth, T. Insomnia: Definition, prevalence, etiology, and consequences. *J. Clin. Sleep Med.* 2007, 3, 7-10. [Google Scholar]
8. Glozier, N.; Martiniuk, A.; Patton, G.; Ivers, R.; Li, Q.; Hickie, I. Short sleep duration in prevalent and persistent psychological distressing young adults: The DRIVE study. *Sleep* 2010, 33, 1139-1145. [Google Scholar]
9. Fleming, L.; Randell, K.; Harvey, C.J.; Espie, C.A. Does cognitive behaviour therapy for insomnia reduce clinical levels of fatigue, anxiety and depression in cancer patients? *Psycho Oncology* 2014, 23, 679-684. [Google Scholar]
10. National Institute for Occupational Safety & Health, "Cdc.gov, 27-Feb-2023. [Online]. Available: <https://www.cdc.gov/niosh/index.htm>. [Accessed: 01-Mar-2023].
11. New study finds higher than expected number of suicide deaths among U.s. veterinarians," CDC, 12-Apr-2019
12. B. Hesketh and G. Shouksmith, "Job and non-job activities, job satisfaction and mental health among veterinarians," *J. Organ. Behav.*, vol. 7, no. 4, pp. 325-339, 1986
13. Li MF, Ji HJ, Liang HJ. Effects of progressive muscle relaxation training on sleep in patients without convulsion. *Chin Gen Pract Nurs* 2018;16:1607-9. [Google Scholar]
14. Park ES, Yim HW, Lee KS. Progressive muscle relaxation therapy to relieve dental anxiety: a randomized controlled trial. *Eur J Oral Sci* 2019;127:45-51. [PubMed] [Google Scholar]
15. De Paolis G, Naccarato A, Cibelli F, et al. The effectiveness of progressive muscle relaxation and interactive guided imagery as a pain-reducing intervention in advanced cancer patients: a multicentre randomised controlled non-pharmacological trial. *Complement Ther Clin Pract* 2019;34:280-7. [PubMed] [Google Scholar]
16. Meyer B, Keller A, Wöller B, et al. Progressive muscle relaxation reduces migraine frequency and normalizes amplitudes of contingent negative variation (CNV). *J Headache Pain* 2016;17:37.
17. Tsitsi et al. Effectiveness of a relaxation intervention (progressive muscle relaxation and guided imagery techniques) to reduce anxiety and improve mood of parents of hospitalized children with malignancies: a randomized controlled trial in Republic of Cyprus and Greece *Eur J Oncol Nurs*(2017)
18. M.L. Carver et al. Progressive muscle relaxation to decrease anxiety in clinical simulations *Teach Learn Nurs*(2015) Dayapoglu N, Tan M. Evaluation of the effect of progressive relaxation exercises on fatigue and sleep quality in patients with multiple sclerosis. *J Altern Complement Med.* 2012;18(10):983-7.

19. Demiralp M, Oflaz F, Komurcu S. Effects of relaxation training on sleep quality and fatigue in patients with breast cancer undergoing adjuvant chemotherapy. *J Clin Nurs*. 2010;19(7-8):1073-83.
20. JalalManesh s, zargarani f. Effects of progressive muscle relaxation technique on fatigue and sleep quality in patients with multiple sclerosis *Scientific Journal of Hamadan Nursing& Midwifery faculty*. 2015;23(3):5-14.
21. Khakha D, Satapathy S, Dey A. Impact of Jacobson Progressive Muscle Relaxation (JPMR) and Deep Breathing Exercises on Anxiety, Psychological Distress and Quality of Sleep of Hospitalized Older Adults. *Journal of Psychosocial Research*. 2015;10(2):211.
22. Saeedi M, Ashktorab T, Saatchi K, Zayeri F, Amir Ali Akbari S. The effect of progressive muscle relaxation on sleep quality of patients undergoing hemodialysis. *Iranian Journal of Critical Care Nursing(IJCCN)*. 2012;5(1):23-8[persion].
23. Amini E, Goudarzi I, Masoudi R, Ahmadi A, Momeni A. Effect of Progressive Muscle Relaxation and Aerobic Exercise on Anxiety, Sleep Quality, and Fatigue in Patients with Chronic Renal Failure Undergoing Hemodialysis.
24. Golmakani N, Seyed Ahmadi Nejad FS, Shakeri MT, Asghari Pour N. Comparing the Effects of Progressive Muscle Relaxation and Guided Imagery on sleep quality in primigravida women referring to Mashhad health care centers-1393. *Journal of Midwifery and Reproductive Health*. 2015;3(2):335-42.
25. Sun J, Kang J, Wang P, Zeng H. Self-relaxation training can improve sleep quality and cognitive functions in the older: a one-year randomised controlled trial. *J Clin Nurs*. 2013;22(9-10):1270-80.
26. Gitanjali N, Sreehari R. Progressive Muscular Relaxation as a Multi-pronged psychotherapeutic technique for Insomnia. *Amrita Journal of Medicine*. 2014;10(1):1 - 44.
27. Alexandru BV, Róbert B, Viorel L, Vasile B. Treating primary insomnia: A comparative study of self-help methods and progressive muscle relaxation. *Journal of Evidence-Based Psychotherapies*. 2009;9(1):67.
28. Buysse DJ. Sleep health: can we define it? Does it matter? *Sleep*. (2014) 37:9–17. doi: 10.5665/sleep.3298
29. Mukherjee S, Patel SR, Kales SN, Ayas NT, Strohl KP, Gozal D, et al. An Official American Thoracic society statement: the importance of healthy sleep. recommendations and future priorities. *Am J Respir Crit Care Med*. (2015) 191:1450–8. doi: 10.1164/rccm.201504-0767ST
30. Hirshkowitz M, Whiton K, Albert SM, Alessi C, Bruni O, DonCarlos L, et al. National Sleep Foundation's sleep time duration recommendations: methodology and results summary. *Sleep Health*. (2015) 1:40–3. doi: 10.1016/j.sleh.2014.12.010
31. Basner M, Fomberstein KM, Razavi FM, Banks S, William JH, Rosa RR, et al American time use survey: sleep time and its relationship to waking activities. *Sleep*. (2007) 30:1085–95. doi: 10.1093/sleep/30.9.1085
32. Buxton OM, Marcelli E. Short and long sleep are positively associated with obesity diabetes, hypertension, and cardiovascular disease among adults in the United States. *Soc Sci Med*. (2010) 71:1027–36. doi: 10.1016/j.socscimed.2010.05.041
33. Sabo E, Reynolds CF, Kupfer DJ, Berman SR. Sleep, depression, and suicide. *Psychiatry Res*. (1991) 36:265–77. doi: 10.1016/0165-1781(91)90025-K
34. Gyles C. Mental health and veterinary suicides. *Can Vet J*. (2014) 55:1123–6.

35. Allison SO, Eggleston-Ahearn AM, Courtney CJ, Hardy CD, Malbrue RA, Quammen JK, et al. Implementing wellness in the veterinary workplace. *J Am Vet Med Assoc.* (2016) 249:879–81. doi: 10.2460/javma.249.8.879
36. Gardner DH, Hini D. Work-related stress in the veterinary profession in New Zealand. *N Z Vet J.* (2006) 54:119–24. doi: 10.1080/00480169.2006.36623
37. Skipper GE, Williams JB. Failure to acknowledge high suicide risk among veterinarians. *J Vet Med Educ.* (2012) 39:79–82. doi: 10.3138/jvme.0311.034R
38. Collins H, Foote D. Managing stress in veterinary students. *J Vet Med Educ.* (2005) 32:170–2. doi: 10.3138/jvme.32.2.170