Effect of Application of an Alternate Nostril Breathing Exercise on Fatigue and Quality of Sleep Pattern among Nursing Students

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Abstract:

Background: The higher the energy level, the more efficient body. The more efficient body, the better feel and the more will use talent to produce outstanding results. Breathing exercise is one of the yogic techniques that can produce different physiological responses in healthy individuals. **Aim:** determine the effect of the application of an alternate nostril breathing exercise on fatigue and sleep quality pattern among nursing students enrolled in the Faculty of Nursing, Alexandria University, Egypt. **Design:** A quasi-experimental design was used to conduct this study. **Subjects**: A simple random sample of 100 volunteers of first-year nursing students enrolled in the winter semester of 2019 (males and females). **Tools:** Two tools were used to collect the necessary data for the present study. The tool I: Alternate nostril breathing assessment and tool II: Iowa Fatigue Scale. **Results**: indicated that regular practice of alternate nostril breathing increases parasympathetic activity. Participants experienced decrease levels of fatigue and improving the quality of sleep pattern. The majority of participants agreed that work drains their energy every day, that they never have enough time between classes to recover their energy, and that they dread waking up to another day of work. **Conclusion:** Implementation of alternate nostril breathing exercises helped in decreasing nursing students' fatigue levels before, during, and after their practice. Also, it improved the quality of sleep patterns. **Recommendations**: Apply the proposed protocol of alternate nostril breathing techniques. The developed colored illustrated booklet regarding the alternate nostril breathing has to be distributed to the newly enrolled nursing students each year. As well as fatigue in nursing students needs further study including the application of the alternate nostril breathing exercises that address chronic and acute fatigue and promote recovery.

Keywords: Nostril Breathing Exercise, Fatigue, Sleep, Nursing Students.

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Introduction:

Alternate nostril breathing (ANB) is a fairly simple and commonly performed exercise. The practice of alternate nostril breathing is traditionally considered to relieve mental unrest and promote physical and mental balance [**Kabitz, Bremer, Schwoerer, Sonntag, et al., 2017**]. There have been studies to assess the effects of the ANB technique on specific physiological and cognitive functions [**Banks, & Dinges, 2016**]. There is evidence for a balancing effect of ANB on the activity of both cerebral hemispheres [**Geurts, de Haart, van Nes, & Duysens, 2015**]. Also, the practice of ANB has been shown to improve visuospatial memory and improve performance in letter cancellation tasks [**Telles, Raghuraj, Maharana, & Nagendra, 2017**].

Yogic breathing exercises are also known to produce acute changes in the cardiovascular parameters [**Naik, Gaur, & Pal, 2018**]. In particular, ANB has been shown to reduce blood pressure and improve heart rate variability measures by a shift in the autonomic tone towards vagal dominance [**Ghiya, & Lee, 2019**]. These findings provide supportive evidence for the potential that has been shown to improve visuospatial memory and improve performance in letter cancellation tasks [**Stroth, Hille, Spitzer, & Reinhardt, 2015**]. Yogic breathing exercises are also known to produce acute changes in the cardiovascular parameters [**Naik, Gaur, & Pal, 2018**]. In particular, ANB has been shown to reduce blood pressure and improve heart rate variability measures by a shift in the autonomic tone towards vagal dominance [**Ghiya, & Lee, 2019**]. These findings provide supportive evidence for the potential antianxiety effects of ANB considering the strong correlation between anxiety states, sympathetic over activity, and attendant changes in heart rate and blood pressure.

Sleep has an important role in maintaining health and wellbeing; this relationship is becoming increasingly recognized for nursing students. Many physicians will encounter young people who present with complaints or conditions that have some relation to sleep disorders. Sleep has many functions (including promoting growth, learning, and cognitive development [**Courtenay, 2017**]. It has a role in immunity and studies have reported an association between poor sleep and heart disease in adults [**Zee, & Turek, 2016**)]. Its relevance is now becoming increasingly recognized in adolescents and nursing students, particularly with regards to our 24-hour culture of connectivity and media consumption [**Calamaro, Mason, & Ratcliffe, 2019**]. Sleep disturbances and decline in physical functionality are common conditions associated with fatigue. Pharmacological treatment of sleep disturbances can be associated with various adverse effects. Short-term trials of Yoga on sleep have shown beneficial effects.

Fatigue refers to an overwhelming sense of tiredness, lack of energy, and a feeling of exhaustion associated with impaired physical and/or cognitive functioning [Rogers, 2018]. Fatigue is a critical and dangerous issue that seriously impacts individuals working shift-work and job productivity, especially registered nurses. It is described as one factor that affects a nurses' ability to provide the best standards of care, when levels of fatigue rise, a nurse's ability to concentrate declines, which affects workforce health and affect negatively on patient safety [**Abdalkader, & Hayajneh, 2008**]. Moreover; it is a multidimensional concept, understanding different aspects of fatigue will help nurses for better planning and implementation of strategies to relieve fatigue [**Aaronson, Teel, et al., 2016**].

Sleep and fatigue; are worth taking some time to consider whether there is any difference between feeling sleepy or fatigued, as the complaint of tiredness may be used by someone to describe either of these symptoms. Sleepiness relates to being more likely to fall asleep, whereas fatigue is a perception of low energy after otherwise normal activities [**Glaus, Crow, & Hammond, 2018**]. Understanding which symptom is being experienced can help with managing the underlying problem although it may sometimes difficult to distinguish between the two. Feeling fatigued during adolescence and young adulthood can be a short-lived complaint, particularly during this period of development where there are physical demands associated

with growth and maturation along with social, educational, and occupational demands.

A smaller proportion will have chronic fatigue syndrome, defined as a persistent debilitating, severe fatigue of more than three months duration with associated symptoms such as joint pain, tenderness, headaches, and unrefreshing sleep, which are not explained by an alternative diagnosis. A study undertaken with British 11–15-years-old identified an incidence of 30.3% for fatigue and 0.5% for chronic fatigue syndrome [**Sharif, Watad, Bragazzi, et al., 2018**].

The practice of alternate nostril breathing enhances voluntary regulation of the breathing to make respiration rhythmic and to calm the mind. It reduces stress, gives more relaxation, gives energy and vitality, and improves overall health and well-being [**Dhanvijay, Bagade, & Kumar, 2020**]. As long as there is breath in the body, there is life. When breath departs, so too does life. Therefore, regulate the breath. Alternate-nostril breathing has been shown to be useful to improve attention, decrease systolic and diastolic blood pressure, and decrease fatigue, anxiety, and stress. Alternate-nostril breathing is activating the parasympathetic (left nostril) or sympathetic (right nostril) divisions of the autonomic nervous system through a pathway involving connections between the nasal meatus and different hypothalamic nuclei and improves the natural rhythm, which is the nasal cycle. Immediately after ANB participants significantly improved their performance in different tasks [**Telles, Yadav, Kumar, Sharma, et al., 2017**]. With the increased awareness and interest in health and natural remedies, yogic techniques including pranayama are gaining importance. Pranayama is generally considered to mean regulated breathing. Alternate nostril breathing is the technique of Nadi shodhana Pranayama consists of slow, deep, quiet breaths using one nostril at a time [**Sharma, Trakroo, Subramaniam, 2018**].

Alternate nostril breathing is one of the common yogic breathing techniques and involves breathing through one nostril at a time while closing the other nostril manually. The normal nasal cycle consists of alternating phases of congestion and decongestion of nasal tissue based on the predominance of parasympathetic or sympathetic tone. Breathing alternately through each nostril helps to restore autonomic nervous system balance. The potential benefits of the regular practice of ANB include modulation of sympathovagal balance, improved cardiac function, refined metabolism, stress relief, increased cognitive acumen, and the attenuation of normal aging, among others [**Ghiya, S., 2017**]. Hence the current study aim is to determine the effect of alternate nostril breathing exercises on fatigue, sleep among nursing students.

The aim of the study was to:

Determine the effect of alternate nostril breathing exercises on fatigue and quality of sleep pattern among nursing students.

Research Hypotheses:

H1: Implementation of alternate nostril breathing exercises may decrease fatigue mean score level among nursing students pre, during, and post-exercise.

H2: Implementation of alternate nostril breathing exercises may improve the quality of sleep pattern among nursing students pre, during, and post-exercise.

Materials and method

Design:

A quasi-experimental design was used to conduct this study.

Setting:

The study was conducted on first-year nursing students at the Faculty of Nursing, Alexandria University

Subject:

A simple random sample of 100 volunteers of first-year nursing students, enrolled at a Faculty of Nursing, Alexandria University in the winter semester of 2019 from males and females.

Epi Info *was used to estimate the sample size using the following parameters*

1- Population size: 480 nursing students

2- Expected frequency: 50%

3- Acceptable error: 10

4- Confidence coefficient: 95%

5- Sample size: 100 nursing students

Inclusion criteria:

- The nursing student was considered eligible to participate in the study if they meet the following criteria:
- Age group 18≤ 20 years old.
- All the subjects were healthy and did not have any cardio-respiratory diseases or chronic diseases and were not under any medications.
- All were non-smokers.
- Agreeing to participate in the study

Tools: Two tools were used to collect the data of the present study:

Tool I: Sleep Quality Scale (SQS)

This tool was developed by the researchers after reviewing relevant literature [**Zee, & Turek, 2016**); **Couper, Dever, et al., 2017; and Telles, Yadav, Kumar, Sharma, et al., 2017**]. It was used to assess nursing students pre and post the implementation of the breathing technique. It was comprised of two parts:

Part I: Students' Socio-demographic Data

This part was developed by the researchers, it was included student socio-demographic data such as; age, gender, education, place of residence

Part II: Sleep Quality Scale

Four-point, Likert-type scale. It was adapted by the researchers from [Yi, Shin & Shin, 2006] in the English language. The scale was self-administered and used to assess the quality of sleep among nursing students. It consisted of six domains of sleep quality: daytime symptoms, restoration after sleep, problems initiating and maintaining sleep, difficulty walking, and sleep satisfaction. In addition, this scale was a four points Likert Scale consisted of 28 statements scored from 0 = "few," 1 = "some-times," 2 = "often," and 3 = "almost always"). It was tested by the researchers for scale items reliability using Cronbach Alpha Test = 0.94**.**

Scoring System:

Respondents indicated how frequently they exhibit certain sleep behaviors The overall items score is calculated as

- Rarely: Non 1-3 times a month
- Some times: 1-2 times a week
- Often: 3-5 times a week
- Almost always: 6-7 times a week

Total scores ranged from 0 to 84, with higher scores denoting more acute sleep problems and the total statements were summed up then converted into number and

Tool II: Iowa Fatigue Scale (IFS)

It was a five-point, Likert-type scale, adapted by the researchers from (Hartz, Kuhn, Bentler, Levine, & London, 1999) in the English language. This tool was 11-item fatigue and self-administered and was used to assess the level of fatigue among nursing students. It was tested by the researchers for scale item reliability using Cronbach Alpha Test = 0.94. The number of the response that best indicated how nursing students had felt. It was scored from 1 = "Not at all," 2 = "A Little," 3 = Total scores ranged from 11 to 55. Fatigue Cut-offs for Total ScoreFatigue = 30 – 39, while Severe fatigue = 40 – 55. In addition, the total statements were summed up then converted into number and percent.

Method

•The researchers obtained permission from the Research Ethics Committee before beginning the data collection process.

•Once approval was obtained the formal consent was taken from the winter 2019 medical surgical nursing professors, to allow the tools to be distributed at the beginning of class, during week seven of the winter semester.

•An official letter was obtained from the administrative office (dean's office) of the Faculty of Nursing.

•An email was sent to the nursing students informing them about the purpose of the study, prior to the data collection.

•The study tool I part I was developed by the researchers based on a review of relevant literature.

•Tools I part II, and tool II was adopted by the researchers.

•The tools were submitted to five experts in Medical-Surgical Nursing, to test its content validity

•The validity and reliability of the tools were tested using appropriate statistical tests.

•A Pilot study was conducted on 10% (10 nursing students) out of the sample who fill the inclusion criteria for testing clarity, feasibility, and applicability of the tools, and necessary modifications were done. Those nursing students will be excluded from the actual study sample.

•100 nursing students were recruited an initial assessment was done using tools I, tool II.

•The aim and objective of the study were explained to each of them and verbal consent was taken.

•Subjects of the present study formed their own control, so separate control was not taken into account.

•Data will be analyzed by the appropriate statistical tests for the effect of alternate nostril breathing exercises on fatigue and sleep pattern quality among nursing students.

•Data were all entered in statistical software (SPSS version 25).

•Mean and standard deviation (± SD) of all parameters were estimated.

The technique of alternate nostril breathing:

- Each ANB session consists of 15 minutes in the morning on an empty stomach. They were directed to sit in an easy and steady posture (either in a lotus posture i.e. a comfortable sitting posture with the head, neck, and trunk erect and in a straight line and keep the body still during the practice of ANB in a calm and quiet room.

- The instructions for the practice of ANB and demonstration were provided by the researchers to the subjects followed by a practice session of ANB and clarification of any doubts regarding the procedure before the 15-minute application of the alternate nostril breathing exercise period began.

-Begin in a comfortable seated position.

-Sit up straight and relax the body.

-Soften the jaw and allow the breath to flow naturally.

-With the right hand, bend the index and middle fingers, keeping the ring finger, pinkie finger, and thumb extended.

-Close the right nostril with the right thumb.

-Inhale deeply through the left nostril.

-At the top of the inhalation, close the left nostril with the ring finger of the right hand as take the thumb away from it and release the right nostril.

-Exhale through the right nostril.

-Keeping the left nostril closed, inhale deeply through the right nostril.

-Seal the right nostril again with the thumb, then release the left nostril.

-Exhale out of the left nostril.

-Begin in the original position, with thumb sealing right nostril as this is one cycle.

-Balance inhalations and exhalations.

-Repeat this pattern of breathing for up to ten full cycles.

-Gradually increasing the number of repetitions as gain experience.

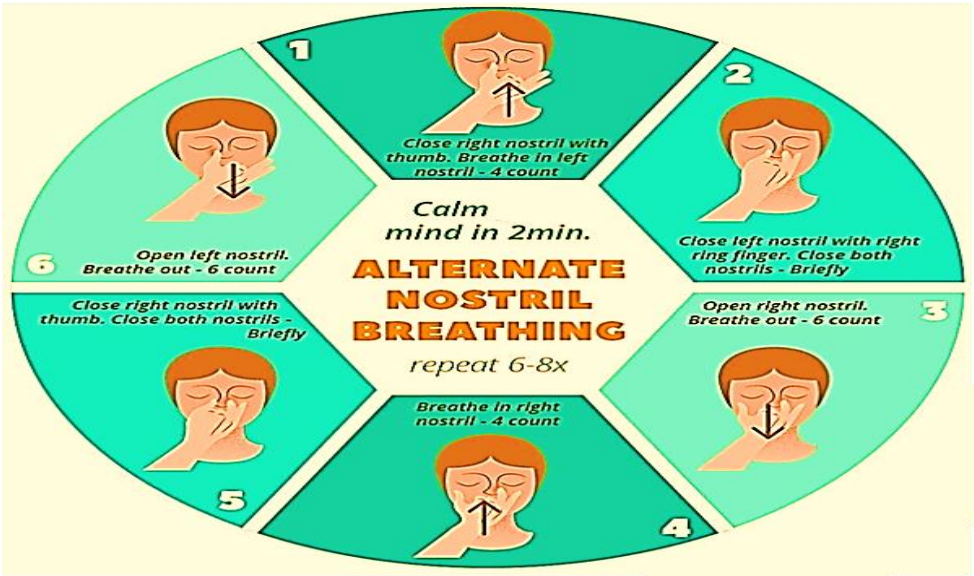
-Keep breath steady, rhythmic, and smooth throughout the practice.

-Balance the inhalations and exhalations so they each last for a count of eight.

-After the first and three weeks reevaluation of the nursing students, fatigue and quality of sleep was done.

-The nursing students were instructed to close their eyes and focus the attention on the breath throughout the exercise.

-Alternate nostril breathing was done three times per day for four weeks.



Ethical Considerations:

- Written informed consent was obtained from each study subject after explanation of the aim of the study.
- The anonymity and confidentiality of nursing students' responses were assured.
- The participants were informed that their participation was not obligatory and they had the right to refuse the participation in the study.
- The nursing students were informed that they have the right to withdraw from the study at any time and respected throughout the study period.

Statistical Analysis: The following statistical measures were used:

- Data were coded, computerized and analyzed using the Statistical Package for Social Sciences (SPSS) version 25.
- Descriptive statistics as frequency, distribution, mean, and standard deviation were used to describe different characteristics.
- Univariate analyses, including: t-test and paired t-test were used to test the significance of results of quantitative variables and to compares the means pre and post in the study group
- The Friedman test as non-parametric test. It is used to test for differences between pre and post application of the alternate nostril breathing exercises when

the dependent variable being measured is ordinal. It used to test the significance of results of quantitative variables of abnormal distribution.

- The level of significance of the results was at the 5% of significance (p value is considered statistically significant if ($p \leq 0.05$) [Grove, & Gray,2018].

Results:

Table (1): Distribution of the studied nursing students according to their sociodemographic characteristics: As regards **age**, it was observed that the highest percentages (46%) of the nursing students were in the age group of (18 < 20), while the lowest percentages (20%) of the study group was in the age group of 18). Regarding **gender**, more than half of the study group (58%) was females. As regards the **place of residence** highest percentages (74%) of the study coming from the urban area.

Figure (2): Comparison of the fatigue level of the studied nursing students pre, and post the application of the alternate nostril breathing exercise: This figure showed that fatigue level in the pre-application of the alternate nostril breathing exercise period was (40%) mild fatigue, while (48%) had moderate fatigue, and (12%) had severe fatigue in the first week after alternate nostril breathing there was an improvement in the fatigue level in which (54%, 44%, 2%) had mild moderate-severe fatigue. after three weeks from alternate nostril breathing (60%, 40%, 0%) had mild, moderate, severe fatigue, there was a statistical significance difference (P=0.024*,0.015*) of fatigue level pre and post first, the second application of the alternate nostril breathing exercise respectively. There was a statistically significant difference in the mean score (P=0.000*) of fatigue pre/post first application of the alternate nostril breathing exercise, pre/post-second application of the alternate nostril breathing exercise, and between post first and the second application of the alternate nostril breathing exercise.

Figure (3): Comparison of the sleep pattern quality level of the studied nursing students pre, and post the application of the alternate nostril breathing exercise: This figure showed that sleep quality in the pre-application of the alternate nostril breathing exercise period (70%) had a fair quality of sleep, (30%) had poor quality of sleep, while (0%) had good sleep. in the first week after alternate nostril breathing, there was an improvement in the quality of sleep in which (12%)had a good quality of sleep, while the poor and fair quality of sleep decreased after application of the alternate nostril breathing exercise (26%,62%) respectively. after three weeks from alternate nostril breathing there was improvement also (2%,66%,32%) had poor, fair, good quality of sleep respectively. there were statistical significance differences (P=0.000*,0.041*,0.000*,0.001) between the quality of sleep in pre and post first, second application of the alternate nostril breathing exercise, post first and post-second application of the alternate nostril breathing exercise respectively. There was a statistically significant difference in the mean score (P=0.000*,0.031*,0.000*,0.001*) between the quality of sleep in pre and post first, second application of the alternate nostril breathing exercise, post first and post-second application of the alternate nostril breathing exercise respectively.

Table (2): Correlation Matrix between fatigue and sleep quality across the study phases: The severity of

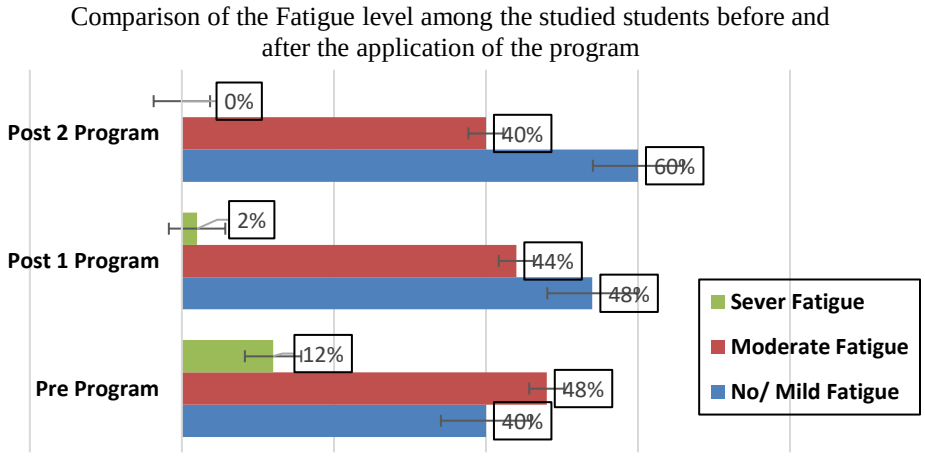
fatigue was significantly correlated with the total score, awakenings during the night, and sleep quality. Sleep quality was a significant predictor of the severity of fatigue in the multiple regression analysis.

Table (1): Distribution of the Studied Nursing Students according to their Sociodemographic Characteristics: (n=100)

Nursing Students' Characteristics	No.	%
Age (in years)		
18 < 19	20	20.0
19 < 20	34	34.0
≤ 20	46	46.0
Gender:		
Male	42	42.0
Female	58	58.0
Area of residence		
Rural	26	26.0
Urban	74	74.0

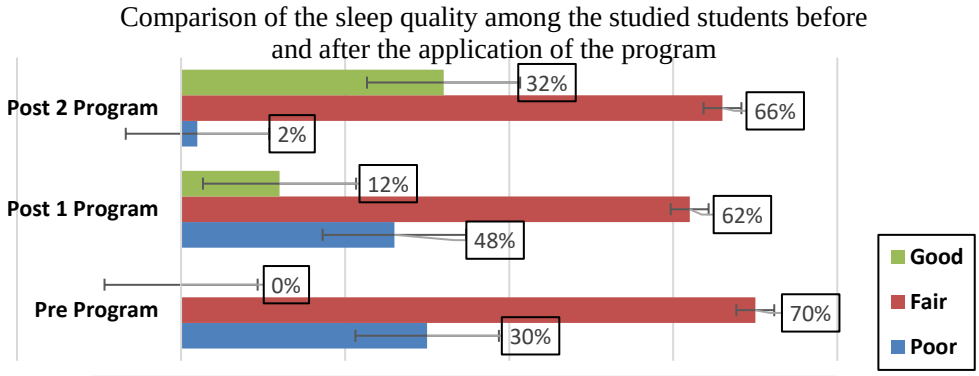
n = number of studied nursing students

Figure (2): Comparison of the Fatigue Level of the Studied Nursing Students Pre, and Post the Application of the Alternate Nostril Breathing Exercise. (n=100)



	Pre Program	Post 1 Program	Post 2 Program
Sever Fatigue	12%	2%	0%
Moderate Fatigue	48%	44%	40%
No/ Mild Fatigue	40%	54%	60%

Figure (3): Comparison of the Sleep Pattern Quality Level of the Studied Nursing Students pre, and post the Application of the Alternate Nostril Breathing Exercise. (n=100)



	Pre Program	Post 1 Program	Post 2 Program
Good	0%	12%	32%
Fair	70%	62%	66%
Poor	30%	26%	2%

Table (2): Correlation Matrix between fatigue and sleeping quality across the study phases. (n=100)

Items		Fatigue Pre	Fatigue Post 1	Fatigue Post 2	Sleep Quality Pre	Sleep Quality Post 1	Sleep Quality Post 2
Fatigue Pre	r						
	P						
Fatigue Post 1	r	0.302					
	P	0.033*					
Fatigue Post 2	r	0.266	0.573				
	P	0.026*	0.000*				
Sleep Quality Pre	r	-0.632	- 0.060	- 0.020			
	P	0.006*	0.678	0.888			
Sleep Quality Post 1	r	-0.524	- 0.860	- 0.170	0.544		
	P	0.000*	0.000*	0.058	0.000*		
Sleep Quality Post 2	r	- 0.164	0.366	- 0.940	0.963	0.731	
	P	0.028*	0.009*	0.000*	0.007*	0.008*	

n = number of studied nursing students
r = Pearson correlation* Significant p at ≤0.05
r ≥0.9 very high correlation r 0.7-<0.9 high correlation r 0.5-<0.7 moderate correlation
r < 0.5 low correlation

Discussion:

Yoga, a commonly practiced mind-body application of the alternate nostril breathing exercise, involves a combination of physical activity, breathing exercise, and meditation [**Woodyard, 2014**]. Nostril breathing activates the parasympathetic (left nostril) or sympathetic (right nostril) divisions of

the autonomic nervous system through connections between the nasal meatus and different hypothalamic nuclei The findings of the present study showed that the majority of the studied group after performing alternate nostril breathing had decreased level of fatigue; this observation is in line with [**Dhungel, 2013**], who emphasized that ANB removes attention from worry decrease worries and "de-stress", fatigue which decrease the release of adrenaline, decrease sympathetic activity and decrease in heart rate, respiratory rate, blood pressure. These results are in accordance with [**Malhotra, 2013**], who mentioned that ANB improves cardiorespiratory and autonomic functions, helps in reducing the scores of anxiety and stress.

Results of the current study indicated that nursing students who practicing Yoga regularly had better overall sleep quality, fewer episodes of disturbed sleep took less time to fall asleep, less daytime dysfunction, less use of sleep medications, and also felt more rested and energetic in the morning. These results in accordance with previous studies where the effect of 6 months of Yoga application of the alternate nostril breathing exercise on elder people were studied and found that Yoga group participants had better sleep quality and fewer sleeping disturbances when compared with the control group. The current results illustrated that one possible reason explained for better sleep quality in Yoga practitioners is that Yoga exercises involve stretching and relaxing of muscles causing significant physical and mental exertion resulting in less sleep latency, more deep sleep, fewer sleep disturbances, and better sleep efficiency [**Bankar, M.,2013**]. Similarly, in a study reported by [**Fullagar, et al.,2015**]. association between poor sleep quality and low wake time oxygen saturation (less than 90%) resulting in poor physical performance in the form of decreased grip strength and walking speed was observed by [**Kabitz, et al., 2014**]. The combination of exercise and respiratory training improves respiratory muscle function in pulmonary hypertension. concluded that Yogic breathing exercises can improve the strength of the respiratory muscles which resulted in better tissue perfusion and improved oxygen saturation.

Differentiating fatigue and sleepiness

The reduction of subjective fatigue in this sample is particularly interesting considering that subjective sleepiness levels were unchanged following sleep extension. This dissociation of results highlights the separateness of these complex constructs. Sleepiness is typically considered a phenomenon directly related to the sleep/wake cycle. Sleepiness is defined as a physiological state that combines several wakes- or sleep-promoting components: circadian rhythmicity, homeostatic drive, environmental, and behavioral factors [**Mantua, 2019**]. Sleep extension reduces fatigue in healthy, normally sleeping nursing students. Fatigue, on the other hand, which is seemingly more difficult to describe, has been defined as "weariness" related to a lack of motivation, weakness, or depleted energy or, alternatively, a failure to initiate or sustain tasks requiring motivation [**Trendall, 2017**].

Several investigations have found poor sleep influences fatigue independent of sleepiness. For instance, a previous study found individuals with insomnia had abnormally high levels of fatigue in the absence of sleepiness [**Riedel, & Lichstein, 2015**]. These results indicate fatigue is increased by poor sleep quality,

even when sleepiness remains relatively unaffected. Adding to these findings, the current study, found that a sleep extension differentially impacted fatigue and sleepiness.

Fatigue is a physiologically complex, multifaceted symptom. Nevertheless, several attempts have been made to quantify the neural signature of subjective fatigue in healthy, nursing students. For instance, one investigation found subjective fatigue was related to decreased oxygenated hemoglobin concentration in the frontal cortex and superior temporal cortex [**Welham, & Maclagan, 2015**]. Similarly, in a study in which fatigue was induced by a continuous performance task, there were detectable alterations in cerebral blood flow in the frontal lobe when fatigue was present [**Secher, Seifert, & Van Lieshout, 2015**].

Taking these results together, it seems subjective fatigue is related to alterations in frontal lobe functioning. Therefore, for sleep extension to be effective in decreasing fatigue i.e., reversing these effects, sleep extension would need to improve frontal lobe functioning. Indeed, a recent study demonstrated that sleep extension increases frontal lobe activation and connectivity with other critical regions. Sleep extension reduces fatigue in healthy, normally sleeping nursing students [**Mantua, et al., 2019**]. Besides these findings, the current study found that sleep extension increases in the adult stage due to sleepiness at night, which leads to fatigue over the day. So this study focuses on performing this breathing exercise to facilitate sleep extension at night and decrease fatigue.

Conclusion:

The findings of the present study were:

•Implementation of alternate nostril breathing exercises may decrease fatigue mean score level among nursing students pre, during, and post-exercise.

•Implementation of alternate nostril breathing exercises may improve the quality of sleep pattern among nursing students pre, during, and post-exercise.

Recommendations:

Based on the findings of the present study, the following recommendation was derived and suggested

•Considering the limited sample size and subjective data of the current study, further studies are required to substantiate the findings in this study.

•Further studies will be required to investigate the effect of alternate nostril breathing exercises on improving the fatigue and quality of sleep pattern among nursing students.

•There are several studies that reported significant findings on nurses, but there are limited data available examining the impact that fatigue has on nursing students.

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Conflicts of Interest Disclosure

The authors declare that there is no conflict of interest.

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