# International Journal of Nursing and Health Sciences

**Urmila Swain**
Nursing Tutor, DRIEMS
School and College of Nursing,
Cuttack, Odisha, India

# An experimental study on effect of deep breathing exercise in promoting quality of sleep among geriatrics those are staying in a selected old age home, Bhubaneswar, Odisha

## Urmila Swain

**Abstract**
Sleep disturbances is a common problem in the society at large with disastrous health implications the most notable change in elderly sleep architecture is decrease quality of sleep, increase sleep disturbance, difficulty falling and maintaining sleep. There is an increasing in non-pharmacological interventions, among which deep breathing exercise is powerful method help to increase sleep quality in geriatrics. In the present study, a pre-experimental, one group pre-test, post-test design was adopted to assess the effect of deep breathing exercise on quality of sleep among geriatrics in selected old age home, Bhubaneswar by taking 60 participants. They were geriatrics between 60 to 80 years of age. Sampling technique was simple raandom sampling method. The tool used for the study included interview schedule for socio demographic variables, standardized self-rating sleep quality index to assess effect of deep breathing exercise on quality of sleep. A simple four-step breathing exercise was created, each of which was performed three times daily for fifteen days. During the pre-test, the majority of samples (87%) had modest sleep quality, while 13% had moderate sleep quality. At the time of the post-test, the majority of study samples (52%) had moderate sleep quality, while the remainder (48%) had mild sleep quality. This study concluded this study found that deep breathing exercises with an appropriate tool increase sleep quality in 60-80-year-olds. Deep breathing exercises improved PSQI global sleep quality in this study. The intervention improved geriatric sleep quality. Deep breathing exercises improve elderly sleep quality. Deep breathing exercises improve geriatrics' sleep, according to the study.

**Keywords:** Effect, deep breathing exercises, quality of sleep, geriatrics

## Introduction
The Greek God Hypnos gave his name to the English term "hypno," which means "sleep." Somnus was the Roman god of sleep, and the term somnia comes from his name. Sleep serves an essential and fundamental biological purpose. It's crucial for one's mental and physiological health. The cognitive abilities of those who don't get enough sleep can rapidly decline. If you want to be at peak performance during the day, you need to get between 7 and 8 hours of sleep per night. This holds true for both men and women of retirement age.

Both the quantity and quality of sleep undergo gradual shifts across the lifespan. As people enter late adulthood, they often experience regular and normal shifts in the way they sleep. The amount of deep sleep (Stage-3) decreases with age, which is the most noticeable shift in sleep architecture in the elderly. Additionally, a smaller proportion of REM sleep occurs as people get older. The sleep of the elderly is often more fragmented than that of younger people. Although sleep requirements change little from childhood to old age, several things can prevent seniors from getting the sleep they need.

Ageing is a process that starts before we are born and goes on for the rest of our lives. Ageing can also be a continuum of independence, dependence, and interdependence. This can range from geriatrics who are mostly independent and do well with daily life to those who need some help in their daily lives to those who are dependent on others for support and care.

**Urmila Swain**
Nursing Tutor, DRIEMS
School and College of Nursing,
Cuttack, Odisha, India

A 2014 study of a group of British people ages 45–90 showed that 63% of men said they had never had trouble falling asleep, while only 40% of women said the same. Most people had trouble sleeping because they woke up too early, which was reported by 12% of men and 15% of women.

A cross-sectional study was done on 235 older people around the age of 80 for an average of 6–8 nights. The study looked at the relationship between nighttime sleep and naps. The sleep includes the total amount of sleep at night, the fragmentation score, and the amount of sleep during the day. Using logistic regression, the link between the total amount of sleep at night and how it was broken up and napping was studied. The results showed that more sleep fragmentation (90%) was linked to a higher chance of napping, but it wasn't linked to the length of naps.

Sleep is important for health and well-being, but as people get older, the quality of their sleep can get worse. Many older people are given sleep aids, but these can cause problems, so we were looking into how technology could help maintain and improve sleep. This is a really new way to help older people get good sleep, and the project has shown what an important role technology could play.

In a general practise study, more than half of the older patients said they had trouble sleeping, and 80% of those people said it was a long-term problem. More women than guys said they had trouble sleeping.

Sleep is a very important part of our bodies, and it has important restorative functions that are needed for us to work well during the day. Lack of sleep or bad quality sleep has been linked to problems with the way neurons work, organ dysfunction, and long-term health problems. The way we sleep and how much we sleep change as we get older, both in terms of quality and quantity.

This study investigated deep breathing exercise as a non-pharmacological treatment for essential sleep disruption.

Deep breathing is the easiest workout to practise alone. Home care can accomplish this. This study examines if deep breathing exercise helps elderly persons sleep. Thus, the study becomes more applicable. This prompted us to explore the effects of deep breathing exercise on sleep in geriatrics in selected old age facilities at BBSR, Odisha.

### Objectives
1. To assess the level of sleeping pattern among geriatrics.
2. To find out the effect of deep breathing exercise in promoting sleep among geriatrics.
3. To find out the association between the quality of sleep in geriatrics with selected socio demographic variable

### Methodology
**Research Design**
The study design chosen for this investigation was a pre-experimental research design.

### Settings of the Study
The research was intended to be conducted at Nirmal Hriday, a retirement community run by Missionaries of Charity in Satyanagar, BBSR, Odisha. With a human touch, they provide comprehensive, supportive care for the elderly with a focus on preventive care for a healthy society.

### Population
All geriatrics are included in the current study's population.

### Sample Size and Sampling Technique
The sample number for the study is 60 older people between the ages of 60 and 80.

Simple random picking was used to choose samples, which were then given to both the experimental group and the control group.

Data collection tool & technique

| S. No | Variables | Tool | Technique |
|---|---|---|---|
| 1. | Socio demographic variable Age in year, Education, Marital status, Presence of disease, Doing exercise, Place of Sleeping, Exposed to noise during sleep, Substance use. | Self-structure questionaries | Interview |
| 2. | Quality of sleep | Pitts burgh sleep quality Index (Rating scale standardize) | Observation technique & Interview |

### Pilot Study
From May 2 to May 4, a feasibility study on geriatrics patients aged 60 to 80 years old was undertaken at the old age home in Cuttack, Odisha. Sister in charge of Daya Ashram gave her proper consent, and CTC was also notified about the project. The study, which involved 12 participants (six from the experimental and control groups), measured the tool's authenticity, guaranteed confidentiality, and highlighted the tool's strengths and weaknesses. The feasibility of the investigation was confirmed by the pilot study's findings, which showed that no serious issues were encountered.

### Intervention
**Deep Breathing exercises**
A simple four-step breathing exercise was created, each of which was performed three times daily for fifteen days. The steps were:

**Step 1:** Deep inhale followed by expiration via nose, Anulom-vilom (shut one nostril, deep inhalation with the other nostril, and exhalation through the closed nostril) 5 times each for left and right nostril.

**Step II:** Inhale deeply and exhale through your mouth.

**Step III:** Inhale deeply and bring the chin near to the chest, then exhale and return the chin to its previous position or normal posture.

**Step IV:** This final phase has four sub steps in which the patient does the identical thing five times in each direction: upward, downward, left side, and right side. The breathing exercises lasted an average of 5.30 minutes.

### Data Collection Technique
Prior permission from the in charge of the old age home was taken to conduct this study.

Self-introduction and purpose of the study were explained to the study sample.

Oral consent was taken from sample to participate in the study.

60 samples were selected using a simple random sampling technique, the deep breathing exercise was taught to the samples in the experimental group, and the researcher oversaw their correct performance of these procedures on a daily basis.

**Data Analysis Procedure**
1. Socio-demographic data to be analysis using descriptive statistic i.e. frequency percentage.
2. Chi-square to find out whether there is any association between quality of sleep with selected socio demographic variables.
3. 't' test to compare the significant difference between pre-test and post test

## Results

**Table I:** Frequency and Percentage Distribution of Samples According to Socio-Demographic Variables (n = 60)

| S. No | Demographic Variables | | Frequency | Percentage |
|---|---|---|---|---|
| 1. | Age | 60-65 | 25 | 41.6 |
| | | 66-70 | 19 | 31.7 |
| | | 71-80 | 16 | 26.7 |
| 2. | Education | Primary | 15 | 25.0 |
| | | Secondary | 22 | 36.6 |
| | | Graduation & above | 11 | 18.3 |
| | | literate | 12 | 20. 0 |
| 3. | Marital Status | Married | 27 | 45.0 |
| | | Un Married | 17 | 28.3 |
| | | Widow | 16 | 26.6 |
| 4. | Any Morbidity | Pulmonary | 9 | 15.0 |
| | | Cardiac | 11 | 18.3 |
| | | Neurological | 10 | 16.7 |
| | | Absent | 30 | 50.0 |
| 5. | Exercises | No exercise | 15 | 25.0 |
| | | Usual daily activity | 21 | 35.0 |
| | | Extra activity used | 16 | 26.6 |
| | | Structured activity practices | 8 | 13.3 |
| 6. | Lightings in ssleep area | No light | 19 | 31.6 |
| | | Dim light | 19 | 31.6 |
| | | Average light | 12 | 20.0 |
| | | Too much light | 10 | 16.6 |
| 7. | Nosie Exposure during Sleep | Exposed | 29 | 48.3 |
| | | Not Exposed | 31 | 51.6 |
| 8. | History of Substance use | Yes | 17 | 28.4 |
| | | No | 43 | 71.6 |

Table 1 shows that (25) 41.6% of sample belongs to the age group of 60- 65 years, (19) 31.7% of sample belongs to the age group of 66-70 years, (16) 26.7% of sample belongs to the age group of 70-80 years, In education (15) 25% of samples are under primary education, (22) 36.6% of samples are under secondary education, (11) 18.3% of samples are under graduation above, (12) 20% of samples are under illiterate. Where (27) 45% samples are married, (17) 28.3% samples are unmarried, (16) 26.6% samples are widow. Such as (9) 15% are having pulmonary disease, (11) 18.3% are having cardiac disease, (10) 16.7% are having neurological disease and (30) 50% are absents of disease. It seems that (15) 25% of samples are doing no exercise, (21)

35% of samples are doing usual daily activities, (16) 26.6% of samples are doing extra activities, (8) 13.3% of samples are doing structured exercise. Whereas usually (19) 37.6% could sleep with no light, (19) 37.6% could sleep with dim light, (12) 20% could sleep with average light, (10) 16.6% could sleep with too much light on the other hand majority of samples (31) 51.6% are not exposed to noise during sleep, and (29) 48.3% are exposed to noise during sleep as well as (17) 28.3% samples are having substance use, (43) 71.6% samples are not.

Figure 1 depicts the percentage distribution of study samples according to sleep quality. During the pre-test, the majority of samples (87%) had modest sleep quality, while 13% had moderate sleep quality. At the time of the post-test, the majority of study samples (52%) had moderate sleep quality, while the remainder (48%) had mild sleep quality.
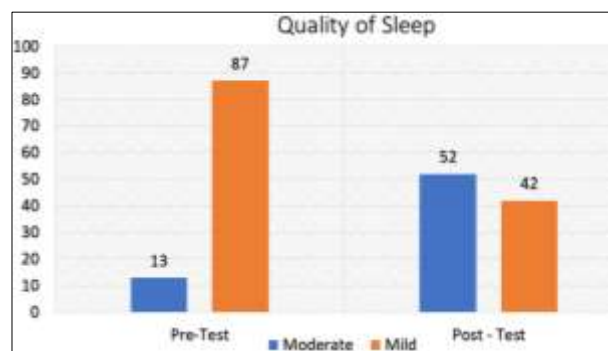


**Fig 1:** Percentage distribution of samples according to quality of sleep

**Table 2:** PSQI pre intervention Mean ± SD quality of sleep (N = 60)

| Test | Mean | Mean Difference | Standard Deviation | Paired 't' test | p value |
|---|---|---|---|---|---|
| Pre-Test | 13.5 | 6.4 | 2.6 | 0.64 (df=59) | 0.001* Significant |
| Post-Test | 7.1 | | 2.7 | | |

Table no 4.2 illustrated that as per PSQI pre-test Mean ± SD quality of sleep-in samples was (13.5±2.6). the post-test Mean + SD quality of sleep was 7.1 ± 2.7. Paired 't' test value was 0.64 for the degree of freedom 59. This value was significant at p value < 0.001. Hence the null hypothesis was rejected and alternate hypothesis was accepted.

**Conclusion**
The findings of this study show that performing deep breathing exercises with an appropriate tool improves sleep quality in geriatrics aged 60-80 years. In the current study, the deep breathing exercises raised the mean score of global sleep quality as measured by the PSQI.

The data demonstrate that geriatrics who got the intervention had better sleep quality. It demonstrates that deep breathing exercise has a significant impact on senior sleep quality.

According to the current study findings, geriatrics' sleep quality can be enhanced by conducting deep breathing exercises.

**References**
1. Black MJ, Hawks HJ. Medical- Surgical Nursing 7th edition, New Delhi, Elsevier India private limited; c2005. p. 2073-2082.

2. Turvey CL. Attitudes about important and depression in elders suffering from chronic heart failure, 2003, 117.

3. Women Ageing and health, A Framework for action, world health organization WHO library cataloguing-in-publication data, 2007, 309. (Cited on april 24, 2016) Available from www.who.int/ageing/publication.

4. Siva Raju S. studies on ageing in India A Review BKPAI working paper no 2 United Nations population Fund (UNFPA), New Delhi, 2011, 3.

5. Thomas Yinka. Get a good night sleep, 7 practical steps: 4 (Cited on April 24, 2016) Available from www.sleepcouncil.org.uk/wp-content/ uploads/2013.

6. Focus on sleep and older people CARDI, (Cited on may 15, 2016) Available from www.cardi.ie/sites/default/files/Focus % 20 on % 20 sleep. 2014 July 6.

7. RM Ngang. Sleep disturbance among elderly people in nursing home, A non-pharmacological approach. Human Aging & Elderly service. ARCADA. (cited on January 25 2016) Available from https/www theseus/ bitstream. 2011.

8. Trunnur JR. The sleep experience of medical & surgical patient. Clinical Nursing Research. 2003 May;12(2):158-173.

9. Knutson KL, Rathouz PJ, Yan LL, *et al*. Stability of the Pittsburgh sleep quality index and the Epworth sleepiness questionnaires over 1 year in elderly middle-aged adults the CARDIA Study, Sleep. 2006;29(11):1503-1506.

10. Cathy A Alessi, Jennifer L Martin, Adam P Webber, Tarannum Alam, Michel R Littner. day time sleeping predicts less functional recovery among older people undergoing post- Acute Rehabilation, Journal of sleep, American sleep disorders, association and sleep resources society. 2008;31(9):1291-300.

11. Susan K. Roepke, Sonia Ancoil-Isreal. Sleep disorder in elderly, Indian Journal medical research, San Diego; c2010 Feb p. 302-310.

12. Strangess Tigbew, Gomez Olive Fx, Thoro Good, M Kandal NB. Sleep problems an emerging global epidemic, findings from the INDEPTH WHO – SAGE Study among more than 40,000 older adults from & contries across Africa and Asia sleep. 2012 Aug;35(8):1173-81.

13. Jianfeng Luo, Guoxing zhu, Qianhua Zhao, Qihao Guo, Taijiao meng, Zhen Hong, *et al*. Risk factors of poor sleep quality among Chinese Elderly in an urban community-results from the shanghai Aging study (PLOS ONE). 2013, 18(11).

14. Insomnia Definition and prevalence (Cited on January 25, 2016) available from health am/sleep more/insomnia definition and prevalence.

15. Bradely A Edwards, Denise MO, Driscoll A, Sad Ali Amy S. Jordan John Trinder, Atul malhetra, Aging and sleep physiology and pathophysiology. 2010;31(5):618-633.