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# Effects of Power Napping on the Working Population of Islamabad

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## A B S T R A C T

Background: Sleep is a prime component of the optimal health and performance in addition to nutrition and exercise. Effective Sleep is essential for the daytime alertness & elevated performance in every aspect of life.

Objective: To determine the frequency of workers taking power naps in Islamabad and to compare Quality of life (QOL) and Fatigue levels of nappers and non-nappers.

Methodology: This was a comparative cross sectional study conducted in Islamabad, Pakistan. A total of 361 participants with age range of 18-60 years from any profession & of both genders were recruited through simple random sampling technique. Demographics were taken via self-structured questionnaire and their quality of life and fatigue levels were assessed through World Health Organization Quality of Life (WHOQOL-BREF) questionnaire and Fatigue Assessment Scale respectively. Quality of life and fatigue levels of Nappers and Non-nappers were compared through independent sample t-test. The data was analysed using IBM-SPSS Statistics 26.

Results: The mean age of the population was 32.54 ± 8.47 years. Majority 213 (59.0%) of the population was taking power naps and 148(41.0%) were non-nappers. Between groups analysis showed better QOL of nappers in Physical Health, Psychological and Environmental health domains then non-nappers. P value showed significant difference (p-value < 0.05) between the groups in all these three domains however both the groups were having good social relationships when assessed through WHOQOL-BREF questionnaire. Results also showed that Fatigue was more prevalent in non-nappers 67 (45.3%) then nappers 61 (28.6%).

Conclusion: This study concluded that majority of the working population of Islamabad is taking power naps and observing beneficial effects of it on QOL and Fatigue levels.

Keywords: Adults, Fatigue, Quality of life, Sleep.

## Introduction

Sleep is a prime component of the optimal health and performance in addition to nutrition and exercise.[1] Effective Sleep is essential for the daytime alertness & elevated performance in every aspect of life.[2] Sleep cycle is mainly consisting of 2 phases including Non-Rapid Eye Movement (NREM) & Rapid Eye Movement (REM).[3] Sleep cycle is regulated by the circadian rhythm. People with more sleep disturbances due to their working duties suffer more fragmentations in sleep cycle which is the primary cause of the sleep disorders.[4]

Sleep habits among duty workers are so problematic which yield the adverse effects on the health and work efficacy.[5] In working population, Insomnia was the major sleep complaint which was observed and was more prominent in night shift workers.[6] A study done by Nayak et al. in 2019 concluded that habit of daytime napping helps in maintaining the performance near the end of night shift however it can also affect the performance in the morning shift, starting early in the morning and finishing late in afternoon.[7] Poor sleep quality and its deprivation is more evident in the working population due to burden of prolonged working hours.[8] This is the reason our body needs break intervals to enhance its functioning level, so it

demands for the recovery period. Napping for a short time period at any place is an appropriate solution to overcome this problem.[9] Power nap is a short period of sleep consists of 15 to 20 and maximum thirty minutes, with purpose to intensify the energy levels. It is concise rest interval which not only freshen the body after frenetic routine but provides the pause to restless body to comeback with elevated energy levels. Power nap enhances the performance, alertness and quality of working.[10] It also augments the focus eventually causes the betterment of the vigilance. It shows strong effects on cognition level and learning abilities.[11]

Every age group takes nap according to their body demands. It gives advantage to younger, middle age & older age groups in different ways. In children, it is included in their daily routine after post lunch. Mid-day power naps in children and in adolescents depicted that it increases their happiness and significantly associated with higher verbal response.[12] Power nap is associated with better cognition & increased psychological wellness.[13] In young population, it can be for enhancing energy levels for the sports activities.[14] Boukhris et al. conducted a study in 2019 concluded that athletes might benefit from a nap opportunity of 25, 35 or 45 min before practice or before a competition.[15] In young elder population napping is more due to excessive leisure time. In this age category, it improves the mental health and reduces their daytime sleepiness.[14]

The major types which are reported in evidence show that napping is of 3 types. Among them one is replacement napping in which person takes nap in response to sleep loss. The next type includes the nap before period of sleep deprivation called the prophylactic nap. The other type is power nap which one takes to rest for a while to reduce the effect of tiredness.[16] Power nap if even taken for the 10 minutes causes the enhancement of the wakefulness & watchfulness in working population.[17] A research conducted by Busaidi et al. in July 2018 in Royal Brisbane hospital Australia suggested that in the workplace environment a brief post-lunch nap is beneficial to subsequent afternoon subjective and objective performance and thus improves workplace efficiency.[18]

In industry workers it is noticed that despite of having huge burden of working, power nap for 20-30 minutes increases wakefulness & readiness in the tasks of the workers.[19] Power nap is frequently taken by the shift workers, nurses, and medical staff. It is more useful for the employees who have night duties. In these types of working population power nap is considered as the best option as it increases the post nap performance and energy levels.[20] Power nap can reduce the sleep need in the health workers in night duties and yields the positive results in psychomotor domain of the working.[21] A Research conducted by Zion in April 2019 concluded that a scheduled nap provides an effective countermeasure against the negative consequences of night-time shift work in female nurses above and beyond interpersonal differences.[22]

Power nap is the best short time rest period with the aim to enhance energy levels, improve quality of life, quality of working furthermore; it also brings down the fatigue levels in stressful work site in the working population.[23] A study done by Harma et al. in 2018 showed that nap elevates the alertness lowers the fatigue levels and magnifies the work place performance.[24] This study will highlight the importance of power napping for working population and will compare the quality of life and fatigue level of nappers and non-nappers.

## Methodology

This was a comparative cross-sectional study conducted in 6 months duration, from August 2020 to January 2021 in Shifa Tameer-e-Millat University Islamabad. This study was done after the approval from Institutional Review Board & Ethical Committee Shifa International Hospital and Shifa Tameer-e-Millat University.

The sample size was calculated by using Rao Soft software which came out to be 385. The total 462 responses were received out of which 361 participants met the inclusion criteria, whereas 29 met the exclusion criteria and 72 responses were excluded as they were filled incompletely. The simple random sampling technique was used to obtain the data, in which self-structured and standard questionnaires were distributed to the working population of Islamabad randomly having equal opportunity of being selected. Participants of both genders, age group ranged from 18 to 60 years and of any profession in working population of Islamabad were included in the study while those with any type of sleep disorders, cognitive disorders and mental illness were excluded.

In this study participants were assessed by three instruments: a self-structured socio-demographic questionnaire, World Health Organization Quality Of Life (WHOQOL-BREF) questionnaire and Fatigue Assessment Scale (FAS). After taking prior consent from participant, data was collected through self-structured questionnaire which was used to satisfy the inclusion and exclusion criteria. The WHOQOL-BREF is a 26-item version of the WHOQOL-100 assessment.[25] In this questionnaire two items relate to self-evaluation about the participants' quality of life and their own general health and 24 items were divided into four domains: physical, psychological, social, and environmental. Each item has five choices, (rated from 1 to 5 except for item 3,4,26 which are ranked from 5 to

1).[26] The raw score of each domain is converted to a transformed score (0-100 scale) and overall lower scores indicates lower quality of life and higher score indicates higher quality of life. Many studies have shown that WHOQOL-BREF has a good psychometric property for assessing quality of life.[27]

Fatigue assessment scale (FAS) has Likert type questions which are 10 in number and the scoring is from 1 to 5 where, 1=Never, 2=Sometimes, 3=Regularly, 4=Often, and 5=Always, except for question 4 and 10.[28] Fatigue assessment scale is considered uni-dimensional and consequently, only a total score is calculated. Total score ranges from 10 to 50, 10 indicates the lowest level of fatigue and 50 indicating highest levels of fatigue.[29] Reliability and validity appear to be good as FAS has a reliability of 0.90 and does not measure emotional stability or depression.[30]

After data collection, the participants were divided into two groups: Group A and Group B. Group A had participants who took power naps. Group B had participants who did not take power naps. Both the groups A and B were compared, and the status of the quality of life was assessed by using the Quality of life questionnaire and fatigue levels were determined by using the Fatigue Assessment Scale. The data was analysed using IBM-SPSS Statistics 26. Independent t-test was used for between groups analysis. P value of less than 0.05 was taken as statistically significant.

## Results

The mean age of the participants was 32.54 ± 8.47 years. Of the participants 183 (50.7%) were males and 178 (49.3%) were females. Out of 361 participants, most individuals were teachers 100 (27.7%), 54 (15%) were from administration staff, 48 (13.3%) were doctors, 40 (11.1%) were engineers, 36 (10 %) were government officers and remaining participants were from different other professions like physiotherapy, banking and nursing etc. Majority 155 (42.9%) of the participants were working 8 hours daily, 61 (16.9%) were working 10 hours/ day and the remaining participants were working less than 8 hours/ day.

Out of 361 participants, majority 213 (59.0%) were taking power nap and 148 (41.0%) were non-nappers. Most of the power nappers 118 (55.4%) were taking maximum 30 minutes of power nap and only 10 (4.7%) power nappers were taking 10 minutes of power nap. Majority 89 (41.8%) of the power nappers were taking power nap because nap refreshed them and 85 (39.9%) were taking power nap because they felt sleepy.

To compare the two groups crosstabs were used. According to WHOQOL-BREF questionnaire, among nappers majority 87.3% participants were having either good or very good quality of life i.e. 124 (58.2%) nappers showed the good QOL and 62 (29.1%) showed very good QOL. While among non nappers only 73.6% participants were having a satisfactory QOL i.e. 74 (50%) showed the good QOL and 35 (23.6%) showed very good QOL. (Table I).

**Table I: Crosstabs for between group comparisons of QOL**

| Nappers Vs Non-Nappers | Quality of Life | Frequency (%age) |
|---|---|---|
| **Nappers** | Very poor | 1(0.5%) |
| | Poor | 0 (0%) |
| | Neither poor nor good | 26 (12.2%) |
| | Good | 124 (58.2%) |
| | Very good | 62 (29.1%) |
| **Non-Nappers** | Very poor | 1 (0.7%) |
| | Poor | 5 (3.4%) |
| | Neither poor nor good | 33 (22.3%) |
| | Good | 74 (50%) |
| | Very good | 35 (23.6%) |

The physical, psychological, and environmental domains also showed differences between groups. The results showed that 115 (54%) nappers had good physical health whereas only 53 (35.8%) non-nappers had good physical health. The majority nappers showed good psychological health 110 (51.6%) whereas only 50 (37.2%) non- nappers showed good psychological health. Similarly 135 (63.3 %) nappers and 78 (52.7%) non-nappers showed good environmental health. Majority of both the nappers 145 (68.1%) and non-nappers 98 (66.2%) showed a good social health. The results also revealed that most of the nappers 152 (71.4%) have no fatigue while 81 (45.3%) non-nappers were having fatigue. (Table II).

## Discussion

The current study showed the higher frequency of nappers in working population which was also seen in the research conducted in Gujrat by Nayak et al. in 2019, also stated the greater prevalence of nappers as compared to non-nappers as employees were more attentive and energetic after having the power naps.[7] Another study conducted at Abu Dubai city (UAE) in 2018 by Garbarino et al. depicted the greater frequency of nappers as compared to non-nappers. They suggested that daytime napping had a direct impact on the happiness of the employee.[9]

In accordance to current study, nappers reported less fatigue as compared to non-nappers. The results of present study are similar with the findings of another research conducted by Busaidi in July 2018 in Royal Brisbane hospital Australia which included doctors, physiotherapists, nurses & administration staff which observed the effects of 10 to 20 minutes nap.[18]

**Table II: Crosstab for between group comparison of different domains of WHOQOL and Fatigue Assessment Scale**

| Domains | | Nappers VS Non nappers | |
|---|---|---|---|
| | | Nappers | Non nappers |
| **Physical health** | Poor Physical Health | 8 (3.8%) | 5 (3.4%) |
| | Normal Physical Health | 90 (42.3%) | 90 (60.8%) |
| | Good Physical Health | 115 (54.0%) | 53 (35.8%) |
| **Psychological Health** | Poor Psychological Health | 19 (8.9%) | 20 (13.5%) |
| | Normal Psychological Health | 84 (39.4%) | 78 (49.3%) |
| | Good Psychological Health | 110 (51.6%) | 50 (37.2%) |
| **Social Relationships** | Poor Social Relationship | 19 (8.9%) | 5 (3.4%) |
| | Normal Social Relationship | 49 (23.0%) | 45 (33.4%) |
| | Good Social Relationship | 145 (63.1%) | 98 (66.2%) |
| **Environmental Health** | Poor Environmental Health | 11 (5.2%) | 15 (10.1%) |
| | Normal Environmental Health | 67 (31.5%) | 55 (37.2%) |
| | Good Environmental Health | 135 (63.3%) | 78 (52.7%) |
| **Fatigue Assessment Scale** | No Fatigue | 152 (71.4%) | 81(54.7%) |
| | Fatigue | 61 (28.6%) | 67 (45.3%) |

The present study revealed that nap elevated the alertness, magnified the work place performance and there was significant improvement in the fatigue level. A systematic review conducted in August 2017 by Gill et al. which represented the multiple already published evidences in their study to find out the impact of nap in emergency medical services personnel. They supported present study & indicated that nap improved performance & decreased the fatigue levels.[2] Another evidence in 2019 by Zion et al. depicted that napped for 30 minutes represented lower sleepiness and greater performance in task also supporting current study.[31]

Results showed that power nap up to 30 minutes was more prevalent in different working populations in Islamabad and considered most effective while Sandybayev et al. in 2019 concluded that in working population, daytime post lunch 15 minutes power nap was also considered to be extremely helpful in the maintenance of the alertness & attentiveness at the work. It also diminishes the sleepiness and enhances the attention in task execution.[9] The difference in the results could be due to study populations, data collection tools, different occupations, and difference in cultural and social setting. The effects of the power nap of different lengths remains to be explored.

As the current study participants only belonged to Islamabad region, which was small for the generalization of the results so future studies should be conducted on power naps with larger sample size. Other comparative cross sectional surveys should be conducted to compare the effectiveness of different time periods of power napping and owing to the efficacy it is recommended that workers should spare some time for napping in order to perform better and to avoid fatigue during the duty hours.

## Conclusion

This study concluded that majority of the working population of Islamabad is taking power naps. Power napping has beneficial effect on the quality of life of the working population. And nappers have significantly better QOL and less fatigue levels as compared to non-nappers.

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