The Professional Medical Journal
www.theprofesional.com

ORIGINAL PROF-2901

# ACADEMIC ACCOMPLISHMENT;
## INFLUENCE OF DIURNAL PREFERENCE IN MEDICAL STUDENTS

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**Article received on:**
22/04/2015
**Accepted for publication:**
07-05-2015
**Received after proof reading:**
08/08/2015

**ABSTRACT… Objective**: To evaluate sleep hygiene and its relationship with academic performance in adults. **Study Design:** Cross sectional. **Place and duration of the study**. The study was conducted at Dow Medical College, Dow university of Health sciences Karachi from December 2012 to November 2013. **Material and methods**: Subjects were students from first year to final year. Instrument was an integrated questionnaire (Horne JA and Ostberg O Morningness- Eveningness questionnaire MEQ original 1976) designed to assess chronotype of young adult population. Subjects (N = 690) completed a questionnaire packet and provided their GPA. **Results:** it was observed that students organizing their activities closer to the morning reported higher GPA whereas students with lower grades reported evening type personality. **Conclusions**: This study may help universities to decrease the prevalence of poor sleep hygiene by developing interventions programs that target adolescents with low academic achievement.

**Key words**: Chronotype, sleep/wake cycle, Academic performance, Sleep habits, Wellbeing.

**Article Citation:** Jabeen S, Matloob A, Mirza N. Academic accomplishment; influence of diurnal preference in medical students. Professional Med J 2015;22(8):1087-1090.

## INTRODUCTION

Determination of Chronotypes also referred to as morningness / eveningness or sleeping at different times are related to specific properties of circadian or biological clock in the human body. All individuals have innate predilection to design their daily sleep/wake schedule within 24 hours. It is observed that some of them can function to their maximum capabilities in the morning where as others are comfortable to organize their daily activities closer to evening and it is variable from person to person. Based on this rhythmic design or morningness eveningness people can be classified in to chronotype i.e lark and owls with obvious variation in sleep wake habits.[1,2,3] At present there has been a remarkable progress in sleep hemostasis perception and physiological mechanisms that are involved at the molecular level and human body clock.[4,5] However all of these studies are based on patients data from Labs, rather than reliance from general population therefore there is little epidemiologic evidence of chronotypes in masses especially in young Adults.[6,7] Further research has shown prevalence of sleep complaints were higher in college students.[8,9] Previous research had also demonstrated a relationship between poor sleep quality and academic difficulties.[10] Consequently this necessitate to find dynamics that contribute to and predict undergraduate academic performance.

Aim of the study was to investigate the influence of chronotypes on academic accomplishment. Although the association of sleep habits might not be the direct determinant on academic performance however it propose the need to explore the influences that contribute to and predict undergraduate academic performance. The subject of sleep rhythm and academic performance is not widely studied particularly in medical students further we find very scarce research data available using sleep as probable influence on academic performance (i.e., cumulative grade point average [GPA]). Hence, we designed this study to evaluate the association

between sleep chronotype and academic performance.

## MATERIAL AND METHODS

The current cross sectional analytical study was conducted at Dow Medical College, Dow University of Health Sciences, and Karachi from December 2012 to November 2013. A systematic literature search was performed to analyze the data written approval of the study was obtained by the institutional review board of Dow University. Subjects included in the present study were healthy medical students from first year to final year (total five years), Data was obtained after written and informed consent of the participants. Only those individuals were enrolled who were fit to participate. Participants with a history of smoking or any chronic disease were excluded. Demographic characteristic's including age, gender, was recorded. We were able to receive complete data from 690 participants out of thousands students. After complete briefing of, the integrated questionnaire, it was distributed in each class (Instrument is an integrated questionnaire Horne JA and Ostberg O Morningness- Eveningness questionnaire to find out different chronotype MEQ original 1976). This instrument has been cited in more than two thousand studies, to assess different chronotypes. After searching the chronotypes in the current study we explored the relationship between chronotype with GPA. Data analysis was carried out on statistical Package for social science (SPSS 20) for windows. Quantitative variable were presented by their mean ± SD values, however, the qualitative variables were presented by frequency and percentages.

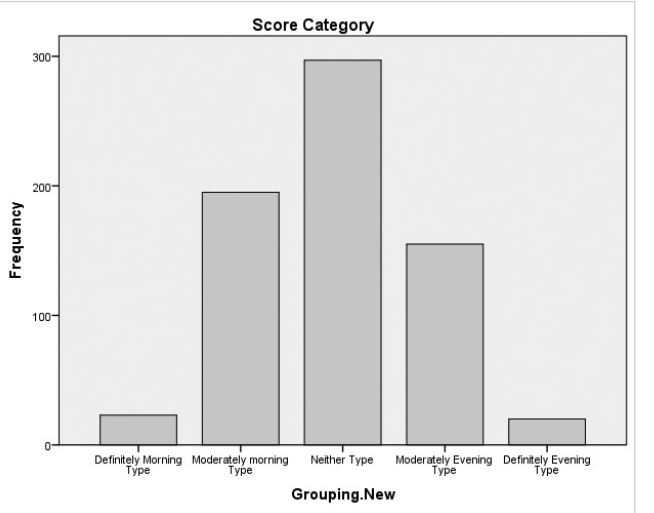
## RESULTS

Our result suggested that morning typology is an indicator of better academic performance. Present study evidenced, a correlation that exist between the organization of behavior in morning or evening with academic performance. Amongst the thousands participants, a sample of six hundred ninety completely filled questionnaires were received. Response rate in this study was 69.0%. Female students dominated the current study as most of our populations under study were females. There were five hundred and ninety two (85.80%) females and ninety eight (14.20%) males. Mean age obtained was 20.09 ± 1.934 (Table-I). Depict the numbers and percentage of different circadian types (chronotype) obtained in this study. Graph 1. Describe the prevalence of different chronotypes.[11] Students were asked to provide their previous GPA and its average was obtained. GPA obtained in definitely morning chronotype students was 2.33 whereas GPA in moderately morning chrontype was 2.42. GPA in intermediate chronotype was 2.31. However GPA in moderately evening chronotype students was 2.35. In definitely evening chronotype it was 1.91.

| Score category | | |
|---|---|---|
| | Frequency | Percent% |
| DM | 23 | 3.3 |
| MM | 195 | 28.3 |
| Intermediate | 297 | 43 |
| ME | 155 | 22.5 |
| DE | 20 | 2.9 |
| Total | 690 | 100 |

**Table-I.**

*DM (Definitely Morning) MM (Moderately Morning) ME (Moderately Evening) DE (Definitely Evening)*




**Graphical presentation of different chronotypes**

## DISCUSSION

Our results demonstrated an association exist between sleep/wake habits and academic

performance, it was observed that the subjects with evening type obtained lower GPA as compare to morning chronotype. This study has approached the subject of sleep and school achievement from circadian rhythm perspective. The current study compared sleep/wake habit and academic accomplishment of students with a morning-type phase preference versus those with an evening-type phase preference. A well-established career is associated with academic performance. For example, cumulative grade point average GPA, anticipates better financial achievement and improve in psychosocial well-being.[12,13,14] It was evidenced annual incomes of subjects with qualification in business increase up to 8.9% for every one-point rise in grade point average.[15,16] In addition, the past research sought to assess whether the observed relationship between achievement and satisfaction was influenced by other variable of students college experiences. Theory and research in higher education believe that students' academic achievement (most frequently measured by college grades) and their satisfaction with college environment are important educational predicts. Although some higher education scholars censure what they believe to be an over dependence on grades, the fact remains that grades govern whether a student will graduate, effect entry into high-paying profession, and affect subsequent educational attainment. In our study the evening type individuals were related with lower academic performance. Consequently later bedtime experience impaired academic performance. Our current findings were similar with another research carried out on students attending first year college where it was observed that students with delayed bedtimes during weekdays and weekends had bad academic performance.[17] Unfortunately student who suffer from academic issues are not aware of the root cause, they relate their examination performance to other factors. Proximate research have pointed the dependence of learning consolidation to the rapid eye movement stage of sleep where most dreaming take place. It was reported that students who demonstrated more REM sleep following an intensive learning period performed significantly better on examinations.[18] Recent reviews have evidenced that memory consolidation and learning are dependent on sleep. Insufficient Sleep leads to sleepiness and decrease neurocognitive functioning and psychomotor abilities. Recent data have shown an important relationship exist between sleep cycle with learning capabilities and subsequent academic performance. Medical students is an exclusive population group of young subjects of academic pressure and routine that can impact their sleep cycle and result in insufficient sleep. This constant academic stress on this group of students may result in irregular sleep/wake cycle and poor sleep, which may reciprocally effect college performance.

## CONCLUSION

The later bed times were associated with lower grades similar to those found in other countries therefore it is important for universities to initiate intervention programs based on sleep hygiene.



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## AUTHORSHIP AND CONTRIBUTION DECLARATION

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| 1 | Dr. Surriya Jabeen | Conecpt, design, drafting, acquisition of data | |
| 2 | Dr. Aneesa Matloob | Data collection | |
| 3 | Dr. Nighat Mirza | Data collection | |