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Independent Study & Mentorship

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A Dreamy State

Research Assessment

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Subject: The Importance of Sleep and Diseases Affecting Sleep

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Dinsmoor, Robert Scott. "Polysomnography." *The Gale Encyclopedia of Medicine*, edited by

Jacqueline L. Longe, 5th ed., Gale, 2015. *Science In Context*,

<http://link.galegroup.com/apps/doc/RMVQCZ085158757/SCIC?u=j043905010&sid=SCIC&xid=08958f7d>. Accessed 10 Oct. 2018.

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<http://link.galegroup.com/apps/doc/CV2644032036/SCIC?u=j043905010&sid=SCIC&xid=835da8e3>. Accessed 10 Oct. 2018.

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<http://link.galegroup.com/apps/doc/CV2644032037/SCIC?u=j043905010&sid=SCIC&xid=8be0403a>. Accessed 10 Oct. 2018.

Assessment:

Sleep is an essential part of the human life cycle, but despite how important it is, there have been minimal conclusions made about the purpose of this period of rest. Thus, in neurology, sleep is considered the most confusing aspect of the field. Technically speaking, sleep is a state of inactivity in which conscious awareness and voluntary movement cease. There are four different stages of sleep ranging from Stage 1 to Stage 4, and each stage is associated with different frequencies of delta and beta waves. Random Eye Movement (REM) cycle is what follows these four stages, and during this period, dreams are formed.

Although it is hard to study sleep and its disorders, electroencephalography tests (EEG) and electro-oculography tests (EOG) are used to monitor patients. During the summer, Dr. Dike showed me how to interpret an EEG, and in a normal patient, eight to ten peaks of brain wave activity are considered average. Usually during the EEG tests, a light stimulus is given and younger individuals react faster to it than older populations. This makes sense because in Biology, I learned about how as one gets older, the myelin sheath, which promotes saltatory conduction, starts to erode. Thus, electrical impulses take longer to transmit and the reaction time decreases. On the other hand, electro-oculography tests (EOG) measure eye movement, and it can be used to differentiate between REM and non-REM sleep.

Using such tests, neurologists can then diagnose patients with different sleep disorders. However, sleep disorders are often hard to diagnose because neurologists must depend on the patient to give them the majority of the information about their sleep cycle. Furthermore, the results of the EEG and EOG tests can vary based on external factors, so they cannot be relied on as the final indicator of a sleep disorder. During my interview with Dr. Aiyagari who worked in

neurocritical care, he explained how for many of his patients that suffer from sleep disorders, multiple polysomnographic tests, or overnight sleep studies, have to be conducted in order to come up with an accurate diagnosis.

Generally speaking, the two main types of sleep disorders plaguing the human body are insomnia, which refers to a lack of sleep, and hypersomnia, which is excessive daytime sleepiness. Most individuals suffering the former-discussed sleep disorder are transient insomniacs, meaning that their condition is temporary. Usually, it is caused by stress, excitement, or illness. In fact, while researching Alzheimer's disease, one of the symptoms mentioned was insomnia, and this makes sense because illnesses are a big factor contributing to this sleep disorder. Hypersomnia is particularly dangerous because it can lead to accidents and harm to surrounding individuals. Furthermore, attempts to treat this disease are ineffective, so the health risk is much greater. In the future, it would be interesting to look into why and how hypersomniacs and insomniacs differ in behavior.

Overall, the purpose of this assessment was to learn more about sleep and the different disorders associated with this essential human activity. I aspire to use this knowledge in the clinical setting, and in the future, I hope to observe a sleep study.