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Untitled

Chicken wire, insulation foam, yarn, acrylic paint

My piece is inspired by the feelings insomnia can invoke – the frustration of sleep evading you, being infected and contaminated with some dark factor. The art piece also involves the serious effects a lack of sleep can create in the human body, including hallucinations, social withdrawal, and other psychotic symptoms. I chose to portray these personal difficulties by creating an abstract sculpture, representing the abstraction of reality in my mind as sleep evaded me.

As my artwork evolved, I chose the colors associated with sleep and the deprivation of sleep. Light, comforting pinks and yellows are contaminated with dark-red-colored thread-y viruses, representing the harsh effects of sleep deprivation smothering the hope of “sweet dreams.” I chose to use expanding foam as it is a light, fast-drying medium that I could easily use to create a bubbly, cloudy texture to portray the softness of sleep.

# Waking up to Insomnia



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*Writer's Note: This paper provides a summary of research on insomnia. I start by defining sleep and the stages of sleep. I then define insomnia, the general shortage of sleep, and the serious negative effect. This paper then examines the research in measuring and diagnosing insomnia. This is followed by a summary of some of the current treatment approaches. Awareness-raising efforts are addressed, as they are also a part of the solution.*

## **I. Introduction**

Sleep is something that we all crave and need. It recharges our bodies and beings physically and mentally. But what happens to those who cannot fall asleep? I chose to research insomnia for my research project to try to understand myself better, and to try to conquer one of my biggest roadblocks. Researching this topic has helped me to understand how insomnia can severely harm mental health in many different ways, generating depression, anxiety, and major attention issues. This paper was one of the most difficult aspects of my time at Oxbow, as one characteristic of insomnia is being twice as unproductive as the average person, and missing work 2.5 times as much as the average person.

For myself and many others, my sleep challenges increased during the COVID-19 pandemic. This even has a name in research fields, covidsomnia, or coronasomnia. The major stress of the pandemic resulted in the number of people experiencing insomnia increasing from one in six to one in four in a United Kingdom study, and in China insomnia rates increased from 14.6 percent to twenty percent (Mayo Clinic). In Brazil, studies suggest that seventy-six percent of the population suffer from at least one sleep disorder. In addition to the stress and uncertainty of the pandemic, many people were not getting the exercise or social stimulation needed. This is

true of me. Additionally, the study suggests that homeschooling involving long periods of time on screens and the reduction of natural daylight was most likely a factor.

Prior to this research, I felt quite alone with my challenge of restless nights. Before writing this paper, I had no idea how my mental health struggles are really related to my disordered sleep. I also did not feel like there was a potential solution. I am heartened to know that I am not the only one and also encouraged that there is so much research, treatment, and awareness activity given the prevalence of insomnia today.

Given what I have learned, I intend to address my insomnia as something that can be managed and ultimately cured. I also intend to share my struggle with insomnia and my approach to wellness with others who might also be struggling.

## **II. Body**

According to the Oxford Dictionary online, sleep is defined as a condition of body and mind that typically recurs for several hours every night, in which the nervous system is relatively inactive, the eyes closed, the postural muscles relaxed, and consciousness practically suspended. Interestingly, cats sleep twelve to eighteen hours per day, while horses spend a mere 2.9 hours per day. Humans spend approximately eight hours a day sleeping, equating to approximately one-third of our lives.

How much sleep do humans really need? There are many different sleep calculators on what time you should go to sleep and how much time you should spend sleeping, based on what time you need to wake up and how much sleep you need personally. The Center for Disease Control and Prevention (CDC) offers guidelines for the amount of sleep different age groups

should be getting, ranging from fourteen to seventeen hours as an infant to only seven to eight hours for those sixty-five and older.

All of this sleep time is not the same. Time sleeping is broken into stages, based on activity of the body and mind. According to research, there are four stages of sleep, classified as N1, N2, N3, and REM. N1 is the first stage of sleep, representing the space between conscious and unconscious. The next stage, N2, is the space where the body officially begins to sleep, and breathing and heart rate drop slightly to become a constant. During N3, breathing slows more and the entire body relaxes and heals itself. REM is the final stage, during which the brain is active and dreams are possible. REM sleep stands for Rapid Eye Movement, meaning the eyes move around rapidly during this period of time, but do not send any information to the brain. REM sleep is the deepest type of sleep and helps to strengthen mental and physical performance, also healing and producing brain cells. REM sleep is where dreams happen, and it happens in the second half of the sleeping cycle, so a struggle to sleep can result in less REM sleep. Insomnia can result in missing out on time spent in the most valuable stage of sleep.

There is a general consensus that sleep is extremely important and essential to life. It is equally important to understand and address a lack of sleep. This is very broadly defined as the umbrella term Insomnia. Insomnia can be misunderstood as it can mean many different things with many different implications.

Insomnia is a sleep disorder in which you have trouble falling and/or staying asleep. According to WebMD,

The condition can be short-term (acute) or can last a long time (chronic). It may also come and go. Acute insomnia lasts from 1 night to a few weeks. Insomnia is chronic when it happens at least 3 nights a week for 3 months or more. There are two types of insomnia: primary and secondary. Primary insomnia: This means your sleep problems aren't linked

to any other health condition or problem. Secondary insomnia: This means you have trouble sleeping because of a health condition (like asthma, depression, arthritis, cancer, or heartburn); pain; medication; or substance use (like alcohol).

Insomnia clearly ranges from a minor, occasional inconvenience to a debilitating disability. Therein lies the confusion. It is difficult to relate to insomnia as a condition when it is really a wide range of conditions with very different causes. Someone might drink coffee late in the day and then complain of the insomnia they experienced that night. Someone else might have years of struggle in trying to gain a full night of sleep. The occasional sleepless nights are experienced by most everyone, while the longer-term struggles are less common and also far more challenging.

The negative effects of any significant loss of sleep can be debilitating. Any search online points to a growing list of troubles associated with insomnia. Recognition in this is why there is such a major investment in identifying and treating sleep challenges and disorders.

First, there is a very significant toll that insomnia can take on your body. The physical effects of sleep deprivation are less visibly recognized but can be extremely serious, even fatal. Insomnia can increase the likelihood of high blood pressure, diabetes, weakened immune system, obesity, and heart attacks. "...your body becomes more susceptible to a host of different diseases, some of which are chronic"(Active Health, 4). Research has also proven that with a reduction in REM sleep, "...your immune system has less time to replace the infection-fighting T-cells, which increases your susceptibility to common illnesses." Public awareness of these extremely harmful physical consequences of sleep loss is very limited.

In addition to the potential physical health problems, insomnia can also lead to cognitive trouble with memory, reaction times, and decision-making. These are essential daily coping skills. A shortage of sleep can impair one's physical capability to complete basic tasks and make important decisions.

Related, insomnia can clearly have an impact on academic and work performance. If you have trouble focusing, have memory trouble, and have a lack of motivation, these factors can combine to challenge your ability to think, and to get any work done. In schools, Section 504 Plans now may provide accommodations for students with insomnia. In the workplace, insomnia is now recognized by the Americans with Disabilities Act (ADA) as a disability because it affects a person's daily life activities.

Yet another area where sleep disorders can have a significant negative impact is in social connections and relationships. "When we're deprived of sleep, we're more likely to overreact to situations that normally wouldn't rattle us. 'This can lead to more conflict and less satisfying relationships'" (BBC). According to a study published in Time magazine, there are three ways sleep impacts relationships. The biggest issue is that one's emotions can be thrown out of whack. "When you're sleep-deprived, the part of your brain that ties emotions to memories- the amygdala- doesn't function properly." A second way in which insomnia can be detrimental to relationships is that it can literally make you sick, as insufficient sleep can put you at risk for health issues. A third more practical problem is that someone with insomnia may have a very different sleep schedule than their partner, which creates distance.

Finally, it is no surprise that a lack of sleep is closely related to depression and anxiety. It is situational in terms of what is the cause and what is the effect, as anxiety and depression can drive insomnia and insomnia can drive a greater degree of anxiety and depression. Given the serious physical and mental harm that can be attributed to insomnia, research to prevent and treat it continues.

The science of studying insomnia has become increasingly advanced. Administering a self-reported questionnaire has been and continues to be a first step. The Insomnia Severity Index, also

known as the ISI, is a questionnaire evaluating the “severity of sleep onset, sleep maintenance, early morning awakening problems, sleep dissatisfaction, interference of sleep difficulties with daytime functioning, noticeability of sleep problems by others, and distress caused by the sleep difficulties” (Sleep). Researchers are now working on new diagnostic insomnia questionnaires. There is something called the SleepMed Insomnia Index (SMI)- a new tool for evaluating sleep disorders. A second new tool is the Sleep Matrix, which visually displays sleep complaints that researchers believe will help diagnose insomnia. Sleep studies are also a common way to diagnose sleeping disorders. These sleep studies, also known as polysomnography, scientifically monitor brain waves, and add movements, heart rate, breathing, and other vital signs in order to understand whether there is an issue. Polysomnography can also identify interrupted sleep, as these medical measures can determine what might trigger arousal.

The science of insomnia has also delved into the chemical makeup of the brain. A tissue in the brain called gray matter is responsible for “...allowing humans to function normally as it allows us to control our movements, retain memories, and regulate our emotions.”(Simply Psychology) This gray matter issue is still unknown in terms of cause and effect, but it is known that there is an association between reduction in gray matter and insomnia.

Also, research continues on the prevalence of insomnia in women. Women are found to struggle much more to sleep, with numbers as high as a “...58% more likely to experience it than males.... ‘There are multiple factors – both biological and social – that account for higher rates of insomnia in women compared with men’”(Medical News Today).

Another interesting research perspective is looking at something called sleep misperception. An ongoing study at Brigham-Young University suggests that “...patients with insomnia may not perceive being asleep until their brain has a large increase in inhibitory activity



in brain regions involved in conscious awareness” (BYU). Those reported to be good sleepers “...may experience going to sleep before this measure.” This study is looking at whether cognitive processes (in other words, thinking about whether you are sleeping or not) may prevent some people from sleeping. Given that sleep is in so many cases self-reported, this is an important area to study.

Insomnia is increasingly recognized as a problem that impacts many, and so the treatment options have expanded. The first step is to identify the problem, and diagnose the severity of the insomnia. This is often done in a few ways. Bloodwork may help to identify specific problems like thyroid, which are associated with poor sleep. Sleep questionnaires may be administered as well as being asked to keep a sleep diary.

A sleep study, also known as polysomnography, might be administered. This is interesting as this moves the research from self-reported data to measurement of bodily functions. “Polysomnography records your brainwaves, the oxygen level in your blood, heart rate and breathing, as well as eye and leg movements during the study” (Mayo Clinic). The goal is to determine sleep stages and to figure out if sleep patterns might be disrupted during the cycles. This information can be especially helpful for physically induced insomnia from conditions like restless leg syndrome, or sleep apnea.

As measurement and diagnosis continues to advance, the treatment options for insomnia also continue to evolve. “According to the 2015 National Sleep Foundation Survey, 29% of Americans regularly take pills to sleep, at least several times each month” (Stanford BeWell). Sleeping pills are a well-known potential treatment, but increasingly are considered both risky and ineffective for many. Some of the most common prescription sleep products include

benzodiazepines and non-benzodiazepine hypnotics. Addiction is an enormous problem with these drugs.

Cognitive Behavioral Therapy (CBT) is increasingly offered as a more effective approach. CBT-I is “a structured program that helps you identify and replace thoughts and behaviors that cause or worsen sleep problems with habits that promote sound sleep... CBT-I helps you overcome the underlying causes of your sleep problems” (Mayo Clinic). CBT-I techniques include stimulus control therapy, sleep restriction, sleep hygiene, sleep environment improvement, relaxation training, remaining passively awake, and biofeedback. These approaches have proven for many to be more effective and lasting than pills.

Another aspect of treatment is raising awareness for those who suffer from insomnia and the broader public. The American Academy of Sleep Medicine (AASM), Society of Behavioral Sleep Medicine (SBSM) and American Alliance for Healthy Sleep (AAHS) have created an Insomnia Awareness Day. There is also a World Sleep Day, as well as a Sleep Awareness Week. These and other awareness efforts provide support and community as well as generating public understanding.

### **III. Conclusion**

In summary, the science and appreciation of sleep as an essential part of our daily lives has advanced dramatically. Insomnia is no longer seen as an inconvenience or simply as a mental health issue. Insomnia is no longer seen as something trivial. It is encouraging to understand some of the major research and treatment options that are available to get a good night’s rest.

Works Cited

Guy, O. (2021, October 11). *Grey Matter in the Brain*. Simply Psychology. Retrieved April 30, 2022, from <https://www.simplypsychology.org/what-is-grey-matter-in-the-brain.html>

Hirotsu, C., Bittencourt, L., Garbuio, S., Anderson, M. L., & Tufik, S. (2014, September). Sleep complaints in the Brazilian population: Impact of socioeconomic factors. *Sleep Science*, 7(3), 135-142.

<https://www.sciencedirect.com/science/article/pii/S1984006314000455>

*How does insomnia affect your life?* (n.d.). Active Health. Retrieved April 30, 2022, from <https://www.activehealth.sg/read/sleep/how-does-insomnia-affect-your-life>

*Insomnia damages relationships, according to study*. (2011, January 27). BBC. Retrieved April 30, 2022, from <https://www.bbc.com/news/health-12287535>

*Insomnia - Diagnosis and treatment*. (2016, October 15). Mayo Clinic. Retrieved April 30, 2022, from <https://www.mayoclinic.org/diseases-conditions/insomnia/diagnosis-treatment/drc-20355173>

*Insomnia treatment: Cognitive behavioral therapy instead of sleeping pills*. (n.d.). Mayo Clinic. Retrieved April 30, 2022, from <https://www.mayoclinic.org/diseases-conditions/insomnia/in-depth/insomnia-treatment/art-20046677>

Joo, E. Y., Noh, H. J., Kim, J.-S., Koo, D. L., Kim, D., Hwang, K. J., Kim, J. Y., Kim, S. T., Kim, M. R., & Hong, S. B. (2013, July 1). Brain Gray Matter Deficits in Patients with Chronic Primary Insomnia. *Sleep*, 36(7), 999-1007.

<https://academic.oup.com/sleep/article/36/7/999/2453939?login=true>

McBride, J., & Jones, T. (2018, March 27). *BYU study: Why people with insomnia don't know they're asleep*. BYU News. Retrieved April 30, 2022, from

<https://news.byu.edu/news/byu-study-why-people-insomnia-dont-know-theyre-asleep>

Morin, C. M., Belleville, G., Bélanger, L., & Ivers, H. (2011). The Insomnia Severity Index: Psychometric Indicators to Detect Insomnia Cases and Evaluate Treatment Response. *Sleep*, 34(5), 601-608.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3079939/>

*Polysomnography (sleep study)*. (2020, December 1). Mayo Clinic. Retrieved April 30, 2022, from <https://www.mayoclinic.org/tests-procedures/polysomnography/about/pac-20394877>

Robinson, J. (2021, July 21). *Insomnia: Definition, Symptoms, Causes, Diagnosis, and Treatment*. WebMD. Retrieved April 30, 2022, from <https://www.webmd.com/sleep-disorders/insomnia-symptoms-and-causes>

Scotta, A. V., Cortez, M. V., & Miranda, A. R. (2022, December 31). Insomnia is associated with worry, cognitive avoidance and low academic engagement in Argentinian university students during the COVID-19 social isolation. *Psychology, Health & Medicine*, 27, 199-214.

<https://www.tandfonline.com/doi/full/10.1080/13548506.2020.1869796>

Shortsleeve, C. (2018, August 3). How Sleep Can Affect Your Relationship, According to Science. *TIME*. <https://time.com/5348694/how-sleep-affects-relationships/>

Villalobos, N. (2021, November 23). *What causes insomnia in females?* Medical News Today. Retrieved April 30, 2022, from

<https://www.medicalnewstoday.com/articles/women-hormones-and-insomnia>

*Waking up to sleeping pill risks - Stanford BeWell.* (n.d.). BeWell@Stanford. Retrieved April 30, 2022, from <https://bewell.stanford.edu/waking-up-to-sleeping-pill-risks/>

Woznika, A. A., Carney, C. E., Kuo, J. R., & Moss, T. G. (2015, August). The insomnia and suicide link: toward an enhanced understanding of this relationship. *Sleep Medicine Reviews, 22*, 37-46.

<https://www.sciencedirect.com/science/article/abs/pii/S1087079214001038>