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The Impact of Using Gadgets and Social Media

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Abstract
Insomnia is part of the primary sleep disorder group, dyssomnia. Insomnia is the inability to meet the need for sleep both in quality and quantity due to difficulties in initiating and maintaining sleep. About 30% of adults suffer from insomnia, and 10% of adults suffer from severe insomnia. The purpose of this article is to determine the impact of gadget on the incidence of insomnia. The method used is systematic literature review. The result of this literature review is that the use of devices has an impact on the incidence of insomnia. The use of electronics deals with various aspects of sleep such as sleep quality, sleep duration, sleep mood and drowsiness during activities. This happens because of the habit of using electronic devices that shine brightly and highlight the eyes, this light can trigger or stimulate the brain to wake up and delay the desire to sleep.

Keywords: Insomnia; Sleep Disorders; Gadgets; Electronic Devices; social media

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Introduction

Sleep is a complex biological process. This is a reversible state of unconsciousness in which a decrease in metabolism and motor activity occurs. There are two distinct types of sleep: rapid eye movement (REM) and non-REM (NREM) sleep. Most people first enter NREM sleep from a state of drowsiness. NREM sleep (dreamless sleep) is further divided into four stages (1-4). The first stage N1 is the lightest stage, which is characterized by the transition from wakefulness to sleep, then the second stage N2 which is the largest percentage of total sleep, then enters the deep sleep stages N3 and N4. After about 70 to 80 minutes of deep sleep, light sleep then enters the REM period, which is usually associated with active dreaming and body movement. This cycle is repeated at intervals of approximately 90 minutes. By morning, there is less stage 3 & 4 sleep and more REM sleep.

Sleep disorders are a group of conditions that interfere with a person's normal sleep patterns. Sleep disturbance is one of the most common clinical problems encountered. Inadequate or non-restorative sleep can interfere with normal physical, mental, social, and emotional functioning. Sleep disturbances can affect your health, safety, and overall quality of life. There are many types of sleep disorders. They can be broadly categorized into primary and secondary. Primary sleep disorders are caused by endogenous disorders, while secondary sleep disorders are the result of various medical and psychiatric conditions such as depression, thyroid problems, and stroke.

Primary sleep disorders can be further subdivided into parasomnias and dyssomnias. Parasomnias are unusual experiences or behaviors during sleep, such as sleep terror disorders, sleepwalking, and nightmare disorders. Dyssomnia is a disorder of the amount, quality, or timing of sleep, such as insomnia and primary hypersomnia, narcolepsy, breathing-related sleep disorders, circadian rhythm sleep disorders.

Sleep disturbances are common in adults and children. However, children with sleep disorders may exhibit different symptoms than adults. Children with sleep problems may exhibit excessive motor activity, inattention, irritability, or defiant behavior (Karna & Gupta, 2021).

Method

A literature review is to provide a framework related to new findings and previous findings in order to identify indications of whether or not there is progress from the results of a study through comprehensive research and interpretation of the results of the literature related to a particular topic which identifies research questions by searching and analyzing relevant literature. using a systematic approach (Randolph 2009).

Discussion

A. Definition

Insomnia is the inability to meet the needs of sleep both in quality and quantity due to difficulty initiating and maintaining sleep (Zahara, Nurchayati, and Woferst 2018).

B. Relationship of Insomnia with Gadget Use

Based on the results of Omega (2017) research, it was obtained = 0.002. This means that the value is smaller than (ρ = 0.005 < = 0.05), so it can be said that Ho is rejected and Ha is accepted or there is a significant relationship between the long use of gadgets and the incidence of insomnia in students. at SMA Negeri 1 Kawangkoan. Most of the length of use of gadgets in students at SMA Negeri 1 Kawangkoan, namely the duration of using gadgets <11 hours/day, most of the incidences of this insomnia are mild insomnia, and there is a significant relationship between the length of time using gadgets and the incidence of insomnia in students. SMA Negeri 1 Kawangkoan.

Salamanja research (2015), on the relationship between the intensity of gadget use and insomnia in Teuku Umar Vocational High School students, Semarang. It was found that students of SMK Teuku Umar Semarang with intense use of gadgets as much as 74.7% which is caused by the frequency of teenagers using gadgets which are done every day with a duration of 12 hours per day, and insomnia 40.3% of adolescents so that there is a very strong relationship between gadget intensity with insomnia.

Research related to insomnia is Nugraha's research (2016), regarding the relationship between social network users and insomnia in male students of the civil engineering faculty of Udayana University, as many as 30 people consisting of 9 insomniacs (28.48%) and students not experiencing insomnia. insomnia 21 people (71.15%).

C. Epidemiology of Insomnia

It is estimated that about 30% of adults suffer from insomnia, and 10% of adults suffer from severe insomnia, which greatly affects their quality of life. In America, one in three adults report difficulty falling asleep and/or staying asleep, and 17% of them take this problem seriously. In a study of insomnia in the general population in Canada, it was found that 13.4% of the 3.3 million Canadians suffer from insomnia. A 12-month prospective study conducted in Texas aimed at studying the prevalence and long-term nature of insomnia and its effect on adult health, found that 25% of the sample suffered from insomnia, 24% of whom had a chronic condition. Based on insomnia research conducted at Ciptomangunkusumo Hospital, it was found that 10% of the total population of Indonesia suffers from insomnia and 15% of them are chronic insomniacs (Susanti 2015).

D. Insomnia Etiology

The cause of insomnia include:

- Electronic devices with illuminated "backlit" displays can affect melatonin at night and cause sleep delays.
- Circadian rhythm disturbances: jet lag (sleep disturbance due to traveling in different time zones), changes in work shifts, altitude, noise, high or low temperatures.

- Psychological problems: People with mood disorders such as bipolar disorder (a mental disorder characterized by drastic changes in emotions), depression and anxiety.
- Medical conditions: brain lesions and tumors, stroke, chronic pain, chronic fatigue syndrome, congestive heart failure, angina pectoris, acid reflux disease (GERD), chronic obstructive pulmonary disease, asthma, sleep apnea, Parkinson's disease and Alzheimer's disease, hyperthyroidism, arthritis, nasal/sinus allergies, gastrointestinal reflux and other problems.
- Medication
  Many over-the-counter medications, such as some painkillers, anti-allergy and cold medications, and weight loss products contain caffeine which can interfere with sleep.
- Sleep-related disorders
  Sleep apnea causes the patient to stop breathing regularly throughout the night, which can interfere with sleep. Restless legs syndrome can cause discomfort in the legs and the urge to move them is almost unbearable, which can be avoided which can prevent the patient from falling asleep.
- Caffeine, nicotine and alcohol.
  Coffee, tea, cola, and other caffeinated beverages are stimulants. Drinking it in the afternoon or evening can cause sleeplessness at night. Nicotine in tobacco products is another stimulant that can interfere with sleep. Drinking alcohol can help you fall asleep, but drinking alcohol prevents better sleep and often causes you to wake up in the middle of the night. (Singh, P. et al. 2016).

E. Risk Factors

Factors that are considered to influence the incidence of insomnia include female gender, age, marital status, income, and education level. A meta-analysis of 29 insomnia studies found that women (41%) had a higher risk of insomnia than men. In another study conducted by the National Sleep Foundation, 57% of women experienced insomnia at least a few nights a week. In a study it was found that the incidence of insomnia increases with age and people with low socioeconomic status (Susanti 2015).

F. Manifestasi Klinis

Clinical manifestations of insomnia according to the American Psychiatric Association (2013)

1. The main complaint of insomnia is the disruption of the quality and quantity of sleep of the sufferer, the disruption of the quality and quantity is caused by one or more of three complaints such as difficulty in maintaining sleep conditions. This is characterized by the patient often waking up or after awakening, the patient cannot go back to sleep, while in children it is difficult

to maintain this sleep condition characterized by difficulty returning to sleep without help from parents or caregivers. The second complaint experienced was difficulty initiating sleep while in children, this was characterized by difficulty initiating sleep without the help of parents or caregivers. The third complaint is not being able to go back to sleep when you wake up too early.

2. There are disturbances in social life, work, education, academics, behavior, or other important functions caused by sleep disturbances experienced by the patient
3. Difficulty sleeping experienced by the patient occurs at least 3 nights in 1 week
4. Difficulty sleeping that has occurred for at least the past 3 months
5. Difficulty sleeping occurs even though there is sufficient time to sleep.
6. Not caused by other sleep disorders such as narcolepsy, sleep disorders related to breathing, and parasomnia
7. Not caused by drug use or drug abuse
8. Not caused by mental disorders or other medical conditions

G. Impact

There are several negative effects that can be caused by insomnia. These negative impacts can be in the form of depression, decreased immunity, weight gain, increased blood pressure, decreased cognitive function, and emotional disturbances. In addition, insomnia also has an impact on school life such as an increase in absenteeism from school and a decrease in academic achievement at school. The number of traffic accidents can also increase due to insomnia (Zahara, Nurchayati, and Woferst 2018).

H. How to deal with insomnia

As for how to cope with insomnia is to pharmacological therapy, namely:

- **Benzodiazepine**

  The group of benzodiazepine drugs consists is triazolam, temazepam, and lorazepam. This drug acts on -aminobutyric acid post-synaptic (GABA), resulting in an increase in GABA (an inhibitory neurotransmitter in the CNS) causing sedation, drowsiness, and muscle relaxant effects. However, this drug is widely abandoned due to causing dependence on the sufferer and causingsymptoms withdrawal. In addition, there are many new drugs that are safer than benzodiazepine drugs (Ghaddafi, 2013).

- **Non-benzodiazepine**

  The non-benzodiazepine group of drugs include zolpidem and zaleplon. The non-benzodiazepine group of drugs is almost the same as the benzodiazepine group of drugs, but there are differences in the side effects of non-benzodiazepine drugs, which are lighter.

- **Zolpidem** is a drug that is often used in insomnia sufferers with short-term treatment. This drug acts on the receptor selective -1 subunit of the GABA receptor which does not provide sedative, hypnotic, muscle relaxant and anticonvulsant effects. The drug zolpidem can accelerate sleep onset and increase the amount of sleep time and reduce the frequency of interruptions during sleep without causing a rebound effect and dependence on the patient so that it is safer than benzodiazepine drugs (Ghaddafi, 2013).
- **Zaleplon** is another drug of choice besides zolpidem. The way the drug zaleplon works is the same as the drug zolpidem. In addition, it has a fast and very short working time of 1 hour. In another study, the drug zaleplon had a superior effect than the drug zolpidem (Ghaddafi, 2013).

- ***Miscellaneous sleep promoting agent***
  This class of drugs can reduce the frequency of sleep cycles and shorten sleep onset. However, there is still no significant research on this class of drugs. As for some drugs consisting of antihistamines, melanin, antidepressants, and aromatherapy (Ghaddafi, 2013).

I. How to prevent insomnia

As for some way to prevent insomnia ie

- Avoid alcoholic beverages
- Do not drink drinks containing caffeine (coffee)
- No smoking
- Avoid eating large amounts before going to bed
- Doing exercise regularly (3-4x/week)
- Avoid strenuous activities before bed
- Avoid sleeping less than 5 hours
- Cognitive therapy to overcome anxiety of insomniacs (Ghaddafi, 2013).

Method

The method is carried out with a literature review of various local and international articles, websites that are searched through the NCBI website and Google Scholar using relevant keywords. The keywords used are insomnia and gadgets. A total of 17 articles were analyzed using a systematic literature review method.

Result and Discussion

- Cell phones or cell phones are almost a necessity that must be owned by everyone at this time, for example, in a study conducted on 295 adolescents with an age range of 15 to 19 years, as many as 98.6% had a cell phone (Tamura et al. 2017). Insomnia is a problem that is quite often experienced at various ages, including teenagers. Research conducted in Japan on 3473 students consisting of 776 junior high school students and 2697 high school students found the prevalence of insomnia was 10% or around 347 students (Tokiya et al. 2017).
- The use of mobile devices and social media is indeed more common in young and middle ages compared to older ages (Bhat et al. 2018). Teenagers often spend a lot of time during the day and before going to bed to use electronic devices (Hysing et al. 2015). In addition, a study of 9,607 adolescents found that late sleepers were associated with the use of television and video games excessive (Kato et al. 2018). In a study with 532 participants with an age range of 18 to 39 years the average use of electronic devices at night was 46.6 minutes (Fossum et al. 2013).
- A study that assessed participants' perceptions of smartphone use. The study was conducted on 256 people using an online survey. Participants confirmed that smartphone use at bedtime caused changes in sleep (M = 4.36 and r = 0.730), excessive use of the internet and social media caused insomnia, depression, anxiety, and stress (M = 4.07, r = 0.747), and prolonged use of technology caused sleep disturbances (M = 3.98, r = 0.737), in addition, participants also agreed that light exposure from gadgets caused sleep disturbances and anxiety (M = 3.64, r = 0.722) (Jaradat, Jibreel, and Skaik 2020).
- The use of mobile devices or devices that emit light at rest will increase the risk of developing insomnia (Khan, Nock, and Gooneratne 2015). The habit of using electronic devices that shine brightly and shine in the eyes affects sleep patterns where light can trigger or stimulate the brain to wake up and delay the desire to sleep (Purnawinadi and Salii 2020). Another study also found that insomnia symptoms were significantly associated with device use before bedtime. In addition, the use of devices throughout the night and the use of devices after turning off the lights at night will increase the risk of experiencing symptoms of insomnia (Walsh et al. 2020). Another study conducted in Switzerland found an association between reduced screen use (Social Media, Watching TV, Watching Videos, Games, and Computer Use) and decreased daytime fatigue because reducing screen use at night could increase sleep duration (Perrault et al. 2019).
- The use of electronic devices has a relationship with various aspects of sleep such as sleep quality, sleep duration, mood during sleep, and sleepiness during activities. Based on research by Caumo et al (2020) longer use of mobile phones at night has a relationship with poor sleep quality. The last time cell phone use was at night was also associated with poor sleep quality (Caumo et al. 2020). Other studies have also found that the use of electronic devices at night causes poor sleep quality, higher levels of insomnia, and more sleepiness in daily activities (Akçay, Akçay, and

Yetkin 2021). In addition to affecting the quality of sleep, the use of mobile phones in bed also affects mood during sleep where the use of mobile phones causes a bad mood during sleep (Bhat et al. 2018).

- Not only the use of electronic devices, but the use of social media is also one of the main factors that affect insomnia in adolescents. For example, a study on 180 adolescents aged 16-17 years found that the duration of social media use, reasons for using social media, and academic stress were the main factors that influenced insomnia in adolescents (Setyaningrum 2013). This is in line with Udin and Sujono's research (2020) that there is a positive correlation between the duration of social media use and the incidence of insomnia in high school students (P=0.003 and r=0.291) (Udin and Sujono 2020).
- Regarding the duration of social media use, a study conducted on 93 students found that 64.5% of students had social media usage duration of more than 5 hours per day and had a severe insomnia incidence of 35.5%. In addition, this study also conducted a bivariate analysis between the duration of social media use and the incidence of insomnia, it was found that there was a relationship between the two variables with a p-value of 0.002 (Fernando and Hidayat 2020). Similar results were also obtained in another study that cell phone use more than 5 hours per day was associated with shorter sleep duration and the incidence of insomnia (Tamura et al. 2017).
- Another study assessed insomnia tendencies and measured internet addiction. The results of the study showed that 79.5% of participants had a sleep duration of fewer than 6.5 hours per day and 72% of them used social media more than 6 hours per day. A positive correlation was found between insomnia and internet addiction, insomnia with a duration of internet use, internet addiction, and duration of internet use. A negative correlation was found between insomnia and sleep duration, internet addiction and sleep duration, and sleep duration and internet usage duration (Prabowo, Dewi, and Nadia 2020)

Conclusion

There is a relationship between insomnia and the use of gadgets in sufferers where 2 out of 3 students who experience insomnia tend to use gadgets in their daily lives. This has an impact on their physical health and ends with a poor quality of life if not treated immediately. There are several ways to prevent and overcome insomnia, but these things do not work if there is no consistency of compliance from the sufferer.

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