

## A Call for Night Shift Regulation

The notion of night shift employment has existed since the dawn of industrialization and has played an integral role in the United States economy. Today, the night shift remains prevalent in U.S. society, harboring more than 21 million workers (Mcmenamin 9). Its continued practice, however, has raised concerns about its potential health detriments. A study from the *British Journal of Cancer* suggests that long working hours (which many night shifts consist of) may share a link to long-term risks such as breast cancer (Heikkila et al. 817). Former U.S. president Richard Nixon famously said in his 1971 speech, “Address to the Nation on Labor Day”, that people “must always remember that the most important part of the quality of life is the quality of work”, perhaps hinting at the Occupational Safety and Health Act (OSHA) he signed into law a year prior. But neither the OSHA nor any federal law currently imposes specific regulations on night shifts, allowing employers to establish their own workforce policies (Schnotz). Although night shift workers cope with their schedules, it is imperative to understand the current status of night work and how it should be managed by employers. Such evaluation brings up the question: What do the current health impacts of the night shift suggest about a need for its future regulation in the U.S.? Overall, an analysis through the economic, medical, and legal angles shows that night shifts do merit governmental regulations. These regulations will ultimately assist employers in minimizing the health risks of workers (mainly caused by circadian misalignment) and in maximizing their well-being and work efficiency.

The health effects of night shifts hold varying consequences from job to job but are nonetheless profound. Most notably, night shifts directly induce sleep problems which include fatigue, disrupted sleep schedules, and insomnia (“Shift”). This is because humans have circadian rhythms that are biologically suited to daytime activity. Misalignment of these rhythms due to

night work can thus give rise to sleep disorders, which consequently influence job performance. According to Giovanni Costa, M.D. from the University of Milan, daytime disturbances, coupled with sustained wakefulness, can exacerbate the sleep problems of night workers, reducing up to four hours of their sleep (113). Costa further reasons that this problem is a key factor in promoting work errors, indicating that night work after the eighth hour has led to an “almost exponential increase of accidents” (114). The rise of work errors from the stresses of night shifts can have impacts on worker safety and the industry or business in concern.

From an economic standpoint, impaired job performance in night shifts can be situational in certain workplace environments. This is especially true for employment involving shift work<sup>1</sup>. For example, in the health industry, night shift nurses often display fatigue, which can be worsened by extended or rotating shifts (Stokowski). Sandy Muecke from the University of Adelaide’s Department of Critical Care Medicine explains that nurses who undergo rotating night shifts are more likely to give false responses and provide inferior patient care (437). Although Muecke substantiates that fatigued nurses correspond to patient death (437), she acknowledges that further research is necessary to prove a causal relationship. In any case, substandard performance in nurses or other healthcare employees can affect the healthcare institution’s reputation and funding, as patients value a “safe clinical environment in which few clinical errors are committed” (José Joaquín et al. 92). Outside of medicine, the problems of night work errors are extant in jobs involving precision or manual labor. These errors have caused historical disasters, such as the Three Mile Island accident<sup>2</sup>, but more relevantly, injuries and deaths. In 2003, Conrail<sup>3</sup> was held

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<sup>1</sup> Shift work: An employment practice that is designed to provide service across 24 hours of the clock and often involves rotating shifts, night shifts, or both

<sup>2</sup> Three Mile Island accident: a nuclear meltdown that occurred in 1979 that has been attributed to oversights by night shift workers

<sup>3</sup> Conrail: a now defunct railroad company based in Philadelphia

liable for \$52.4 million in damages from an employee death caused by another employee who was “operating on only three to four hours of sleep” (Hazelwood). As companies fail to minimize employee fatigue, night workers may perform mistakes that not only risk safety in specific environments, but also cost the companies a large sum of money.

Some experts argue that there are effective treatments to sleep problems that can help night workers stay alert, such as exercising regularly and using stimulants at a sparing level (Shortsleeve). Sleep researcher Tina Waters also notes that night workers can practice good sleep hygiene to maximize resting time (qtd. in “How”). However, these methods ignore the time constraints attributed to many night workers and do not sufficiently alleviate their circadian disruptions. For example, sleep hygiene can be rendered less effective due to daytime disturbances, as mentioned previously by Costa. An unbiased study conducted by the Cochrane Work Group also shows that the use of stimulants and medications on night workers can produce side effects, notably headaches and nausea (Liira et al.). The limited efficacy of these treatments means that although night workers can seek temporary relief for their stresses, they are still subject to the long-term health risks of circadian misalignment.

Most night workers have some degree of sleep disturbance which can affect their long-term health. However, some of these workers, especially shift workers, have schedules that extend into parts of the day (Price). These shifts further augment sleep issues and the long-term risks associated with them. Dr. Frank Scheer, director of the medical chronobiology program at Brigham and Women’s Hospital, asserts that “the body clock controls a number of important physiological functions”, including metabolism and cardiovascular health (qtd. in Weeks). His claim ties with his findings from the U.S. Proceedings of the National Academy of Sciences, which reveal that long-term circadian misalignment caused by night shifts leads to an increase in blood pressure and

a risk of heart disease (Scheer et al. 4457). Scheer's findings thus outline a harm of the night shift that has not yet been mitigated. Another major concern that arises with night shifts is the increased risk of breast cancer. An unbiased study with a sample size of 116,462 individuals conducted by researchers from the *British Journal of Cancer* suggests an association between long working hours and breast cancer (Heikkila et al. 814). The finding can indicate that night workers who work long hours have a higher chance of developing breast cancer, although analysis of the study's confounding variables proposes no link between cancer and night work itself (Heikkila et al. 817). Despite this, researchers from the University of Manchester's Faculty of Biology find that circadian misalignment caused by night shifts indeed triggers abnormal gene expression in the breast, and that "working night shifts three or more times per month elevates the risk of breast cancer" (Blakeman et al.). The concern for breast cancer thus extends to more than just night workers who have long shifts. Overall, the long-term risks of circadian misalignment and sleep disturbance apply to nearly all night workers, more so to those with longer shifts.

From a medical perspective, many researchers believe that directly minimizing circadian misalignment can reduce the long-term health risks of night workers, and additionally, reduce their sleep problems that affect job performance. Such measure includes the aforementioned treatments for sleep problems while also targeting the night workers' shifts. Night workers can adjust work schedules to suit their biological rhythms, as proposed by Charmane Eastman, a professor of biological psychology. These schedules "[make] use of the days off before the first night shift" to prevent fatigue in night workers, notably those with long or irregular shifts (42). Eastman's argument uses analysis pertaining to the human circadian rhythm; however, her proposal of an ideal schedule can be difficult to integrate, as Alan Cavaiola, a psychology professor at Monmouth University, states: "In the majority of workplaces, work schedules are often fixed in stone with

often very little opportunity for employee-worker input". Another explored method is the practice of napping during work, which, according to many sources, helps maintain alertness, performance, and healthy metabolism. Even short naps can help relieve circadian misalignment in night workers, as noted by Michael Thorpy, director of the Sleep-Wake Disorders Center (27). On the other hand, Eastman and another researcher from Rush University Medical Center indicate that "napping does not overcome the decrement in alertness that remains most pronounced at the circadian nadir", and that "sleep inertia, the grogginess often felt upon awakening from sleep, is most severe at night" (Smith and Eastman 114). Consequently, effective naps for night workers calls for long and unfeasible break periods.

Some treatments for circadian misalignment are applicable but are not strictly imposed by employers. For instance, bright light therapy can help night workers maintain their sleep schedules. The light acts as a natural stimulant, and night workers under bright conditions have displayed improvements in job performance from increased vigilance (Smith and Eastman 114). Employers can increase the brightness of lights during night shifts, although this is often to the control of the worker. For treatments that occur outside of work, such as the use of sunglasses during daytime<sup>4</sup>, employers play an even more minor role in establishing standards.

The question regarding how employers should set policies for night shifts brings up a legal analysis of the issue. U.S. employers are responsible for keeping night workers productive and safe (Scott). Thus, if night workers face issues with health and safety, an intervention from the government should be considered to help employers set better standards. According to Thomas Frieden, former director of the Centers for Disease Control and Prevention, a major role of the government is to "protect individuals from preventable harm caused by other individuals or

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<sup>4</sup> Wearing sunglasses during the day can help night workers adjust their biological clock and sleep better.

groups” (1857). In the case of night shift employment, the government should therefore intervene if night workers are at risk of impaired job performance or the long-term risks of circadian misalignment. This intervention can maintain both the well-being of the worker and the integrity of the company or industry. Frieden additionally argues that the government has a responsibility to “increase the information available to the public and decision makers” as well as “create environments that support healthy behaviors” (1859). The previously analyzed aspects of the night shift’s current status show that many workers are at risk for work errors and medical complications. As it is clear that current policies of employers do not sufficiently mitigate the health impacts of night workers, the government—suitably the federal government—should aid employers in extending regulations.

The main health problem pertaining to night shifts has invariably been circadian misalignment. The U.S. federal government has several ways to combat the issue. Ideally, the government can ensure that night shifts have limits on working hours, namely for jobs in which work errors risk the safety of individuals. Researcher Bronwyn Fryer from the Harvard Business Review affirms that a policy limiting work hours can help night workers “avoid building up a sleep deficit”. Such policy is not a new concept. The law in Great Britain, for instance, mandates that “night workers must not work more than an average of 8 hours in a 24-hour period” (United Kingdom). By establishing working hour regulations for night shifts, the U.S. federal government can ensure workers do not endure sleep problems that deteriorate their performance or overall health, preventing fatal accidents as seen through the economic lens and long-term conditions as seen through the medical lens. However, these regulations hold limitations, at least in the short run. Firstly, organizations that manage certain industries will need to revise their regulations to fit the government’s, which can involve complicated processes. Secondly, shortening night shifts will

force employers to adjust work schedules as well as employ new members to make up for the cut hours. Long shifts are common in the U.S. and have risen in frequency over the decades (“Why”). Implementing the new regulations can have consequences in areas such as medicine, as a temporary dearth of employees can put lives at stake. Taking these problems into account, the federal government should implement its regulations gradually.

To a lesser extent, the federal government can set regulations on working environments. Applicable treatments for sleep problems, such as stronger lighting, can be integrated into the nighttime workplace. Orientation sessions tailored toward night workers can educate them about the risks of and treatments for circadian misalignment. Ultimately, transparency and a good working environment, emphasized previously by Frieden, can maintain healthy behaviors that help reduce the health risks involved with night shifts. Nevertheless, the main limitation to these regulations is that treatments for night shift problems can be unrefined, and in some cases, experimental. Bright lights, for instance, do not completely eliminate the “trough of alertness at the circadian nadir” (Smith and Eastman 114). However, as more research gives rise to better treatments, the federal government can gain confidence in promoting or imposing them.

The current health impacts of night shifts in the U.S. suggest many detriments. Sleep problems of night workers can negatively affect industries through reduced job performance, while harming themselves or other individuals at the same time. Moreover, long-term circadian misalignment of night workers can result in medical risks, the major ones being heart disease and breast cancer. Minimizing the health problems related to night work, without a doubt, requires employers to balance night workers’ biological clocks, which can be an undesirable process. A very effective way to incite employers to do such action is to have the federal government regulate night shift hours and working environments. Through a gradual process, the government can

protect night workers from the harms of night shifts as employers adapt to new regulations. Ideally, the night shift can still remain at the heart of U.S. society as workers assume a healthier and more productive lifestyle.

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