Nurses and Sleep Deprivation

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Imagine you have a loved one who is a patient in a hospital. You have been sitting by their bedside for hours. You notice that the day nurse who has been caring for your loved one is now telling a night nurse what care has been done so far and what care will probably need to be done. You decide to go home and come back tomorrow. You tell you loved one good night and go home for the evening. The next day you are not able to get to the hospital until almost noon. When you arrive, you notice that the night nurse from last evening is still there. The night nurse looks really tired. You wonder how she keeps functioning after working almost a day and a half. You greet your loved one as you enter their room, but something is not right. Your loved one is acting abnormally lethargic. You ask for the nurse to come check on your loved one. When she does, she notices that your loved one was given the wrong dose of a certain medication. She acts quickly to counteract the medical error and stabilize your loved one. Your loved one is ok, but that gave you quite a scare. You asked what happened. The nurse reviews the medical record and realizes that she had made a mathematical mistake when calculating the dose. You question whether this nurse should be caring for your loved one. The nurse seems genuinely concerned for your loved one but looks so worn out! You want a nurse who is not sleep deprived to care for your loved one. What if another medical error is made and your loved one is not so lucky? This is of course just a scenario, but how would you really feel leaving the care of a loved one in the hands of a sleep deprived nurse? Should nurses be
caring for patients when they themselves are worn out? Does fatigue effect the quality of care given by a nurse? These are all questions that should be asked. Healthcare professionals tell us to “Eat right, exercise regularly, & get good sleep!” However, in their own lives healthcare professionals may lack in these fundamental areas of health - particularly sleep. This paper will take a look at the importance of sleep, the effects of sleep deprivation, and whether sleep deprivation could affect the quality of care professional healthcare nurses provide.

In order to be able to understand if nurses are getting the proper amount of sleep, it is important to understand how sleep works. And while this might be a tedious part of this paper for some, I personally find it fascinating. Let’s start with asking the questions “what is sleep and what does it do for our health?” Sleep while not fully understood is generally defined as a state of unconsciousness during which our body rests and restores itself. For our bodies to fully get a refreshing sleep, it must go through both non-REM sleep and REM sleep within a twenty-four hour period. Our bodies have an internal biological clock (circadian rhythm) that is set by external stimuli (zeitgeber) such as light. Chemicals released in response to darkness and daylight stimulate our circadian rhythm. Our bodies becomes sleepy as adenosine is released into the blood stream and travels to the brain. As cortisol and serotonin are suppressed, melatonin is released causing the onset of sleep. During daylight, cortisol and serotonin help wake our bodies up. Temperature also plays a part in sleep readiness. One’s body temperature decreases towards the end of one’s day helping to facilitate sleep. Our sleep starts out with non-REM (non-rapid eye movement) sleep which has four stages. NREM stage one is the light sleep we experience halfway between awake and sleep. One can easily be awaken during this nodding off period. NREM stage two is a slightly deeper sleep during which one’s muscles begin to relax and heart rate and breathing begin to slow down. It is harder to awaken at this point. NREM stages three and four are deep sleep. Breathing slows considerably. One’s heart rate and blood pressure can drop as much as thirty percent. One is no longer easily awaken by external stimuli, and if awaken one will be groggy for a while. During deep sleep the pituitary releases growth hormones to help facilitate tissue repair and growth. This is the deep sleep one especially needs when one is trying to recover from being sick.

REM sleep starts when acetylcholine is released, and REM sleep stops when serotonin inhibits acetylcholine. REM sleep is the mental recharging part of the sleep cycles. During this period the brain becomes busy with organizing information, processing and solidifying new information, problem solving, and storing long-term memories. Dreams occur during REM sleep, the eyes move back and forth rapidly, and one’s skeletal muscle become limp and still.
During sleep, one will go through waves of NREM and REM sleep. These waves of sleep cycles can be graphed on a hypnogram (13). Each of these sleep cycles last about ninety to one hundred ten minutes for most adults. After about three cycles (around four and a half hours to five and a half hours), the body generally does not continue to go into NREM stage three and four deep sleep. Instead REM sleep will become more dominant towards the latter end of sleep.

How many hours of sleep does an adult need? According to the National Sleep Foundation, a healthy amount of sleep that adults should get is anywhere from seven to nine hours. This would allow for about five sleep cycles. If a person needs to divide their sleep, it is recommended that they sleep at least four hours twice in a twenty-four hour period. When a person does not get the seven to nine hours of sleep within a twenty-four hour time period, they begin to run the risk of becoming sleep deprived.

So what is sleep deprivation and how does it effect a person’s health? Simply put, sleep deprivation is not getting enough sleep. One does not awaken feeling revitalized and refreshed. There are two types of sleep deprivation: acute and chronic. Acute sleep deprivation is when every once in a while a person does not get a full ration of sleep within the twenty-four hour period. General symptoms are physical fatigue, mental fatigue, and emotion fatigue. Most people have experienced acute sleep deprivation a few times in their lives. People usually can “catch up” on their sleep the next time they sleep by adding a few extra deep sleep stages. Chronic sleep deprivation, however, is far more serious to one’s health. Chronic sleep deprivation can be defined as a lack of proper sleep on a regular basis (less than six hours within a twenty-four hour period for at least one week or more)(12). Chronic sleep deprivation may or may not be recognized by the one suffering from it. Long term sleep deprivation may have a domino effect on a person’s health. Complications that may happen as a result of long-term sleep loss are cognitive impairment, difficulty focusing on tasks, impaired judgment, memory lapses or losses, hallucinations, irritability, depression, increased time needed for reactions, decreased coordination, decreased accuracy, muscle aches, and tremors. Chronic sleep deprivation increases the risk for cardiovascular diseases, weight gain, digestive problems, diabetes, cancer, and impaired immune function. These complications of course vary from person to person.

Genetics and the health status of individuals play an important role in the effects of long term sleep loss on a person. There is still a lot that researcher do not know about sleep deprivation. What is known is that long term sleep loss has the potential to negatively affect a person’s health.
Now that we have talked about sleep and some of the adverse effects of sleep loss, let’s apply this to professional nurses. Are nurses at risk of being sleep deprived? Based on the research I have read, sleep deprivation is a possibility in the nursing occupation (2)(6)(7)(8)(12). Due to staffing issues and the nurse shortage, nurses have the potential of being deprived of proper sleep. A lot of nursing shifts are twelve hours especially in hospital facilities. Working overtime is a common occurrence due to understaffing and the need to keep a reasonable nurse to patient ratio (2). Nursing is one of the jobs that you stay at work until another nurse comes to relieve you of your responsibility in caring for your patients. If a nurse has already worked twelve hours and must stay longer, then the overtime begins to cut into a nurse’s sleep schedule. The nurses most at risk of sleep deprivation are night shift nurses who work over twelve hour shifts and nurses that rotate back and forth from day and night shifts (7)(8)(12). Night nurses and rotating shift nurses have the challenge of their work schedules going against their body’s natural circadian rhythm. Nurses may or may not adjust well to these hours.

After reading about nurses and sleep deprivation, I figured I should ask some of the nurses and nursing students around me what their sleep patterns are like, and if they felt they were getting enough sleep. I sent a questionnaire to them and got responses from ten of them. Mind you, this is just a small survey to see if what I was reading was applicable to nurses I know. I asked how many hours they typically sleep before work and/or school. Most sleep five to six hours before going to work and five to seven hours before going to school. I asked if they struggle to wake up. Seven responded yes, two responded sometimes, and one responded no. I asked if they felt they needed more sleep, and interestingly each replied that they felt they need more sleep (with the average desired sleep being around eight hours). The results of my small survey fit with what I have read.

With sleep deprivation being a very probable possibility amount nurses, the next question to ask is does sleep deprivation effect the quality of a nurse’s work? Sleep deprivation can affect the quality of a nurse’s work (2)(6)(7)(8)(12). Nurse fatigue can lead to reduced reaction time, decreased vigilance and observational skills, and impaired decision making abilities. When nurses are tired, it can adversely affect their patients. Unintentional medication errors (such as heparin or insulin errors) could be caused by impaired math skills due to mental fatigue or by decreased observational skills due to fatigue. Failure to rescue could be due to the reduced reaction time of the tired nurse. Increased risks of patient falls or pressure ulcers could be due to a decrease in the nurse’s observational skills. Also nosocomial (hospital-acquired) infections increase when nurses are sleep
deprived. The nurse could forget to follow aseptic technique when entering and leaving a patient’s room. Or the worn out nurse could become sick herself and spread the infection that way. Sleep deprivation can have a negative effect on nurses also. Fatigue increases the risk of needle sticks, cuts, lacerations, bruises, sprains, strains, and back injuries to nurses - just to name a few. All these adverse events can be reduced when nurses are well rested. Therefore it is important that nurses get proper sleep.

It is especially important that nurses be rested and at the top of their game because of the crucial role nurses play in the care of patients. Ways in which healthcare facilities can help nurses get adequate rest include NOT working nurses more than twelve hours within a twenty-four hour time period. If it is absolutely necessary for the nurse to work overnight, providing a quiet place and a break during which the nurse could take a short nap (8). For nurses that rotate shifts, try to rotate the shifts clockwise (nights to days, days to evenings, evenings to nights) working with the body’s natural circadian rhythm and not against it (12). These are just a few ideas for employers. While these are all wonderful ideas for healthcare facilities to consider and hopefully implement, ultimately the responsibility of a proper night’s sleep rest upon the nurse herself. Some ideas to help the nurse plan for proper sleep are to make sure to not hang around and visit after being relieved of her shift - especially after working overtime. Go home and sleep. Helpful tips for nurses sleeping during daylight, darken the bedroom, keep house quiet and the temperature cool to help facilitate sleep. Wearing earplugs or using white noise (fans or relaxing sound-scape machines) also help. Do not exercise before sleep as this will delay sleep. Avoid caffeine and other stimulant at least six hours before sleep. Stay off of electronic devices (computers, smart phones, etc.) before sleep. As much as possible try to go to bed and wake up at the same time each day. Try to get five sleep cycles (seven to nine hours) of sleep each day. All these ideas can help nurses better optimize their sleep (6)(8). Nurses need to take care of themselves as well as their patient.

In conclusion, sleep deprivation can happen to nurses who work long hours. Sleep deprivation of nurses does affect the quality of care nurses give. This is a real safety concern, and it is important to address it. Healthcare facilities and nurses can and should work together to prevent sleep deprivation of nurses. Healthcare professionals give really good advice to their patients on how to live a healthy lifestyle. Perhaps it is time for healthcare professionals to follow that wise advice too. "Eat right! Exercise! And be sure to get plenty of sleep!"
REFERENCES:


