**Part 1 - What I Need To Know**

Did you ever experience sleep deprivation as a child, or do you know someone in their middle school and high school years, that suffers from sleep deprivation? I would like to address to my audience why my essential question is important in my life. I have experienced sleep deprivation throughout my high school career and I know many students younger than me who are experiencing it as you read this. My goal is to search for the find the real scientific answer to this question because we have all heard myths revolving around what happens when we have lack of sleep but no one really knows the science behind it. For me the most exciting part about finding the answer to my essential is that I will finally be able to understand how lack of sleep has affected me. I will finally be able to identify the developmental and growth factors that lack of sleep has caused me to suffer from and to what degree it has changed me. Additionally, I am excited to find out the science behind the factors that affect growth and development in children caused by lack of sleep so that I can help make changes in the future generations and reduce the risks that they may face.

**Part 2 - What I Know or Assume**

When I first began my internship at One Family Pediatrics I was not thinking about the essential question I chose to research. When it came time to develop an essential question, my first thought was about the issues with sleep deprivation among children, especially teens because of the high frequency concerns that the patients presented. I developed my research question based on the amount to concerns being raised about sleep deprivation and how the patients were being affected. Before I began researching, I had a basic understanding about lack of sleep, it's obvious affects on the body and a few home remedies but I was not fully aware of the depth of this matter. I started off with basic knowledge which centered around the fact that sleep deprivation had several negative impacts on our bodies such as slowing down of body movements and loss of focus but I did not know or understand the scientific reasons and remedies for this issue.

**Part 3 - The Search**

As I began my research regarding my essential question, How does lack of sleep affect growth and development in children? What changes can be made to help future generations reduce risks associated with sleep deprivation? I consulted my mentor for a portion of the credible information I gathered. My research consists of credible and valid information pulled from various scientific studies, scientific reports, journals and published articles. Three of the main sources I used to gather my findings are provided in annotated bibliography section of this project. Along with reading scientific publications online and in books, I had the opportunity to interview a medical professional who provided me with their knowledge and input regarding my essential question and research topic. The interview was with a DNP professional who works with Piedmont Health Care and below I have placed the questions and answers that resulted from our interview. Overall, the sources I used during my critical research were mostly non-biased towards an particular side because the writings were heavily based on scientific evidence that was proven through extensive experimentation and scientific studies.

1) How many patients do you see throughout the year that have health issues relating to their sleep?  
Mentor: 10-15 per month so that adds to around 50-60 per year!  
Reflection: To be honest, I was expecting the number to be much larger than this. I feel that this number would be higher if more parents and children were able to identify this in the first place.  
  
2) Generally, what is the age group that is most affected by this ongoing issue?  
Mentor: New borns, high school students, teens that work, do extracurricular and attend school  
Reflection: I agree with is but I relate more to the teens because even though I do not work, I get very stressed throughout the week with my academic work with changes my sleep cycle every day.  
  
3) From a medical professional's standpoint, what are the growth and developmental issues children have due to the lack of sleep?  
Mentor: lack of concentration, irritation, anger, mood swings, depression, blood pressure, anxiety, and disturbed eating patterns.  
Reflection: All these growth and developmental factors are concerning but personally I relate to the lack of concentration and random eating habits factors.  
  
4) What techniques, medications, and/ or technologies have already been developed in an effort to help the children experiencing side-effects from lack of sleep?  
Mentor: sleep hygiene, distraction techniques, avoiding caffeine/ sugar, exercise for healthy sleep, less screen-time especially in evening/night, keep to a regular daily routine, never use sending your child to bed as a threat, maintain a sleep diary, and finally if home remedies don't seem to work ask pediatrician about prescribed medicine, melatonin.  
Reflection: My parents have always followed these techniques, especially when I was younger but now they just let me decide on my sleep schedule. My mom tries to remind me to sleep and wake up earlier but with my school work I sometimes find it impossible to sleep before 11:30pm.  
  
5) When patients come to the clinic, what do here most commonly as to why they experience the lack of sleep? What is the leading cause?  
Mentor: too much screen-time, school work stress, some have complaints about not being able to identify reason for why they cannot sleep well.  
Reflection: I can relate to the high school students reason without doubt. I know for a fact that my homework and constant focus on my computer screen doesn't allow me to sleep.  
  
6) To what degree does the child's sleep and work environments affect their sleep? What role does technology have in lack of sleep in children?  
Mentor: Screen-time 1 hour before bed time causes disturbances in sleep because the lights and waves awaken the brain making us more alert rather than sleepy.  
Reflection: This is very true and I finally understand the importance now after researching even though my mom has told me several times before.  
  
7) How should their daily work and sleep environment look like? What are some "home-remedy" solutions for a child who has recently begun experiencing disrupted sleep patterns?  
Mentor: Screen-free bedroom, phones and anything with bright lights should be off and away from bed about 1 hour before sleeping, dim lights, relaxation music, read book not phone, keep constant sleep schedule throughout week.  
Reflection: My room is TV-free, the only screen I have in my room is my phone which I place on the night stand across my side of the bed, before I sleep.  
  
8) What are some key indications that the child is experiencing the right amount of sleep? What does the correct sleep pattern for children classify as?  
Mentor: Infants 4 to 12 months – 12 to 16 hours (including naps), Toddlers 1 to 2 years – 11 to 14 hours (including naps), 3 to 5 year old children – 10 to 13 hours (including naps), 6 to 12 year old children – 9 to 12 hours, Teens 13 to 18 years – 8 to 10 hours.  
Reflection: I without doubt do not receive enough sleep for my age. I generally sleep at1am and wake up by 6:30 am Monday to Friday. On the weekends I get too much sleep but that is only because I lack that sleep during the week.  
  
9) How big is the role of parents in their child's lack of sleep issue? How do you think they can encourage better sleep and might discourage proper sleep?  
Mentor: Some parents work late so they don't set a specific bedtime for their young ones, some parents follow the rule that when their child is sleepy they will sleep and some parents work their children too much by making them study a lot. All three of these are bad parenting techniques as far as sleep is concerned. Parents should set reasonable bedtimes for young children. They should make sure their older children are not too stressed with work and school. Parents need to make observations like the following:  
- Does your child fall asleep in the car almost every time you drive with them?  
- Do you have to wake your child up almost every morning?  
- Does your child seem overtired, cranky, irritable, aggressive, over-emotional, hyperactive, or have   trouble thinking during the day?  
- On some nights, does your child “crash” much earlier than their usual bedtime?  
   
Reflection: My parents do a fairly good job of reminding of my sleep and the risks of not receiving enough sleep.  
   
10) In your opinion, what changes can be made, that have not already been made, to help future generations reduce risks associated with sleep deprivation? (Technologies, Medications, Home-remedies)  
Mentor: Not that I am aware of specifically as of now.  
Reflection: Technology development and research about this topic is on-going.

**Part 4 - What I discovered**

After conducting extensive research about my topic I was able to combine the knowledge I gained from various sources and fully answer the question. Through the published studies and reports I learned about the current research on sleep patterns in adolescents, factors contributing to chronic sleep loss (ex: electronic media use, caffeine consumption), and health-related consequences, such as depression, increased obesity risk, and higher rates of drowsy driving accidents. The report also discusses the potential role of later school start times as a means of reducing adolescent sleepiness. The information provided in this research report. From similar sources I was furthered my knowledge and learned that chronic sleep loss and associated sleepiness and daytime impairments in adolescence are a serious threat to the academic success, health, and safety of our nation’s youth and an important public health issue. While this may seem to be common sense, we overlook these clear indications. Furthermore, upon more research, I was able to link the connection between lack of sleep and internal bodily function within children. Several of the publications indicated that children who experienced lack of sleep also suffered from growth hormone deficiency. In all, lack of sleep in children affects the growth and development of children and this is evident through some of the following indications: loss of focus and concentration, stumped growth, poor vision, lethargy, low levels of insulin, diabetes, sleep disorders and weight loss. Through my research I have also concluded that the various simple technological advancements that have occurred over the years, in order to fix these issues among children include: the night shade feature on phones and various home remedies such as maintaining sleep hygiene, utilizing distraction techniques, avoiding sugar/caffeine, exercising healthy sleep schedules and reducing screen time.