Fetal Alcohol Spectrum Disorders

Fetal Alcohol Spectrum Disorders is defined by the SAMSHA FASD Center for Excellence as a term describing the range of effects that can occur in an infant whose mother drank alcohol during pregnancy. The range of these effects can include physical, mental, behavioral, and/or learning disabilities. The term FASD refers to a continuum of conditions. These include fetal alcohol syndromes, fetal alcohol effects, alcohol-related neurodevelopmental disorder, and alcohol-related birth defects. Although disorders within the spectrum can be diagnosed, the term FASD is not used as a clinical diagnosis.

Introduction

I chose Fetal Alcohol Spectrum Disorders as my research topic because it troubles me to know that negligence is the cause for these disorders around the world. With effects so life alternating, one would think that an expectant mother would take precaution in the decisions she chooses to make while pregnant. I was curious to learn how prevalent the disorder is around the world and what exactly causes the unborn child so much harm and possible damage. As a Public Health major and a student also interested in working toward a nursing degree, I felt this topic was a condition I would be seeing in the future and therefore felt it would be constructive to learn more about.

Section 1: Background and Problem Statement

- **Web site #1 Name: National Center on Birth Defects and Developmental Disabilities**
- **Web address: http://www.cdc.gov/ncbddd/fasd/index.html**
- **Background Information:**
    - Healthy People 2020 does not address Fetal Alcohol Spectrum Disorders. Many other government and non-profit organizations do address this health issue though. Fetal Alcohol Spectrum Disorders are a collection of conditions that can occur in an individual whose mother drank alcohol during pregnancy. The effects can range anywhere from physical, behavioral, learning, or mental problems and can also be a mixture of these. These conditions can also be mild to severe. Diagnosing FAS can be difficult because many symptoms are similar to those of attention-deficit/hyperactivity disorder (ADHD). Also, no medical test can be done to diagnose FAS. Doctors can only diagnose this by looking for signs and symptoms such as abnormal facial features (smooth ridge between the nose and upper lip called the philtrum), small head size, lower birth weight, shorter-than-average height, poor coordination, hyperactive behavior, difficulty paying attention, poor memory, difficulty in school (especially math), learning disabilities, intellectual disability or low IQ, poor reasoning and judgment skills, CNS (central nervous system) problems (small head size, problems with attention and hyperactivity, poor coordination), sleep and sucking problems as a baby, kidney, heart, or bone issues, vision or hearing problems, speech and language delays, and prenatal alcohol exposure (although confirmation is not required to make a diagnosis). FASDs can have lifelong effects on an individual. It is also one hundred percent preventable.

- **Web site #2 Name: Competency-Based Curriculum Development Guide**
- **Web address: http://www.cdc.gov/ncbddd/fasd/curriculum/FASDguide_web.pdf**
- **Background Information:**
    - Now that there is a general idea of the different kinds of birth defects FASDs can cause a deeper look can be taken at what actually goes on in the fetus when there is alcohol consumption. It is important to understand that the areas most affected by the fetus are the skeletal structures, organs, Central Nervous System, and related areas of growth. Specifically in the Central Nervous System, alcohol can have the greatest effects. This toxicant interferes with the normal proliferation of nerve cells and increases the formation of cell-damaging molecular fragments. It also alters the cell's ability to produce or regulate cell growth, division, and survival. Not only does it alter the formation of axons, but it also alters the cell membranes and pathways of electrical signals within the cells. Lastly, it changes the expression of certain genes.

- **Web site #3 Name: American Pregnancy Association Promoting Pregnancy Wellness**
- **Web address: http://www.americanpregnancy.org/index.htm**
- **Background Information:**
    - Pregnant women should not drink alcohol during the duration of their pregnancy. There is no safe amount of alcohol for a pregnant woman to drink; just as well as there is no safe time for a pregnant woman to drink. Fetal Alcohol Spectrum Disorders includes all the problems that result in prenatal alcohol exposure. The most commonly known of the effects are both Fetal Alcohol Syndrome and Fetal Alcohol Effects. Fetal Alcohol Syndrome is a result of high doses of alcohol consumption during pregnancy such as binge drinking and/or drinking on a regular basis, while Fetal Alcohol Effects are a result of moderate drinking throughout pregnancy. Both have lifelong and permanent effects on the unborn child. Fetal Alcohol Effects can be broken down into Alcohol-Related Neurodevelopmental Disorder and Alcohol-Related Birth Defects. FAS is one of the most common causes of mental retardation and the only one that is completely preventable. Although there is no cure for FASDs, research shows that early intervention treatment services can improve a child's development. There are many protective factors that can be taken to reduce the effects of FASDs as well. These include diagnosis before 6 years of age, a nurturing and stable home environment during the school years, absence of violence, and involvement in special education and social services. In regards to treatment, there are a few options. These include medication to help with some specific symptoms, behavior and education therapy, parent training, and other alternative approaches. Every child is different therefore no one specific option is best for each and every child with FASDs, but all good treatment plans will include close monitoring, follow-ups, and changes as needed.

Section 2: Research

- **Web site #1 Name: PubMed**
- **Web address: http://www.jpeds.com/article/S0022-3476(05)00093-4/abstract**
- **Summary of the research:**
    - Fetal Alcohol Spectrum Disorders weren't found until 1973. Since then much has been learned about diagnosing and preventing this disorder. Research helps physicians better identify at-risk pregnancies and alcohol-affected people. Obtaining a marker to indicate FAS could lead to the identification and treatment of women at risk for an alcohol-exposed pregnancy. A biological marker, fatty acid ethyl esters (FAEE), would allow an earlier identification and intervention for affected infants, and recognition of women at risk for the alcohol abuse. The University Hospital of Cleveland in Cleveland Ohio facilitates research on dose-response relationships between alcohol exposure and alcohol related birth defects. The project proposed that FAEE in meconium is a useful marker for exposure of low to moderate alcohol use in pregnancy and can identify infants at risk for bad neurodevelopmental outcomes.

- **Web site #2 Name: PubMed**
- **Web address: http://www.ncbi.nlm.nih.gov/pubmed/19327965**
- **Summary of the research:**
    - The Centers for Disease Control and Prevention (CDC) is working to develop Fetal Alcohol Spectrum Disorder tracking systems as well. They believe in researching how many people have FASDs they can comprehend and find the more susceptible populations. This can lead to target prevention and treatment supplies. Intervention and treatment strategies can then be put into place. The Fetal Alcohol Syndrome Surveillance Network (FASSNet), it was found that around 0.3 to 1.5 cases of FAS per 1,000 live births occur in certain areas of the United States. These states include Arizona, Colorado, and New York. Studies sponsored by the CDC found that children with FASDs are at an extremely high risk for developing secondary conditions such as difficulty in school, trouble with the law, substance abuse problems, and mental health problems. Up until recently most intervention strategies for children with FASDs were often non-specific, unsystematic, and lacked scientific evaluation or validation. Now, organizations are trying to collaborate together to identify, develop, and evaluate effective strategies for intervening with children with FASDs and their families. Recent studies found all participants showed improvement in behaviors or skills and important lessons were learned from these interventions, including parent education or training, teaching children specific skills they would usually learn by observation or abstraction, and integration into existing systems of treatment.

- **Web site #3 Name: Google Scholar search engine, Research on Fetal Alcohol Spectrum Disorders**
- **Web address: http://ebm.rsmjournals.com/content/230/6/357.full**
- **Summary of the research:**

- As mentioned earlier, there is a range of results that can occur (FAS, FAE, ARBD, etc). The major influence in all is the amount of alcohol that reaches the embryo, which is determined by the dose and guideline of the alcohol exposure. Research shows that genetics also plays a role (metabolism, reactivity to alcohol, etc.). Timing of when the alcohol is entered into the fetus and nutritional factors influence the effects as well. Research has proven that prenatal exposure during the first trimester hinders the organization and proliferation of brain cells. A study done on mice resulted in malformations of the face and brain. These patterns showed death of cells in the anterior neural plate. Exposure to alcohol in the third trimester on the other hand, results in damage to the cerebellum, hippocampus, and prefrontal cortex. This results in a variation of structural and functional abnormalities. The consequences depend on the time of exposure.

Section 3: Statistics

- **Web site #1 Name: Centers for Disease Control and Prevention**
- **Web address: http://www.cdc.gov/ncbddd/fasd/data.html**
- **Summary of the statistics:**
  - This article took statistics of alcohol use among women of childbearing age in the United States. About 12.25 of women (about 1 in 8) reported any alcohol use in the past 30 days. This rate has remained stable over the 15-year period (1991-2005). Pregnant women most likely to report any alcohol use were 35-44 years of age (17.7%), 14.4% were college graduates, 13.7% employed, and 13.4% unmarried. 1.9% of pregnant women (about 1 in 50) reported binge drinking in the past 30 days. Pregnant women who binge drank were more likely to be employed and unmarried. In this study, binge drinking was considered having 5 or more drinks at one time. The prevalence of binge drinking among pregnant women didn't change much over the 15-year period. Alcohol use levels prior to pregnancy are a strong predictor of alcohol use during pregnancy.

- **Web site #2 Name: PubMed**
- **Web address: http://www.ncbi.nlm.nih.gov/pubmed/16772190?log$=activity**
- **Summary of the statistics:**
  - Approximately 10% of pregnant women (1 in 10) reported any alcohol use in the past 30 days. Approximately 2% of pregnant women (about 1in 50) engaged in binge drinking or frequent use of alcohol in the past 30 days. Among women who might become pregnant (they reported not using any type of birth control), 52.4% said that they wanted to become pregnant, 54.9% reported alcohol use, and 12.4% reported binge drinking. In the United States almost 50% of pregnancies are unplanned, stressing the importance of educating all women who are of childbearing age about the risks of alcohol during pregnancy.

- **Web site #3: Understanding Alcohol Abuse**
- **Web address: http://alcoholnews.org/FAS.html**
- **Summary of the statistics:**

- It is hard to get concrete numbers of how prevalent and common FASD cases are. In Native Americans and a good number of South African societies, FAS is estimated to affect 10-40 infants per 1,000 live births. As of 2009, the United States showed that 2-7 cases were found per 1,000 live births. Even the lower rate, however, makes FAS as common as Down syndrome. That is frightening considering it is entirely preventable. It is said that per every one child with full FAS, there are an estimated 3 who have one of the other IOM diagnoses. This means that 1% of all children born in the US may be affected. These numbers, of course, are most likely under-estimated because drinking during pregnancy is strongly discouraged; therefore women tend to not admit doing so. Upper and middle class populations are screened less than the poor, therefore unless distorted facial features are prevalent, the children may be misdiagnosed.

Section 4: Consumer Information

- **Web site #1 Name: National Organization on Fetal Alcohol Syndrome**
- **Web address: http://www.nofas.org/faqs.aspx?id=28**
- **Summary of the information:**
  - Unfortunately, some of the most vulnerable periods for alcohol damage occur early in pregnancy. So early that a woman may not yet be aware that she is pregnant. Some misconceptions about FASD are that the mother had an easy choice not to drink during pregnancy and was just careless. The mother of the child could have an alcohol abuse problem that needs serious medical attention. Another misconception is that behavioral problems associated with FASD are all due to parenting and bad living environment, which is untrue also. As mentioned earlier, behavioral problems are some of the secondary effects of this disorder. Another misconception is that the child will grow out of it. This is untrue, as the disorder lasts a lifetime.

- **Web site #2 Name: Google Scholar search engine, does male drinking lower testosterone affecting the unborn baby**
- **Web address: http://books.google.com/books?hl=en&lr=&id=cl9hDsHq5UIC&oi=fnd&pg=PP9&dq=oes+a+males+drinking+lower+testosterone+level+affecting+the+unborn+babay&ots=lG1RBqa0Xh&sig=pjRT4iIwtHZIbkufIfKYfk_LZQg#v=onepage&q&f=false**
- **Summary of the information:**
  - Even though a mother's drinking is the only cause of Fetal Alcohol Spectrum Disorders, an interesting fact has been found regarding male drinking. Drinking can lower testosterone levels in a male, which can potentially cause harm to the sperm. This can result in an increased risk of disorders in the offspring. Some studies have shown that alcohol consumed by the male can enter the testicles through the bloodstream. The drug then seems to mutate some characteristics of the sperm (deformed heads or tails which can hinder their mobility). Alcohol could also be transported to the ova via the semen and expose the embryo to this toxicant. In addition, alcohol-affected semen could alter the maturation of sperm.

- **Web site #3 Name: National Organization on Fetal Alcohol Syndrome**
- **Web address: http://www.nofas.org/FASD_DAY.aspx**
- **Summary of the information:**
    - Every year, September 9 is recognized as International FASD Awareness Day. The ninth day of the ninth month of the year symbolizes the 9 months of pregnancy that a woman should avoid alcohol. The mission is to spread the word about the importance of having a healthy, alcohol-free pregnancy with family and friends.

Section 5: Solutions to the Problem (or Issue)

- **Web site #1 Name: Centers for Disease Control and Prevention**
- **Web address: http://www.cdc.gov/ncbddd/fasd/training.html**
- **Summary of the information:**
    - CDC worked with the American College of Obstetricians and Gynecologists to create a tool kit called "Drinking and Reproductive Health; A Fetal Alcohol Syndrome Spectrum Disorders Prevention Tool Kit". This is for women's health care providers and it contains a CD-ROM that teaches them how to properly screen women for this disorder, as well as educate women on the effects of drinking during pregnancy. It advises them to tell their patients to use contraception if they are still using alcohol, but also gives information on drinking once a woman is actually pregnant. It is a brief guide with resource information, handouts, and is available for download or online purchases.

- **Web site #2 Name: Children's Neurobiological Solutions**
- **Web address: http://www.cnsfoundation.org/site/News2?page=NewsArticle&id=9227**
- **Summary of the information:**
    - The Centers for Disease Control and Prevention (CDC) takes initiative in awarding grants to organizations that run programs for people with Fetal Alcohol Spectrum Disorder. St. Louis University has received one with the intention to provide help to older children and adults that have been diagnosed with this disorder. The problems discussed earlier have focused on the effect on the child's early years of life, but the problems don't go away as they get older. Many adults still suffer from these difficulties; only there are not as many programs to help adults with FASD. The St. Louis University grant will be working to provide programs for adults with FASD, because it is a disorder that lasts a lifetime.

- **Web site #3 Name: FASD Center for Excellence**
- **Web address: http://www.fasdcenter.samhsa.gov/**
- **Background Information:**
    - The FASD Center for Excellence includes funding for local, state, and juvenile court organizations to implement evidence-based prevention or diagnosis and intervention programs. If a person thinks their child might have an FASD, they should talk to their child's doctor and express their concerns. If the guardian and/or doctor think there is a potential problem, the child should be taken to a

specialist, such as a developmental pediatrician, child psychologist, or clinical geneticist. The state's public early childhood system should also be contacted so that the child can receive an evaluation to find out if he/she qualifies for treatment services. Subcontractors are funded to screen and diagnose children receiving services in a range of local, state, and juvenile court programs to provide them with needed interventions. Programs are targeting children ranging from 0-5 years of age based on research that shows early diagnosis of FASD can make a significant difference in children's lives. The people are trying to decrease this public health issue by working to eliminate alcohol consumption in pregnant women and improve the functioning and quality of life of children with an FASD and their families.

Conclusions

I feel that after completing this fact sheet, I have learned a lot of constructive information about Fetal Alcohol Spectrum Disorders. Had I not done this fact sheet I wouldn't have been aware of how many cases are prevalent in today's society, nor would I have known that there are screening and interventions to help with this disorder. It is a 100% preventable disease and I now that I know there is an International FASD Awareness Day, I feel I want to take part in spreading the word to help prevent FASDs around the world. I now know the signs and symptoms, as well as the actions to take if I sense a child is showing signs of FASDs.

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