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Comparing the Care of Pregnant Women in Ghana and the United States

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Abstract:

During pregnancy, factors such as maternal nutrition, location of delivery, the number of antenatal care visits, maternal age, and more can all impact the health of both the mother and the developing fetus. All of these factors are subject to change based on where the mother lives and the resources that her country has to offer her. The objective of this paper was to compare and contrast the nutritional and non-nutritional care of pregnant women in Ghana and the United States and its impact on maternal/child mortality in the two countries. The information collected for this project was taken from online databases, websites, and books as well as a reflection from the author's experience in the Ghana Health Service. The results of this project conclude that the United States is more equipped to care for its pregnant women, though Ghana has also made significant improvements in its maternal care in the past few years.

Background:

Nutritional Factors that Affect Birth Outcomes:

Role of Maternal Nutrition in Fetal Development

Eating a varied diet is important to sustain the mother's health during pregnancy and any person's health for that matter, but is even more vital for the developing fetus, who depends on certain micronutrients in the different stages of gestation. Understanding which nutrients are required during pregnancy for the proper development of the fetus is crucial for minimizing the risk of birth defects or other unwanted pregnancy outcomes; deficiencies in specific micronutrients can have detrimental impacts on the infant's health after birth. Iron deficiency is one of the most common deficiencies worldwide, as more than two billion people around the world are suspected to have an iron deficiency^[1,2]. Women are often even more susceptible to iron deficiencies than men, and research has found that 40% of fertile, nonpregnant women have

low iron reserves ^[3]. For pregnant women, having enough iron in the body is especially important for fetal development because a deficiency in iron during pregnancy is associated with disruptions in the development of motor, cognitive, socioemotional, and behavioral skills for the infant ^[1]. Iron deficiencies can also lead to anemia, and 1 in 8 persons are believed to have iron deficiency anemia; this is especially dangerous for pregnant women since anemia in pregnancy has been associated with low birth weight and preterm birth ^[2,3]. In order to combat the negative pregnancy outcomes associated with iron deficiencies, the World Health Organization recommends that pregnant women supplement 30 to 60 mg of elemental iron a day into their diets depending on their needs ^[4].

An additional micronutrient deficiency that should be a concern to pregnant women is a deficiency in iodine, which plays a significant role in neurodevelopment. The development of the brain and the nervous system is a long process that continues throughout the entire pregnancy. The process of neurogenesis, production of neurons, begins on embryonic day 42 and ends near mid-gestation, whereas the development of synapses continues well into the third trimester, at which point they are being generated at a rate of 40,000 synapses per minute ^[1]. Research has found that a deficiency in iodine disrupts the process of neurogenesis and synaptogenesis, as well as the myelination of axons ^[1]. The proper development of neurons, synapses and myelin sheaths is crucial to the function of the nervous system, and the disruption of such processes can result in severe birth defects for the infants. Neurons and synapses are extremely important for the function of the nervous system, as they play a major role in relaying signals from one part of the body to another. Furthermore, a myelin sheath, found on the axon of neurons, allows messages to travel more efficiently through the neuron, speeding up the rate at which messages are sent from one neuron to another.

Choline and folate also impact the neurodevelopment of the fetus. Both micronutrients are involved in helping develop the neural tube, though folate is the more important of the two since a deficiency in folate is highly associated with neural tube defects in the fetus, such as spina bifida ^[1]. It is recommended that all women of reproductive age make a conscious effort to eat foods rich in folate, as well as acquiring 400 µg of folic acid a day either by taking supplements or eating fortified foods. Since the neural tube develops in the first four weeks of pregnancy, when many women do not know that they are pregnant, it is important for all women of childbearing years to obtain adequate folic acid intake at all times. Consuming the adequate folic acid intake prior to pregnancy and continuing to do so into early pregnancy will help prevent the cases of neural tube defects by 40-80% ^[5].

Finally, zinc and tryptophan are two nutrients that are also important in fetal neurodevelopment. Zinc, similar to iodine, impacts fetal neurodevelopment by synthesizing neurons ^[1]. Tryptophan is an essential amino acid found in milk and meat products that is used in the synthesis of neurotransmitters ^[6, 1]. It is important for pregnant women to have adequate tryptophan consumption because tryptophan cannot be produced in the body ^[6].

Calcium and vitamin D are nutrients that are important for the skeletal development of the fetus. Specifically, the fetus relies entirely on maternal vitamin D stores for healthy bone development, which is concerning due to the fact that 40-98% of women globally have a vitamin D deficiency, and 15-84% of women globally are severely deficient in vitamin D ^[5]. There is evidence that supports treating a vitamin D deficiency during pregnancy because proper vitamin D stores can help reduce the risk of birth defects associated with this deficiency, including rickets and low birth weight ^[5]. Calcium also impacts fetal bone development, and the demand for calcium during pregnancy increases in the third trimester to compensate for the large quantity

that is being transported across the placenta to the fetus ^[5]. During pregnancy, fetal calcium uptake increases to about 350 mg per day ^[7]. Research has found that taking calcium supplements of at least 1000 mg per day during pregnancy reduces the risk of preterm delivery, maternal morbidity, and infant mortality ^[7]. Consuming adequate calcium intake is especially important during the third trimester because a maternal calcium deficiency during this time has been associated with delayed infant growth and a low birth weight ^[5].

In addition to micronutrients, macronutrients are also an important component of a pregnant mother's diet. Macronutrients such as carbohydrates, proteins, and fats provide the body with the energy that it needs, and these energy needs increase with the length of gestation; pregnant women do not require additional energy intake during the first trimester, but their needs begin to increase between weeks 10-30 to sustain the ongoing maternal and fetal tissue growth ^[5]. Beginning in the second trimester, energy requirements for the mother increase to approximately 340 kcal per day, and then continue to increase through the third trimester, when energy requirements are approximately 452 kcal per day ^[8]. Carbohydrates should account for 45-64% of daily caloric intake, fats should compromise 20-35% of daily caloric intake, and protein consumption should be 10-25% of the daily energy requirements ^[8,5]. The requirements for protein in the first trimester only increase by 1 g/day, but then increase by 8 g/day and 26 g/day in the second and third trimesters, respectively ^[9]. The data clearly indicates that energy and protein requirements must increase during the second and third trimesters to meet the demands of the developing fetus. Meeting this demand is imperative to reduce the risk of negative birth outcomes, since macronutrient deficiencies during the third trimester are associated with a reduced birth weight of the infant ^[10]. This is concerning since impaired fetal

growth, such as low birth weight, is linked with an increased risk for cardiovascular disease and type 2 diabetes mellitus later in life ^[1].

Non-Nutritional Factors that Affect Birth Outcomes:

Antenatal Care

The purpose of antenatal care is to detect any problems that are related to the pregnancy so that the mother can be directed to the appropriate facilities and specialists for proper care and treatment. Additionally, antenatal care visits help predict future problems that could arise during the pregnancy and delivery so that the care providers can help to prevent the problem or decrease its likelihood of occurring ^[11]. According to the World Health Organization, women should attend at least four antenatal care visits while pregnant, and their first antenatal care visit should be within the first 16 weeks of gestation ^[12,11]. Studies have shown that there is an association between fewer antenatal care visits and an increased risk of negative birth outcomes. One retrospective cohort study performed in the United States reported that women who did not attend any antenatal care visits, or an inadequate number of visits, had an increased risk for having low birth weight babies, a preterm birth, and infant mortality ^[11].

Family Planning

Family planning is a method used to avoid unplanned and unwanted pregnancies; it can involve the use of contraceptives, planning intercourse around ovulation cycles, or even abstinence so that the female becomes pregnant when she and her family are ready. Many women around the world utilize family planning so that when they become pregnant, they are emotionally, physically, and financially prepared. Understanding proper spacing and timing of pregnancies, especially in the developing world where access to health care is not always easy, is extremely important for decreasing the risk of complications with the pregnancy. Not only does

it help improve daily life for women and children, it can also help to minimize some of the traumatic outcomes of birth; there is research that shows that women who space their successive births by three years are more likely to survive and their babies are twice as likely to survive infancy ^[13]. Many partners in the developing world give birth to more children than they can afford due to the lack of access to family planning. The use of family planning gives families the opportunity to thrive as the healthy spacing of children allows the mother to spend more time working, therefore making more money so that her children can go to school and eat nutritious meals ^[13].

The choice seems straightforward: use family planning. However, the reality is not so simple, as there are approximately 220 million women in the developing world who lack access to family planning resources, whether it be information on their ovulation cycle or contraceptives. This lack of knowledge and access leads these women to have unwanted pregnancies at a time when their physical and emotional states may not be ready ^[13]. Globally, there are 800 women who die every day from pregnancy related complications, and about 99% of them occur in the developing world. In Sub-Saharan Africa alone, where Ghana is located, it is reported that one in thirty-nine women die either during pregnancy or during delivery ^[13].

Maternal Age at Time of Delivery

Knowing the proper age to become pregnant is also vital for both the health of the mother and the child. If a girl becomes pregnant too young, her body is usually not fully equipped to handle child birth, which increases her risk of dying or having severe complications due to the pregnancy. Around the world, teen pregnancy is the most common cause of death for girls aged fifteen to nineteen, and 95% of these pregnancies occur in low- and middle- income countries ^[13].

Location of Delivery

Delivery can be dangerous for both the mother and child, and many unwanted complications can arise that require immediate medical attention. For such reasons, the World Health Organization recommends that all women deliver their infant in a birthing facility or in the company of a skilled birth attendant ^[11].

Objective:

The purpose of this honors project was to compare and contrast the nutritional and non-nutritional care of pregnant women in Ghana and the United States and its impact on maternal/child mortality in the two countries.

Methods:

The information found in this paper was collected from a number of journals, reports, websites, and books. All of the journal articles cited in this paper were found from online databases such as PubMed and were peer reviewed. The websites used for this paper are all nationally and internationally known organizations, such as the World Health Organization and the United States' Center for Disease Control. The book, *The Mother and Child Project: Raising Our Voices for Health and Hope*, was also a resource for this paper as it consists of testimonials and articles from people who have traveled to third world countries. The book addresses the needed resources of developing countries such as birth control and counseling on family planning. Finally, as I shadowed at six different health facilities in Winneba, Ghana during the 2019 summer term, I wrote in a journal and I used this to reflect on the nutritional and non-nutritional care of the pregnant women using these facilities.

Discussion

Antenatal Care in Ghana and the United States

Ghana is a country in Sub-Saharan Africa on the coast of the Gulf of Guinea, and though it is one of the more well-developed countries in west Africa, it is still a developing country that does not have access to the latest medical supplies and equipment. The Ghana Demographic and Health Survey was a survey conducted in 2014 that outlines the possible determinants for why the quality of maternal and child health in Ghana is not as good as it could be. A positive finding was that 89.2% of the Ghanaian women surveyed attended at least four antenatal care visits ^[12]. The factor that was found to have one of the most significant impacts on whether or not the maternal health facilities were being utilized was education. According to the results of the survey, women who received a secondary education or higher were 76% more likely to attend at least four antenatal care visits ^[12].

In contrast, the United States has much better access to medical supplies than Ghana, but this does not mean that all people have access to it. According to a 2017 report, 77.3% of mothers in the United States followed the World Health Organization's recommendation and attended an antenatal care visit within the first trimester ^[14]. The United States is extremely racially and socioeconomically diverse, and therefore it is important to recognize that access to antenatal care differs for white and black women. There is a discrepancy between white women and black women, as 82.4% of white mothers compared to 66.6% of black mothers attended their first antenatal visit within the first trimester ^[14]. A report issued in 2016 stated that 75.6% of mothers in the United States attended adequate antenatal care visits, which was defined as attending 80-109% of the number of recommended visits ^[15]. The same report also showed that the woman's level of education, as seen in Ghana, affects her likelihood to attend the recommended number of antenatal visits. According to the findings, 83.6% of women who

attained a bachelor's degree attended adequate antenatal care visits, compared to the 62.6% of women who never completed high school ^[15].

Location and Delivery in Ghana and the United States

In the Bongo District in Northern Ghana, there is only one medical doctor and sixty-five nurses available to attend to the medical needs of the entire district ^[16]. The limited number of medical experts within the region greatly reduces the chances of pregnant women in that region giving birth in the company of a skilled birth attendant. Additionally, results from the Ghana Demographic and Health Survey reported that a third of the women who live in rural Ghana are more than four hours from a district health facility. The amount of time it would take to travel to one of these facilities deters many of the women from delivering their infants in a proper facility, resulting in them giving birth at home where they are at higher risk of dying were an unexpected complication to arise ^[12].

Not all of Ghana has such a low physician-to-population ratio. The findings from the Ghana Demographic and Health Survey reported that 74.2% of the surveyed women confirmed that they had a facility-based delivery ^[12]. This is a trend in the right direction for the health of women and children in Ghana, but it is still far from the percentage of facility-based births reported in the United States. A report using United States birth certificates stated that in 2017, only 1.61% of the total births in the United States were considered “out-of-hospital” births, which still included planned home births as well as planned births at locations other than hospitals. Additionally, of all of the reported home births from every state, except California, including Washington D.C., only 15% of them were not planned ^[17].

Maternal Age at Delivery in Ghana and the United States

The mean birth age reported in 2017 for Ghana was 22.3 years old, which is lower than the mean birth age of 26.8 years old for the United States ^[18,14]. This mean birth age difference could contribute to negative outcomes for both the mother and child.

Nutritional Factors in Ghana and the United States

The variety of nutrients a person acquires during a day is highly associated with their daily food consumption. The United States and Ghana have access to very different food sources, which means that their populations have access to different nutrients. As Ghana is still a developing country, it does not have the resources to import different types of food from all over the world. The majority of the Ghanaian diet comes from locally grown food, and therefore the people of Ghana have access to a limited amount of nutrients and these nutrients vary by season. In the United States supermarkets are stocked with all different kinds of food throughout the season as food is imported from other countries. Some of the Ghanaian foods that are considered to be healthier dishes include kenke, banku, fufu, tueozafi, rice, yams, watermelon, mangos, apples, avocados, bananas, pawpaw, pineapple, and certain vegetables. Kenke, banku, tueozafi and fufu are local dishes made from locally grown foods. Kenke is made from fermented corn dough, banku is made from cassava dough and corn, tueozafi is made from corn and cassava flour, and finally, fufu is made from pounded boiled yams and cassava ^[19].

The lack of food variety in Ghana compared to the United States results in greater nutrient deficiencies among Ghanaian people. One way to compensate for deficiencies in the diet is to fortify and enrich foods with nutrients, which is a method that is utilized by both countries. Fortification of foods in the United States began in 1924, when iodine was added to salt in an attempt to decrease the high prevalence of goiters as a result of an iodine deficiency. In 1933, the United States began to fortify milk with vitamin D, which was followed by the

enrichment of bread in 1941 with iron, folic acid, riboflavin, niacin, and thiamin. The idea of fortification was meant to combat deficiencies in society, though the Food and Drug Administration does not require that any foods are fortified ^[20]. Ghana was far behind the United States, as it only began to fortify foods in 1996, when the country started fortifying salt with iodine. Roughly ten years after that, wheat flour began to be fortified with iron, zinc, B-vitamins, and vitamin A, and oil products also became fortified with vitamin A ^[21]. In addition to fortifying foods, the Ghana Health Service has also made efforts to reduce the prevalence of nutrient deficiencies in the country by providing pregnant women who attend antenatal care visits with iron and folic acid supplements. Additionally, infants aged 6 to 59 months are given vitamin A supplementation, and in certain regions, girls aged 10 to 19 years old also receive iron and folic acid supplements ^[21].

Despite the efforts of the Ghana Health Service and the fortification of food, nutrient deficiencies remain high in Ghana. According to the World Health Organization, it is estimated that Africa has the highest prevalence of anemia during pregnancy, and Ghana is no exception to that statement ^[22]. Anemia during pregnancy is a very dangerous situation because it can result in a miscarriage, a still birth, or other negative birth outcomes, such as small for gestational age infants or maternal mortality ^[22]. According to the findings from Nonterah et al., a study involving 506 pregnant Ghanaian women, 42.7% of the women were anemic ^[22]. The results from a separate study reported that 45.1% of the pregnant women and 27.1% of the non-pregnant Ghanaian women aged 15 to 49 years old had anemia. Forty percent of this anemia could be contributed to an iron deficiency ^[21]. Fortification of wheat flour was supposed to help combat such deficiencies, but according to a survey conducted in 2011, only 13% of the wheat flour samples in Ghana were found to be properly fortified. Therefore, this inadequate fortification

probably contributes to the high prevalence of anemia and iron deficiency in Ghanaian women [21].

Many Ghanaian women also have a folate deficiency. According to the Micronutrient Ghana Survey in 2017, of non-pregnant Ghanaian women aged 15 to 49, 53.8% were found to have a folate deficiency [21]. Folate is crucial for proper development of the fetus, and a deficiency can have detrimental effects on the infant, which is why it is so important for women of child bearing years to take folic acid supplements. Unfortunately, according to the survey, only 123 of the 1053 non-pregnant women of childbearing years reported taking a folic acid supplement in the six months prior to the survey, and only 430 of the 1053 non-pregnant women reported taking either an iron or folic acid supplement for 90 days or more during their last pregnancy [21]. In addition to folate, this survey suggests that 50% of non-pregnant women also suffer from iodine deficiencies, which can also have negative effects on fetal development and birth outcomes [21].

Though food fortification in Ghana has not been very effective in combating nutrient deficiencies, especially for nutrients that are crucial during pregnancy, the process of fortifying foods in the United States has been very helpful in reducing deficiencies. Due to the high prevalence of folate deficiency in women of reproductive age in the United states, a standard was set in January of 1998 that required that all enriched grain products must contain 0.43 mg folic acid for every 1.4 mg/lb of product in order for it to be able to be labeled as enriched [20]. According to the CDC's *Second National Report on Biochemical Indicators of Diet and Nutrition in the US Population* in 2012, prior to the standardization of folic acid enrichment in grain products in 1998, 10-12% of women of child bearing age in the United States had a folate deficiency. By 2003, the percentage of women with folate deficiency dropped to less than 1% of

the population of women of child bearing age ^[23]. During this same period the number of reported neural tube defects in infants decreased by 36% ^[2].

As seen by the differences in folic acid deficiencies, it is clear that Americans have a lower overall prevalence of deficiencies than Ghanaians. The most common deficiency in the United States is a vitamin B6 deficiency, but only 10.5% of the entire population is deficient ^[23]. Additionally, the prevalence of iron deficiency for women in the United States is reported to be only 9.5% of women aged 12 to 49 years old ^[23]. However, the prevalence differs by race with 22% of Mexican-American women, 19% of non-Hispanic black women, and 10% of non-Hispanic white women with iron deficiencies ^[2].

One deficiency that is prevalent in the United States and is not as common in Ghana is a vitamin D deficiency. This is most likely because Ghana sits just north of the equator, where regular exposure to the sun is common. Research has shown that people who receive regular sun exposure do not need to worry as much about their dietary vitamin D intake because they are acquiring adequate amounts through the sunlight ^[2]. This is not the case for Americans, and even after milk fortification with vitamin D began in 1933, 8.1% of the population still has a vitamin D deficiency ^[20,23]. Women have been found to be more at risk of having a vitamin D deficiency with 10% of women at risk of becoming deficient as compared to 6% of men that are at risk for a deficiency ^[2]. Since vitamin D plays a vital role in fetal bone development, it is very important that women of reproductive age are aware of their vitamin D consumption.

Maternal Mortality Rates in Ghana and the U.S.

The differences in non-nutritional and nutritional factors between Ghana and the United States results in very different maternal and child mortality rates. As expected, Ghana has higher infant and maternal mortality rates than the United States. The reports show that for every

100,000 live births that occur, 319 mothers in Ghana die during labor, and for every 1,000 births that take place, 34.1 infants die during labor^[18]. The maternal mortality rate in Ghana has decreased tremendously since the late 1990s, when it was 740 deaths for every 100,000 live births, but the current rate is still much too high to be considered satisfactory^[12].

With a greater availability of advanced medical equipment and facilities, the United States has much lower maternal and infant mortality rates than Ghana, where there are 14 maternal deaths for every 100,000 live births and 5.7 infant deaths for every 1,000 live births^[24]. This data, however, is not consistent for African American infant deaths, as findings from 2016 reported that there were 11.2 African American infant deaths per every 1,000 live births^[25]. In addition, compared to the 11.2% of children under the age of five that are underweight in Ghana, only 0.5% of children under the age of five are underweight in the United States^[18,24].

Unlike Ghana, the United States is made up of women from all different ethnic backgrounds, which is important to consider when analyzing the maternal mortality ratio. The CDC reports that approximately 700 women in the United States die annually due to pregnancy related complications, and of these 700 women, black women have a pregnancy-related mortality ratio 3.3 times higher than white women and American Indian/Alaskan Native women have a ratio that is 2.5 times higher than white women. The CDC also reports that women aged thirty-five and higher and women that were not married had the highest pregnancy-related mortality ratio^[26].

Reflection:

From June 26th, 2019 until July 28th, 2019 I spent a total of 18 days shadowing Ghanaian doctors and nurses in six different health clinics and hospitals in Winneba, Ghana. My knowledge of maternal nutrition and the overall care of pregnant women in Ghana grew

significantly during this time. Throughout the duration of my stay, I was able to witness many births, both natural and cesarean, antenatal care visits, as well as many other aspects of health care. Most of what I observed correlated to the research I found on the care of pregnant women in Ghana. However, from my own experience, it seemed as though the Ghana Health Service was more concerned with the health of the newborn than the health of the mother during pregnancy. Throughout the 18 days that I shadowed in the Ghana Health Service I only observed two mothers who attended the clinics during pregnancy, so the majority of what I learned about the antenatal care practices in Ghana came from the nurses and doctors. This was not the case for infant care; during my time shadowing, I was personally able to witness how the Ghana Health Service cares for infants almost every day since many mothers brought their infants in for check-ups at each location that I visited.

At each community health clinic, I was able to attend an outreach day, a day when a group of the nurses take vaccines out into the community and distribute them to the infants who still need them. Outreach days are very beneficial for families who are unable to travel to the clinic, and therefore the clinics usually provide one outreach day a week in various communities. In addition to this service, I also observed that the clinics had many posters that talked about proper breast-feeding patterns. The Ghana Health Service recommends solely breastfeeding for the first six months and then introducing normal food while continuing breastfeeding until the child is two years old. Due to the fact that I observed more information on infant health and was present for more infant check-ups than antenatal visits, I made the assumption that the Ghana Health Service puts more emphasis on the health of the baby than the health of the mother. However, I do recognize that the fact that I only observed two antenatal care visits could have been due to poor timing.

Though it appeared that maternal health was not as big of a concern as infant health, the nurses at the various health clinics were still able to teach me all about how the Ghana Health Service cares for pregnant women. One fact that became very apparent early on was that anemia is extremely common among pregnant women in Ghana, which can be very dangerous and often requires women to have blood transfusions during delivery. Unfortunately, the community health clinics I visited did not have access to blood, meaning that pregnant women who suffer from anemia have to give birth in a hospital where they can receive a blood transfusion. This can be a problem if the women live very far from a hospital and are unable to make it there in time for delivery. In order to try to avoid this, the nurses explained that during the antenatal care visits the mothers are counseled on proper nutrition during pregnancy to keep their iron levels high. In Ghana, mothers are encouraged to eat leafy green vegetables, meat, and fish while they are also advised to avoid carbohydrates and foods rich in starch. One vegetable that is highly recommended for pregnant women are turkey berries, which resemble a pea but are very high in iron. Mothers are told to blend the berries, strain them, and then add the remains of the berries to milk or water to drink as a tea. Apparently, this is the most efficient method to get the highest dose of iron per berry.

During the antenatal care visits, the midwife also checks the expecting mother's blood pressure, and sometimes even blood counts, as both can be indicators as to whether or not the mother is consuming enough iron. Based on the results, the midwife then counsels the mothers on what foods to eat and which ones to avoid. Additionally, in the last few years, the Ghana Health Service has begun to provide mothers with a Maternal and Child Health Record Book, which is used to keep a record of the infant's growth after birth. Up until a few years ago, mothers received these books after delivery because they only provided information on proper

care of the infant after birth. The new version is now given to the mother at her first antenatal care visit and provides information on both the proper care of the mother during pregnancy, including nutrition, as well as care of the infant after delivery. Although this is a great step in the right direction, the nurses presume that many of the mothers are illiterate, meaning that the books are not as useful as they are meant to be.

In addition to nutritional counseling, the doctors and nurses also try to reduce the risk of anemia during pregnancy by providing any mother who comes in for antenatal care with plenty of folic acid for the first trimester of the pregnancy. Additionally, in congruence with the previous research, I learned that any girl between the ages of 10 and 19 is able to receive free folic acid tablets that are to be taken once a week in order to help reduce the risk of anemia caused by menstruation. Although this service is only meant to help prevent anemia, the added benefit is that the girls are already consuming adequate folic acid levels, should they become pregnant. Unfortunately, this service ends once a girl reaches the age of 20, when the national insurance no longer covers the cost of the tablets.

The experiences that I had throughout my time in Winneba lead me to conclude that the Ghana Health Service is more concerned about infant health than the health of the mothers during pregnancy, but the information that I was able to learn from the doctors and nurses helped me to get a better idea of how pregnant women are cared for in Ghana. The decrease in maternal mortality ratios from the late 1990s until now indicates that Ghana is moving in the right direction, but health care can and should always strive to be better. The services that the Ghana Health Service provides pregnant women are getting better but improvements can be made so that the health care providers are equally as concerned about the mothers as they are about the

infants, especially since the health of the mother can have such a big impact on the health of the newborn.

Conclusion

In conclusion, the comparisons mentioned in this paper between the nutritional and non-nutritional factors that impact maternal health in Ghana and the United States demonstrate how the increased availability and access to resources significantly reduces the risks of nutrition deficiencies and poor antenatal care. Across the board, the United States is more equipped to care for its pregnant mothers than Ghana. Though geographical location and the local agriculture in each country may somewhat contribute to the reason why Ghana is not as equipped as the United States, the main reason is undoubtedly because the United States is a major world power with access to the newest medical technology. This does not mean that Ghana is helpless, as the decrease in the maternal mortality ratio in Ghana demonstrates that the Ghana Health Service is making significant improvements to its policies on the care of pregnant women. There were also many other positive findings, including the high percentage of women in Ghana who reported attending at least four antenatal care visits. Overall, both countries are making positive decisions regarding the care of their pregnant mothers, but neither country should be content with where they are at; improvements can always be made, and new medical findings are discovered every day. Going forward, both countries should continue seeking new ways to improve the care of their pregnant mothers to help reduce the risk of negative birth outcomes.

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