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The Issue: Anemia

Time is one of the most sought after resources in the world. Everyone wishes for more hours in a day or even just a couple more minutes of sleep at night. The reality is that there is often too little time in the day, and this reality is even more significant for pregnant women whether it is their first child or not. Pregnant women are living their day-to-day lives while protecting and nourishing a growing infant. Not only do they have to take care of themselves, but they are also responsible for ensuring their child has everything needed to grow healthily and safely. One central area of health often overlooked for the sake of efficiency and speed during a stressful and busy time is diet. Women, regardless of pregnancy, are at risk for iron-deficiency anemia due to their diet and menstrual cycle. Add growing and nourishing another human during pregnancy, and the risk for anemia is heightened (Crispin, Stephens, McArthur, & Sethna, 2019). Iron is essential for brain function and overall energy production as it is an integral part of hemoglobin, which transports oxygen through the blood to the body. Iron-deficiency anemia is associated with a lack of adequate energy, lightheadedness, and shortness of breath. Another significant impact of anemia during the first and second trimester of pregnancy is preterm labor and low birth weight (Bánhidy, Ács, Puhó, & Czeizel, 2011). Not only can an iron deficiency impact the pregnancy outcome, but it can also contribute to postpartum anemia and an increased risk of postpartum depression (Urquizu i Brichs, Rodriguez Carballeira, García Fernández, & Perez Picañol, 2016). Iron is an essential nutrient that should be an area of intervention for pregnant women in developing and developed countries.

Pregnant women of all demographics face issues involving their diet and health throughout their pregnancies. Supports in place for these women include regular visits to their doctors throughout their pregnancies to screen for possible complications, programs like WIC for the low income women who may not have access to paid programs, and classes geared towards education. The CDC reports that 77.1% of pregnant women receive adequate prenatal care during their first trimester of pregnancy (Osterman & Martin, 2018). Care from an OBGYN during a pregnancy provides access to screening for maternal and fetal health issues as well as education to help prevent negative outcomes such as preterm labor. Screening and subsequent education is an important support for women as it can lead to healthier babies and fewer postpartum complications. For lower income women, prenatal care and nutrition education can be provided through programs like WIC that have online nutrition education programs as well as in person prenatal care opportunities. Supports like WIC and online education paths allow for access of vital information regarding nutrients such as iron and folate for women regardless of time or money constraints. Barriers for pregnant women in addressing nutrient deficiencies include a lack of education focused on iron-deficiency, a perception of anemia as a normal side effect of pregnancy, and a disparity between knowledge and action on the part of the pregnant women. Nutrition expertise in the public is lacking and this is particularly an issue for women of childbearing age as an inadequate diet can have devastating effects on their child. Pregnant women reported that the nutrition education they received from their clinicians was brief and vague. A lack of nutrition knowledge includes not understanding how their diet can impact their pregnancy, conflicting information from sources making it difficult to comprehend the healthiest choices, and a lack of follow-ups with nutrition professionals such as dietitians (Lee, Newton, Radcliffe, & Belski, 2018). It is unlikely a brief and impersonal overview of nutrition during

pregnancy would include a discussion of the symptoms and risk factors for iron-deficiency anemia. Perception of anemia, lightheadedness, and trouble breathing as a normal part of pregnancy is a major barrier to addressing the health complications associated with anemia. The common belief that negative side effects of pregnancy are "normal" is a gender issue as well as a cultural issue stemming from a lack of focus on maternal health in both the medical field and households (Chatterjee & Fernandes, 2014). Lastly, a major barrier to addressing iron-deficiency anemia is the lack of focus on adherence to supplementation and preventative measures. Many women believe that possible side effects from iron supplementation are more threatening than the anemia they are treating and will cease following the supplementation guidelines they are provided without informing their clinicians (Vosnacos & Pinchon, 2015). Further education on the risks of anemia and the benefits of prevention and supplementation may help combat the barriers to help.

The favored intervention for iron-deficiency anemia treatment and prevention is supplementation with iron. According to the CDC, regardless of anemia, pregnant women require a higher intake of iron compared to non-pregnant women due to increased blood volume to account for the placenta, growth of the fetus, and other tissue expansion ("Recommendations to prevent", 1998). Supplementation via oral intake is a widely used form of treatment and prevention but is associated with low absorption and adherence due to negative side effects. Due to this trend, intravenous supplementation for women with moderate to severe anemia is a preferred intervention tool. A single IV iron infusion has been shown to increase the quality of life of anemic pregnant women, involve a higher cost-effectiveness, lead to fewer side effects, and be more time-efficient (Khalafallah et al., 2018). It is imperative that IDA is addressed through iron supplementation as it has been shown to decrease the prevalence of preterm labor as

well as low birth-weight outcomes (Bánhidy, Ács, Puhó, & Czeizel, 2011). Low serum ferritin levels in the first trimester of pregnancy have been shown to possibly be an indicator of anemia in later stages of pregnancy (Crispin, Stephens, McArthur, and Sethna, 2019). Since iron supplementation can be costly for low-income women, involve an additional consideration for a woman, and have side effects, screening for IDA in pregnant women is an important intervention tool to provide education and possible supplementation to those who need it.

In theory, educating pregnant women about their nutrition and risks of iron-deficiency anemia should be enough of an intervention to help solve the health issues facing them. In practice, though, education does not lead directly to changes in behavior. Regardless of the level of information provided during doctors visits or online, if a woman does not have the in depth understanding of the severity of the issue or the importance of screening for anemia or supplementation with iron, she will not follow through with the intervention. It is important to take into consideration the lack of basic nutrition knowledge and a reliance on cultural norms when considering interventions for issues during such an intimate time like pregnancy. In order to fully impart the necessary changes to diet and understanding, doctors and other health professionals need to be better prepared to screen for anemia in pregnant women and discuss the importance of adherence to supplementation and an iron-rich diet in order to improve pregnancy and post-pregnancy outcomes for infants and women. In terms of education, pregnant women need to be taught more specific information about the amount of iron they need daily as well as what foods contain high levels of iron. They also need to be taught about the risks of not being consistent with supplementation if they are diagnosed with anemia, such as low birth weight and preterm labor. Currently, there is very little focus in research on improving iron status for women through education, which is a gap in research that must be addressed in order to effect change.

Iron-deficiency anemia is an important area of study for pregnant women and their unborn children. Screening for anemia and subsequent supplementation with iron when necessary is a helpful way to improve pregnancy and postpartum outcomes for many women around the world. Helping to improve the nutrition knowledge of women can help with pregnancy and everyday health following a pregnancy. Knowing how to properly nourish their bodies with important micronutrients like iron can help prevent negative outcomes. I believe that by teaching pregnant women early about ways that they can safely nourish themselves and identify if they may have a deficiency, they will grow in their self-efficacy and be better prepared to identify non-nutrition related issues that could result in adverse effects for their child and themselves. A curriculum plan that prepares women to pay attention to their diet and their bodies through education about iron-deficiency anemia and the risk factors associated with it will be directly translatable to other micronutrients of concern for this population such as folate and calcium. Many women are unaware of the possible effects that their diet may have on their developing child and are willing and ready to learn and change when given information they can understand and apply. I hope, through my curriculum, I can help educate and encourage women to research for themselves. I believe that interactive lesson plans and easy to comprehend and remember information that can be quickly utilized during their busy lives is the most efficient way to encourage self-efficacy in pregnant women. This will include recipes to help with iron consumption and education through a series of asynchronous lessons and handouts.
Iron-deficiency anemia does not have to be a scary topic and should be something that is screened for and discussed early in pregnancy in order to prevent negative pregnancy outcomes.

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