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Availability Of & Access to Prenatal Care & The Effects On Maternal & Infant Mortality Rates: A Comparison of Central American Countries, Costa Rica & Guatemala

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A THESIS SUBMITTED TO THE

HONORS COLLEGE

IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS FOR HONORS IN THE DEGREE OF

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ABSTRACT

Costa Rica and Guatemala share similarities in history, culture, and a relatively congruous geopolitical philosophy. Yet despite these superficial parallels, access to prenatal care between the two countries is shockingly disparate. Costa Rican women have better access to prenatal care and both the maternal and infant mortality rates are comparable to more developed countries with significantly higher rates of economic development and higher spending on healthcare per capita. In juxtaposition, the lack of prenatal care within Guatemala's health care system is a prime example of a country's failure to implement protections and policies that promote and elevate the level of healthcare woman receive. Societal, economic, geopolitical, and systematic factors directly contribute in either subtracting or adding lives to the maternal and infant mortality rates in both countries. The successes that Costa Rica has had in reaching and administering prenatal healthcare to its most rural, diverse and vulnerable populations shows that this method could be an effective starting point for Guatemala to structure their own healthcare initiatives in the future to help prevent complications during pregnancy. While it is necessary to acknowledge that there are substantial differences between the countries – such as economic status and infrastructural complications – that significantly influence the governing bodies ability to provide prenatal care, some structural aspects that Costa Rica has established would be not only beneficial, but also attainable in the country of Guatemala.

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To my family…

Mom & Dad
Kathryn & David
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Thank you for always pushing me to be
the best version of myself

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"Not only that, but we rejoice in our sufferings,
knowing that suffering produces endurance,
and endurance produces character,
and character produces hope,
and hope does not put us to shame,
because God's love has been poured into our hearts
through the Holy Spirit which has been given to us"
Romans 5:3-5

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BACKGROUND

Two years ago, halfway through my college experience, I decided to step far outside of my comfort zone and take an adventure. Though I had never been out of the country and didn't speak a word of Spanish, I bought a plane ticket to Guatemala. I had heard of this need for healthcare professionals to speak Spanish in order to assist with the growing number of patients requiring this service within Georgia, I didn't want my ability to provide and educate my patients to be limited by a language barrier. My independent study was focused on learning Spanish and serving as a volunteer within the community. At then end of the semester I wrote a research paper entitled, "A Thorough Observation of Maternal and Child Health in Guatemala." These are a few of these words that I wrote…

> "Latin America is a place with vast, overwhelming beauty juxtaposed by the equally extensive amounts of crippling poverty. Living in Guatemala for the past two and a half months has taught me how delicately this balance is played out in the lives of the people that live here. Some days I have seen people much richer than myself living in absolute luxury, and the same day on the way home I pass a man who makes his living by digging in the trash for the things people have tossed out. The contrast within this country has been the most shocking thing to me. Conflicting dynamics are constant sources of dividing conflict here in Latin America and trying to understand the complexities that make up life here are what has made this trip so culturally interesting. The health problems that I have observed that are the most concerning for Guatemala fall into the categories of maternal and child health."

One of the most influential people that I had the privilege to meet during my journey was my host mom. She would spend hours helping me with my Spanish, helping me to learn about the culture in which she was raised. Her kindness was so influential to me and made a place that

could have been so foreign and lonely, filled with laughter and happy. I will be forever grateful for the way she welcomed me into her family, and I would like to share with you her hopes for the future generations of the Guatemalan people as I documented in my paper…

> "My host mother seems very certain that the generation of girls growing up now is very different [than her age group], and that they are afforded more opportunities than previous generations. She is hopeful that they will make the choice to go to school and learn how to support themselves, so that they will be able to live with dignity."

Hope that the future generations in Guatemala, other developing countries, and even in my own country will experience better, more comprehensive healthcare than previous generations has been my motivation to write this paper. Like many people, I think that the best healthcare is preventive care. I wanted to compare Guatemala to Costa Rica because it is known as the 'Switzerland of Latin American'(Campo-Engelstein & Meagher, 2011, p. 99). and provides some of the most comprehensive medical care to its citizens. After I finished up my semester in Guatemala I had the chance to visit Costa Rica. I remember walking the streets in San José , thinking "how can these two countries be so close and yet so vastly different in regard to; infrastructure, healthcare, water sanitation, and so many other factors?"

I thoroughly enjoyed meeting people in Guatemala, being able to experience their culture during Semana Santa, teaching English at an elementary school, volunteering at a daycare for single, low income mothers, and meeting the community leaders that were supporting and changing the outcomes for these Guatemalan women and children that would have just become a statistic in the eyes of those researching these issues from an outside perspective. I have the utmost respect for the people of Guatemala and will always cherish the time that I have spent in Latin America. *Gracias por todos los recuerdos!*

INTRODUCTION

The health care system in Guatemala is affected by many issues within the country and has unfortunately not been able to place safeguards within its medical system to protect mothers and unborn babies from difficulties during pregnancy. This situation is directly related to the lack of available prenatal care. Societal, economic, geopolitical, and systematic factors inhibit the availability and access to prenatal healthcare in Guatemala. The lack of prenatal care within Guatemala's health care system is a prime example of a country's failure to implement protections and policies that promote and elevate the level of healthcare women are able to receive. Unfortunately, this has led to increased maternal and infant mortality rates within the country. Costa Rica is comparable to Guatemala with reference to cultural barriers and a relatively similar geopolitical philosophy. However, Costa Rican women have better access to prenatal care and both the maternal and infant mortality rates are comparable to more developed countries with significantly higher rates of economic development and higher spending on healthcare per capita.

Prenatal care, also known as antenatal care, refers to the medical care that a woman receives before the birth of their child after conception of the embryo. In 2016, the World Health Organization (WHO) doubled the recommended number of visits to a health care provider for pregnant women. The new recommendation is now eight visits; this measure attempts to address the growing numbers of still births and maternal deaths related to pregnancy complications (New guidelines on antenatal care, 2016). Only 64% of women around the world receive prenatal care at least four times during their pregnancy (New guidelines on antenatal care, 2016). If a woman has eight or more interactions with a health care provider "for antenatal care [this] can reduce perinatal deaths by up to eight per 1000 births when compared to four visits" (New guidelines on antenatal care, 2016).

The most recent guidelines initiated by the WHO also address the standards of care to be provided during the prenatal visits. The basic level of care includes the evaluation of physical health, a thorough history of environmental health factors, and screening for potential complications (Worldwide Health Organization, 2016, p. 40-62). The physical health assessment includes ultrasound screening and testing for anemia through a full blood count test (Worldwide Health Organization, 2016, p. 40-62). The environmental history assesses for intimate partner violence, a history of substance abuse, and evaluates alcohol usage (Worldwide Health Organization, 2016, p. 40-62). Complications recommended to be screened for are gestational diabetes mellitus, sexually transmitted infections, and tuberculosis (Worldwide Health Organization, 2016, p. 40-62). Figure 1 provides information regarding the aforementioned initiatives set forth by the WHO. These posters display the type and methods that are used to distribute prenatal information in many countries around the world. The access, availability, and quality of prenatal care directly affects the outcomes of the pregnancy experience and prepares both the mother and the healthcare providers for what to expect during the labor process.

Figure 1: Public awareness documents on pre-natal care created by the World Health Organization for global distribution (New guidelines on antenatal care, 2017).

Access to prenatal care empowers women to educate themselves to safeguard their health and the health of their baby. Regrettably, the availability of such services is disproportionately distributed throughout the world. Adolescent pregnancies make up a large amount of the pregnancies that are unattended by trained medical staff and consequently have a higher risk of complications (Adolescent pregnancy, 2020). The following bullet points in Figure 2, provided by the World Health Organization, detail the severity of the situation in the most unrepresented demographic. This issue is highlighted because unfortunately adolescence pregnancies occur frequently in the some of the countries to be discussed.

- Approximately 12 million girls aged 15–19 years and at least 777,000 girls under 15 years give birth each year in developing regions.
- At least 10 million unintended pregnancies occur each year among adolescent girls aged 15–19 years in the developing world.
- Complications during pregnancy and childbirth are the leading cause of death for 15–19-year-old girls globally.
- Of the estimated 5.6 million abortions that occur each year among adolescent girls aged 15–19 years, 3.9 million are unsafe, contributing to maternal mortality, morbidity and lasting health problems.
- Adolescent mothers (ages 10–19 years) face higher risks of eclampsia, puerperal endometritis, and systemic infections than women aged 20 to 24 years, and babies of adolescent mothers face higher risks of low birth weight, preterm delivery and severe neonatal conditions." (Adolescent pregnancy, 2020)

Figure 2: Statistics from the World Health Organization outlining the severity of the issue of adolescent pregnancy around the world, (Adolescent pregnancy, 2020)

Adolescent girls are some of the most vulnerable future mothers as they have a greatly increased rate of complications related to pregnancy, which in turn affects the health of their children. The standards of safe and effective prenatal care should be issued to all mothers. Governments should strive to structure their healthcare systems in such a manner that prioritizes and recognizes this high-risk population. Provisions in regard to adolescent mothers could be effective in reducing the statistics previously mentioned, along with the expounding complications that are a result of miseducation and inadequate medical care. When healthcare teaches young women about reproductive health and prenatal care, it empowers them to make educated decisions about not only their health, but also the health of future generations. It is imperative that prenatal care is established and seen as a high priority in developing countries to secure and promote health in every child and expecting mother.

CHAPTER1: CURRENT SITUATION

Maternal mortality and infant mortality are both major causes of death that disproportionally affect areas in the developing world. The WHO reported in 2015 that "an estimated 303,000 women died from pregnancy-related causes, 2.7 million babies died during the first 28 days of life, and 2.6 million babies were stillborn" (New guidelines on antenatal care, 2017). These statistics poignantly represent a large portion of women around the globe, who are regrettably not able to receive adequate and sufficient amounts of healthcare, specifically comprehensive prenatal care.

In the 2018, the United Nations International Children's Fund reported that Guatemala's infant mortality rate was 27.6 per every 1,000 live births and the maternal mortality rate was 95 per every 100,000 live births (Antenatal Care, 2018). These statistics make Guatemala the country with the third highest rates for infant mortality in all of North America, with the Dominican Republic in second and the island nation of Haiti in first with 26 deaths per every 1,000 live births (Antenatal Care, 2018). For maternal mortality, Guatemala has similar rates of mortality as both Nicaragua and the Dominican Republic, while Haiti has almost four times the rate of maternal death at 480 deaths per every 100,000 live births (Antenatal Care, 2018). Both Guatemala's infant and maternal mortality rates are three times higher than Costa Rica's current statistics, though both countries have faced similar challenges in providing health care to their diverse and widespread populations

In contrast to the staggering statistics reported about Guatemala, the country of Costa Rica has an infant mortality rate of 9 deaths per every 1,000 live births and a maternal mortality rate of 27 per every 100,000 live births (Antenatal Care, 2018). To provide context for these statistics, the United States of America has an infant mortality rate of 5.3 deaths for every 1,000 live births and a maternal mortality rate of 19 deaths for every 100,000 births. The most current statistics

show that Greece, Iceland, Poland, and Finland have the lowest rates of maternal mortality at 3 deaths per every 100,000 live births. The lowest rates of infant mortality are found in Monaco and Japan at 1.8 and 2.0 deaths for every 1,000 live births, respectively (Country Comparison: Rates, n.d.). The fact that Costa Rica is able to care for the maternal and infant health while spending only a fraction of what more developed countries spend on healthcare shows how remarkably dedicated to promoting the health of all its citizens.

The current situation in Guatemala mandates great cause for concern. As the country continues to allocate its financial resources as a rapidly developing country, more emphasis must be placed on assuring access to proper prenatal care for new mothers. The availability of this medical care will be imperative if Guatemala wishes to ensure that it will retain healthy and prosperous citizens as a part of its workforce; thereby ensuring continuing economic growth and prosperity within the country.

CHAPTER 2: SOCIETAL & CULTURAL FACTORS

One of the most significant factors that affect the prevalence and acceptance of prenatal care in a country are the societal stigmas and traditional beliefs surrounding healthcare during pregnancy. Societal factors are progressively becoming more relevant for the country of Guatemala as they face a painful and increasingly more apparent cultural divide within the country between indigenous individuals of Mayan along with other pre-conquest groups descent and "ladinos". Ladinos are peoples of mixed Spanish descent that historically have had control of the political power and influence within the country (Pebley, Goldman, & Rodriguez, 1996, p.2). Unfortunately this ethnical divide within the country has become an obstacle for the reception of adequate medical care as the "indigenous people in Guatemala face discrimination at health care facilities that are staffed by predominantly ladino personnel; [therefore] they distrust and avoid modern health care services; and they prefer traditional alternatives to institutional prenatal care and delivery" (Ishida, Stupp, Turcios-Ruiz, William, & Espinoza, 2012). Due to this societal fissure, only 66% of births in Guatemala are attended by a skilled medical professional (Antenatal care, 2018). For reference, over 99% of births in Costa Rica are attended by a skilled medical professional (Antenatal care, 2018). The presence of a skilled medical professional on the bedside of a laboring mother greatly decreases the risk of the mother and child enduring life-threatening complications.

Another factor that contributes to the issues of providing comprehensive healthcare to women in this area of the world is the age of the mothers. Latin American countries tend to have one of the highest adolescent pregnancy rates when compared to the rest of the world (Paulino, Vázquez, & Bolúmar, 2018, 59). These pregnancies are most common within the indigenous populations. Below in Figure 3, these charts detail the differences in positive maternal practices in the indigenous and non-indigenous populations in Latin American countries including Guatemala.

In the chart labeled “Skilled birth attendant present”, the gap between persons of indigenous heritage and persons of non-indigenous heritage is very apparent. While over 70% of non-indigenous peoples have a skilled birth attendant present, only 20% of the indigenous population have a skilled birth attendant present ((Paulino, Vázquez, & Bolúmar, 2018, p. 62).

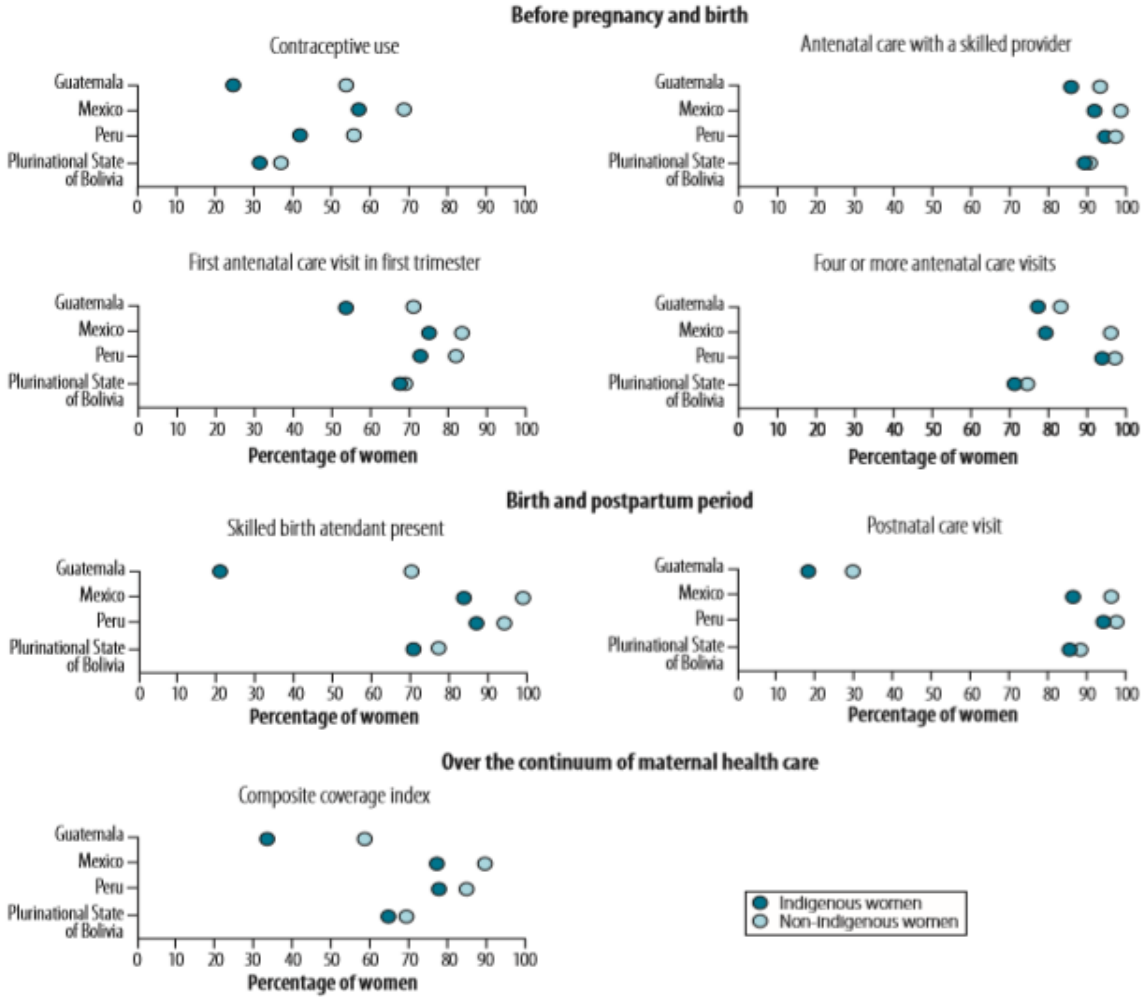

Figure 3: Charts detailing the disparities in the healthcare provided to indigenous women versus non-indigenous women, (Paulino, Vázquez, & Bolúmar, 2018, p. 62)

Another factor in the provision of healthcare to the Guatemalan people is that many of the people that live in the remote villages in the rural countryside do not speak Spanish or speak Spanish as a second language, and instead their primary language of communication is one of

over twenty-one Mayan languages or one of the two indigenous languages: Garífuna and Xinca-present within the country (Guatemala: New Law Recognizes Indigenous Languages, 2003). The language barrier that is present and also the traditional ties cause many indigenous mothers to choose local traditional healers and unlicensed midwives to be the health care givers present during childbirth. An article written by Pebley, Noreen, and Rodriguz (1996) tried to explain the differences in access to prenatal care experienced by indigenous populations by identifying three distinct areas of concern: "more severe economic and social constraints on indigenous families, resulting in less access to formal health care; differences in health beliefs; and efforts by some indigenous communities to maintain a separate ethnic identity" (p. 5). Though traditional health beliefs in themselves may be perfectly acceptable, there are also dangerous culture practices. Indigenous peoples may not be advised or warned against such practices if there is no trusted healthcare provider to dispel some of the more harmful habits that maybe present in many rural villages.

One of the recommendations the World Health Organization has for medical professionals is to "counsel [pregnant mothers] about healthy eating and keeping physically active during pregnancy is recommended for pregnant women to stay healthy and to prevent excessive weight gain during pregnancy" (WHO recommendations on antenatal care, 2016, p. 13). Malnutrition is one of the great challenges facing pregnant women in Guatemala. WHO recommends that pregnant women receive a balanced diet of proteins, fats, carbohydrates, and minerals along with daily supplementation of iron and folic acid at minimum (WHO recommendations on antenatal care, 2016, p.23). The issue in Guatemala is that many women do not have access to fresh vegetables and meat, nor do they have the financial means to purchase supplements to ensure the positive outcome from their pregnancy.

Though it is difficult to define the ethnic differences between countries, as ethnicity involves a fluid subjective concept that is very specific to one country or region, it is clear that indigenous communities and peoples throughout the world are at greater risk for disparities in the availability of healthcare. A study conducted by the World Health Organization specifically about indigenous populations in Latin America by Nancy Paulino, María Vázquez, and Franciso Bolúmar, identified that indigenous women "experience substantially worse maternal health care outcomes than the majority of the population and less likely to benefit from [governmentally provided healthcare] services" (Paulino, Vázquez, & Bolúmar, 2018, p.59). Studies like this emphasize the importance of addressing these vulnerable populations with healthcare measures specifically targeted at alleviating the disparities within this population.

Costa Rica, like Guatemala, has historically been faced with similar ethnic divides between those of Spanish descent and those people's native descent. Costa Rica takes pride in the "la leyenda blanca" and promotes the elevation of peoples with European ancestry above those with indigenous backgrounds (Campo-Engelstein & Meagher, 2011, p. 100). These attitudes within the country allowed for certain areas of the country to lie undeveloped while others were prospering. Costa Rica has ethnic divides within its country that it deals with to this day, evidenced by the relatively recent access and improvement of infrastructure in areas home to primarily indigenous populations. Such disparity and inequality allowed the government to not grant citizenship to the majority of indigenous peoples until the 1990's (Campo-Engelstein & Meagher, 2011, p.104). In one area called the Talamanca region, indigenous people known as the Bri Brí have infant mortality rates that are twice as high as the infant mortality rates for the rest of Costa Rica (Campo-Engelstein & Meagher, 2011, p. 104). One study concluded that the "distribution of resources [within Costa Rica's healthcare system] is tied to race, poverty, and geography(Campo-Engelstein & Meagher, 2011, p. 104). For Costa Rica, the success of their

healthcare system is closely tied to their identity as a country. Though they have made many strides to give their most vulnerable populations access to good, modern healthcare they have fallen short when it comes to providing access for rural and indigenous populations.

Ethnic divides within divides within Latin American- or really any- countries have always been a source of contention. Providing healthcare to all citizens within a certain country is a difficult task in itself, but when there is systemic, normalized marginalization of indigenous populations that is accepted by the majority of the country, it is almost impossible to provide everyone with equal access to healthcare. The governments of both Guatemala and Costa Rica will have to find new and innovative ways to ensure that all of its citizens are given the rights to healthcare that they are promised in the constitutions.

CHAPTER 3: ECONOMIC FACTORS

The most prominent difference between the countries Guatemala and Costa Rica is in the realm of economics. Economics affects all areas of healthcare and both the government of Guatemala and the government of Costa Rica's ability to provide vital health-related services to the people of their country. Guatemala is a country of approximately sixteen million individuals and the Gross Domestic Product (GDP) of the country is $75.62 billion (Country Comparison: GDP, n.d). Guatemala is one of the most heavily populated areas in Central America and this affects the GDP per capita (the overall GDP divided by the population of the country), which is $8,200 US dollars per person as of the year 2017 reported by the United States Central Intelligence Agency (Country Comparison: GDP, n.d). Unfortunately, more than 50% of Guatemala's citizens live below the poverty line, and almost one quarter of the people live in extremely impoverished conditions (The World Factbook: Guatemala, 2018). Poverty in the country is disproportionately distributed among Guatemala's indigenous population, "which make up more than 40% of the [total] population, averages 79% [poverty rate], with 40% of the indigenous population living in extreme poverty" (The World Factbook: Guatemala, 2018). Both GDP per capita and the poverty rate affect Guatemalan citizens ability to obtain adequate healthcare either from the government or in the private sector.

Costa Rica has a little over one fourth of the population that Guatemala does; Costa Rica's GDP is 57.06, but its GDP per capita is over twice that of Guatemala's at $16,900 (Country Comparison: GDP, n.d). Poverty levels in Costa Rica are around 20% and have remained at that level for over twenty years (The World Factbook: Costa Rica, 2018). Costa Rica's economy is for the most part is primarily centered around tourism and agriculture; more recently Costa Rica has ventured to refine their processes of exportation and have started to manufacture medical devices

(The World Factbook: Costa Rica, 2018). Costa Rica's economic growth has contributed to the successful provision of healthcare to its citizens.

The most effective way to change the healthcare outcomes within a country is to invest in preventive and education measures within the healthcare system to provide individuals with the knowledge to know when to seek help. The World Health Organization has analyzed and outlined the most effective methods of reducing maternal and infant mortality rates due to preventable causes. This study conducted in 2015 conglomerated information related to maternal and infant mortality from 144 countries, with the hope of identifying factors that lead to and methods that reduced the severity of maternal and infant health in these countries and its relation to the economic sector (Success factors for reducing maternal, 2015, p.2). Factors such as the participation of women in political and socioeconomic sectors, economic development, health systems related to immunizations -especially the measles vaccination- and the presence of a skilled medical professional present at birth, population dynamics like fertility rate reductions, female education, environmental factors like access to clean water, and income inequality were identified (Success factors for reducing maternal, 2015, p.6). Foundational health ideas such as sanitization and immunization, that cost relatively less than treating water-borne diseases or dealing with life-threating illness for which there is a vaccination, would prove to be the most effective way to economically promote healthcare behaviors. These preventive factors are the way that countries, with less resources to allocate to healthcare, successfully alleviate the burden of countless patients on their healthcare systems. By starting with implementing preventative care measures, governments can build healthier populations, investing in the future health of the nation. Though economic situations within developing countries often determine the priority of the nation's government, this study is an important reminder that resources allocated in the right manner can have a major impact on the healthcare system within a developing country.

The following representation in Figure 4 was included in the World Health Organization's study of the "Success Factors Related to Maternal and Infant Mortality" to demonstrate the average healthcare spending per person within that country. Often, the effects on infant and maternal mortality are not positively influenced by the amount of money spent. Costa Rica does spend more on healthcare than Guatemala. This map shows that other countries like Greece, Monaco, and Poland that have very low infant and maternal mortality rates also do not spend as much on healthcare as countries like the United States and the United Kingdom. This begs the question of how to most effectively spend healthcare dollars to ensure that they are the most beneficial to all parts of society.

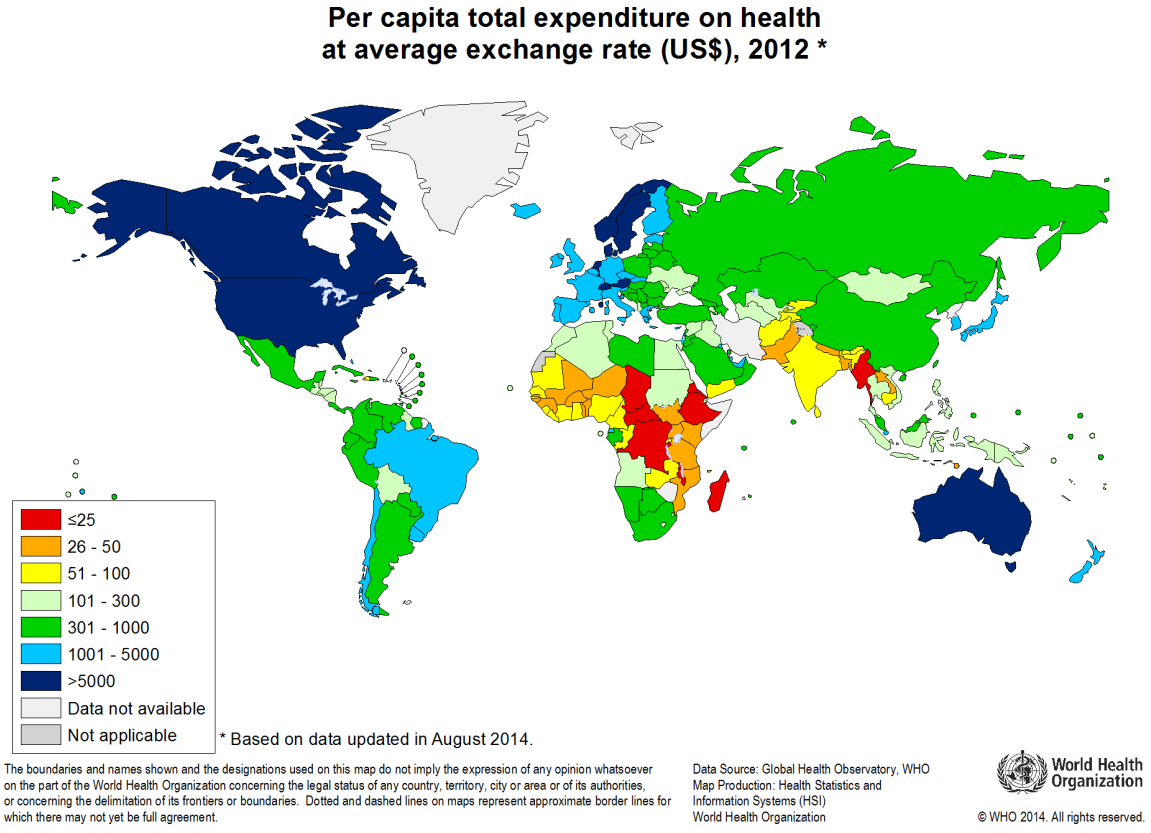

Figure 4: Variations of countries with regard to healthcare spending, (Success factors, 2015)

The economic situations in Guatemala and Costa Rica are extraordinarily different, and the economic growth has provided both countries with the resources to either positively or

negatively affect the maternal and infant mortality rates within their countries healthcare system. Regardless of the economic situations surrounding these countries there will always be a more effective and efficient way to implement healthcare resources to ensure that the economic assistance reaches the widest, most diverse majority of individuals within the country.

CHAPTER 4: GEOPOLITICAL FACTORS

Guatemala's constitution states that every citizen is to have free healthcare made available and supplied by governmental health facilities. However, due to a lack of resources and understaffing at governmentally managed institutions the reality is that these issues minimize the effect of any governmental effort to supply health care and the result is an underserved population (Ippolito, Chary, Daniel, Barnoya, Monroe, & Eakin, 2017, p.2). The public health system is structured in an un-advantageous way that makes it primarily accessible to those only above the line of poverty, while minimal to no care is being offered in the regions with indigenous and low-income portions of the population (Ippolito et.al., 2017, p. 2). Unequal distribution of the healthcare efforts within Guatemala leaves those individuals already at increased risk with even more obstacles between them and the care or education that they need to keep both themselves and their families healthy.

Costa Rica also has universal healthcare as a precedent in their constitution. In an article written by Campo-Engelstein and Meagher, the comparison was drawn between "the four principles of solidarity, obligation, equity and universality paint a picture of Costa Rican health care that is consonant with the master narrative of the nation" (Campo-Engelstein & Meagher, 2011, p.103). Healthcare policy is so closely tied to the creation of the country that it has become the national symbol and measure for success. Costa Rica's dedication to its citizen is displayed through its commitment to identifying new ways of insuring its people have access to healthcare, promoting a culture of health within the society, preventing noncommunicable diseases through education about their risk factors, "strengthen[ing] the institutional framework and performance of the health sector, [and] to ensure that investment, expenditures, and financing are consistent with the values and principles that govern the sector's policies and priorities (Paredes, ect., 2007,

p.252). Coast Rica's emphasis on accessible healthcare and education has reverberating implications for women's healthcare and therefore on maternal and infant mortality rates.

CHAPTER 5: SYSTEMIC FACTORS

One of the most significant factors in availability of healthcare, is the audience that is being given information about a condition. Such education can only be as effective as the ability of the desired population to learn and comprehend the material being presented. The usefulness of education about medical matters is affected by a variety of factors such as an individual's readiness to learn, the individual's comfort level with the healthcare providers, and the individual's ability to understand and utilize the information being provided- this is also known as an individual's health literacy. The health literacy of individuals within a country can affect the entire country's health outlook. As discussed previously, the societal divisions within Guatemala cause indigenous peoples to be skeptical of medical professionals, causing some to not seek out or disregard advice of healthcare professionals. In this example, health literacy has a major impact on the manner in which medical information is distributed and received by the general population.

One of the most significant factors that affect health literacy is the education level within the country. Education affects a person's ability to understand, comprehend, and act on the information they are receiving. The literacy rates in Guatemala and Costa Rica show a disparity in the education levels between the two countries. The literacy rates in Guatemala are 81.5 percent, with the male literacy rate elevated 10 percent higher than the female rate (The World Factbook: Guatemala, 2018). The literacy rate in Costa Rica is 97.9, with no significant disparity between male and female population (The World Factbook: Costa Rica, 2018). Conversely, in a survey conducted to determine the level of prenatal knowledge, such as dietary considerations and warning signs of early labor, found that "the country of origin has a larger effect than having graduated from high school" in regards to the surveyed women's prenatal knowledge (Guilford, Downs, & Royce, 2008, p. 372). Therefore, this information suggests that the healthcare policies,

and the availability thereof, in Costa Rica have positively affected the knowledge level of women in relation to prenatal care.

Costa Rica's success within the structure of their healthcare system, should give hope to the Guatemalan government that even with all the obstacles they can efficaciously serve their diverse population. Maternal healthcare centered "policies, programs and practices could be changed to benefit the health of indigenous women and to ensure that resources are allocated efficiently" (Paulino, Vázquez, & Bolúmar, 2018, p.59). For indigenous populations, incorporating prenatal care and education about reproductive health into programs that are designed to reach this population would positively affect the outcome of many pregnancies and also empower women to make knowledge-based decisions regarding their healthcare.

CONCLUSION

In conclusion, both Guatemala and Costa Rica have a variety of factors that influence the access and availability of prenatal care to expecting mothers within the countries. Societal, economic, geopolitical, and systematic factors directly contribute in either subtracting or adding lives to the maternal and infant mortality rates. The successes that Costa Rica has had in reaching and administering prenatal healthcare to its most rural, diverse and vulnerable populations shows that this method could be an effective jumping off point for Guatemala to structure their own healthcare initiatives around in the future to help prevent complications during pregnancy. While it is necessary to acknowledge that there are substantial differences between the countries – such as economic status and infrastructural complications – that significantly influence the governing bodies ability to provide prenatal care, it is not outside the realm of possibility that some structural aspects that Costa Rica has established would be not only beneficial, but also attainable in the country of Guatemala.

Access to prenatal care is not merely a medical issue but reflects the value a society places on women. As evidenced by inadequate access to care being disproportionately distributed around indigenous, adolescent women, improving outcomes for mothers and infants in Central America does not end with the efforts of medical providers. Rather, the solution must begin with broader access to education and opportunities provided for women of all ages especially those in the most vulnerable demographics.

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