

The Scope of the Malnutrition Epidemic in Guatemala:
Its Implications on the Development of the Child and of the Nation

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Abstract

Research reveals that malnutrition is a severe problem in the nation of Guatemala, as it is the country with the highest rate of malnutrition in Latin America and the Western hemisphere, and the fourth highest rate in the world. The epidemic of malnutrition in Guatemala not only inhibits the development of each child, but also the development of the nation as a whole. The causes and effects of child malnutrition both on the individual and on Guatemalan society will be explored. Infant malnutrition in Guatemala is an injustice which manifests itself severely through the cognitive, physical, and psychosocial shortcomings in development of each Guatemalan child affected, and in turn, creates an immense societal problem for the nation of Guatemala.

The Scope of the Malnutrition Epidemic in Guatemala: Its Implications on the
Development of the Child and of the Nation

Human survival at the most basic level requires few things: a home, food, and clean water. Malnourished children are denied the basic rights to have nutritional food and clean water, and these innocent children are left to pay for the consequences of a greater poverty that is no fault of their own. Infant malnutrition in Guatemala is an injustice which manifests itself severely through the cognitive, physical, and psychosocial shortcomings in development of each Guatemalan child affected, and in turn, creates an immense societal problem for the nation of Guatemala.

Although Guatemala is not the poorest country in Latin America, it is the country with the highest rate of malnutrition in Latin America and the Western hemisphere, and the fourth highest in the world (“Guatemala: Overview,” 2011). It has been reported that half of the population of children under five years of age in Guatemala is malnourished, and this average is even higher, up to 80 percent, in indigenous regions (“At a glance: Guatemala,” 2009). These numbers are shocking because Guatemala is relatively prosperous in terms of gross domestic product in comparison to other Latin American countries with lower rates of malnutrition, such as Bolivia, Peru, and Brazil (Loewenberg, 2009), and is rich enough to prevent malnutrition (“A National Shame,” 2009). For example, as of the year 2009, malnutrition rates in Guatemala were double the rates in Haiti, where the average income is one fourth as high (“A National Shame,” 2009). Because of the prosperity of the Guatemalan economy in comparison to neighboring nations, the exact cause of malnutrition in Guatemala cannot be solely attributed to the poverty of the nation. Generally, the prevalence of the issue of

malnutrition in Guatemala is due to poor parental education, limited access to nutrient-rich foods, and ineffective governance.

Societal Causes of Malnutrition

In Guatemala, many expecting mothers are uneducated, receive little or no prenatal care, and are uninformed as to the importance of nutrients for their child, especially during the prenatal and neonatal time periods. In a study performed in the two communities of Cienaga Grande and El Pajón, it was found that children who were raised by illiterate primary caregivers were five times more likely to be malnourished as those raised by literate parents (Sereebutra, Solomons, Aliyu, & Jolly, 2006). Therefore, poor parental education is a predictor of malnutrition, as those who are illiterate are more likely to be poor and unable to afford nutrient-rich food. But, literacy is not only an indicator of the socioeconomic status of the family; it also indicates the decreased likelihood of a mother to recognize the malnutrition of the child and to seek medical care (Sereebutra et al., 2006). Parents do not understand the importance of the role they play in their child's growth and development because they are uneducated in general, let alone educated specifically about the health needs of their child. In fact, the problem of malnutrition is so widespread in indigenous communities, and health education is so deficient, that stunting and malnourishment are the norm; they are not even recognized as issues (Loewenberg, 2009).

Yet even if parents were well educated, they probably would not have access to the nutrient-rich foods or water needed, as resources within families are limited, and most poverty-stricken Guatemalan diets consist of little more than tortillas. According to a study done in Guatemala observing factors contributing to child malnutrition, low per

capita food availability is the most significant risk factor for failure of growth in Guatemalan children (Immink & Payongayong, 1999). The absence of food and its effect on malnutrition is even more apparent within large families. Studies also suggest that children in larger families, with four or more children, are three times more likely to be malnourished than families with less than four children (Sereebutra et al., 2006). This disparity is most likely due to poverty and low family income, because in larger families resources are spread thin and each child receives both less food and attention than they would if they were an only child. In addition, when food is scarce, parents are forced to ration what is available and prioritize which children should receive food. Some sources indicate that when deciding which children will receive food, male children take precedence, leaving female siblings more likely to be hungry and malnourished (Miller, 2011).

While some children may be receiving the right amounts of food, they are not receiving the proper kinds of food that their body needs, nor do they receive clean, uncontaminated water. Malnourished children may not necessarily be starving, but lack the basic nutrients they need for development. The Guatemalan diet typically consists of maize tortillas and rice: a diet that is high in carbohydrates and cheap fats (Miller, 2011). Common sources of protein are found in beans and eggs, which are too expensive for the poor (Loewenberg, 2009). Even more expensive are meat and dairy products, which are essential to the healthy development of a child (Valladares, 2011). According to Guatemalan nutritionist Cyntia Tabin, children need a balanced diet with 65 percent carbohydrates, 20 percent fats, and 15 percent protein. In contrast, the average Guatemalan child receives a diet with 80 percent carbohydrates and not enough proteins

and good animal fats (Valladares, 2011). Adding to unhealthy conditions, the country's water infrastructure is very poor, as running water is a luxury for the rich and tap water is unsafe to drink (Vasquez, 2011). Contaminated water causes parasites, infections, and diarrhea which are all correlated with malnutrition.

Like many other Latin American countries, natural resources, which are in abundant supply in Guatemala, are unequally distributed throughout the country. According to the World Food Programme, Guatemala has one of the most unequal economies in the world, with a Gini Index of 54 ("Guatemala: Overview," 2011). Some even say that Guatemala is truthfully two countries in one: the select few rich, and the rest poor, with 20 percent of the population having 60 percent of income (Loewenberg, 2009). Contributing to the inequality and disunity of the country are the 24 different indigenous groups, each with their own language and their own culture. It is these indigenous communities that suffer the highest poverty and malnutrition rates. In visiting Guatemala, the unequal distribution of wealth is starkly evident. Cities are full of businesses and development, and appear to be prosperous. However, in indigenous areas, the Mayans sleep on the ground, live in huts, and only eat what they produce themselves. This is partially due to the Guatemalan Civil War, lasting from 1960 to 1996, which left the Mayan populations demoralized and their social conditions damaged. The areas that were more affected by the civil war, such as the province of Quiché, are now the areas that are most affected by hunger. A government worker, Andrés Botrán, admits that after the war, government budgets were actually shifted to maintain underdevelopment in some regions (Loewenberg, 2009). "These people were totally abandoned in the mountains with no infrastructure, no education, no health," says Rafael Espada, the former vice-president of Guatemala ("A National Shame," 2009, p. 2).

The issues of poor education and living conditions suggest a government that has done a poor job of rebuilding Guatemala after the long civil war and frequent natural disasters, especially with the lack of tax reform (Loewenberg, 2009). Despite the apparent prejudice against indigenous regions, government officials do express desire to lower poverty and malnutrition rates. Although the government may show desire to improve the water systems, provide education and resources to the poor, and fight malnutrition, they lack the funds to do so, perhaps because there is such an extremely low tax base (Loewenberg). In a study done to explore the water system of Guatemala, it was found that there is a lack of political will to invest in the development of adequate, uninterrupted national water infrastructure and that the government has not taken responsibility to improve the system (Vasquez, 2011). Individual families are left to treat the water on their own, which poor families are unable to do (Vasquez). Because of the lack of government action, access to resources such as nutrient-rich food and drinkable water is not available to the poor, especially the indigenous living in the mountains, and as a result, the needs of innocent children are neglected and malnutrition rates are extremely high.

Proper Nutrition: Prenatal and Neonatal

Each of these causes greatly contributes to the problem of malnutrition in Guatemalan society, which affects the human development of each malnourished child individually for the rest of his or her life. As this problem is so rampant within the Guatemalan population, it is important first to understand and explore the urgency of providing proper nutrition for a developing infant. As far as nutrition is concerned, timing is paramount. Child nutrition begins in the mother's womb and is of vital importance

during the first two years of life (Dewey & Begum, 2011). World Bank research suggests that many children are irreversibly damaged by malnutrition by age two (World Bank, 2006). Most poor Guatemalan children are malnourished during the most crucial stages of development: the prenatal and neonatal stages. When a mother is malnourished, the baby is malnourished; thus as the baby is quickly developing in the womb, it is vital that the mother eats the proper foods to encourage development. When she does not, the result is low birth weight or initial birth defects, which can impair development permanently. Pregnant women need extra protein and an additional 300 to 500 calories each day in order to feed the developing baby within (Papalia, Olds, & Feldman, 2008). Some nutrients that are necessary in the womb are simply not available to poor Guatemalan communities, such as prenatal vitamins, protein, omega 3, folic acid, and vitamin B (Papalia et al., 2008). These are the kinds of nutrients that are found in fruit and vegetables, fish, and whole grains: foods that are not included in a typical Guatemalan diet. Thus, when the mother does not receive the proper nutrition and is malnourished, underweight or overweight, she is more likely to give birth to an extremely underweight and malnourished baby (Papalia et al., 2008).

However, nutrition is not only essential in the womb. After a baby is born, it is imperative that babies receive proper, deliberate, and intentional nutritional care. In the United States and other developed countries, most mothers are well educated on neonatal nutrition and understand the healthiest option for feeding the baby is breast milk. For this reason, breast feeding is suggested exclusively for the first 6 months of life, and should be continued for at least a year (Papalia et al., 2008). Iron-enriched foods and fruit juice can be introduced between the ages of 6 and 12 months (Papalia et al., 2008). Generally,

this is common knowledge to most in first world countries, and resources are readily available for mothers to adequately provide the correct nutrients for their child at the correct time. But in Guatemala, not only are resources unavailable, but mothers are uneducated on how to properly nurture their child during these critical first years of life. Nutritionist Cyntia Tabin explains that Guatemalan mothers often give up breast feeding before the child is 6 months old (as cited in Valladares, 2011). Additionally, UNICEF (2009) statistics reveal that only 50 percent of Guatemalan babies are exclusively breast fed the first 6 months, and only 71 percent of babies are breast fed with complementary food at 6 to 9 months.

As the need for proper nutrition during the first years of life is neglected, each domain of human development is affected. There are three interrelated yet separate aspects of human development: physical development, cognitive development, and psychosocial development. Physical development is the growth or lack of growth of the physical body and the brain, which includes the changes in sensory ability, motor skills, and general health (Papalia et al., 2008). Cognitive development entails any pattern of change or stability of mental ability, including “learning, attention, memory, language, thinking, reasoning, and creativity” (Papalia et al., 2008, p. 10). Finally, psychosocial development describes the changes that occur emotionally, in personality, and within social relationships (Papalia et al., 2008). These aspects of development are not entirely separate, as they all influence each other. For example, the chronically ill will both think differently cognitively, and respond differently psychosocially to their peers than the healthy. Likewise, the way the chronically ill think and act towards others might affect overall physical health. The same concept is applicable to the way malnourished children

are influenced in each developmental domain, and who they become as people is largely affected by malnutrition.

Physical Effects of Malnutrition

Often upon first glance, the physical symptoms of malnutrition are apparent. The child will have a distended stomach, appear to be only skin and bones, and might not have the strength to stand, lift his or her head, or even smile. Many children will experience hair loss, or their black hair will change to a blonde or copper color because of vitamin deficiency (Loewenberg, 2009). Children might retain fluid causing them to appear swollen or even of normal weight, their skin might peel or darken, and their veins in their legs can become completely visible (Loewenberg, 2009). While these perceptible symptoms may be detectable at first glance, there are also many underlying physical effects of malnutrition that are destroying the child's body; as malnutrition ranges in severity, symptoms might be more subtle. In Guatemala, the most common effects of malnutrition on physical development are stunted growth, underweight and overweight, higher susceptibility to disease, and increased mortality rate.

As a Guatemalan child is denied the nutrients needed for development, the child's physical body is negatively affected. The most common and discernible physical evidence of the epidemic of child malnutrition in Guatemala is stunted growth. According to some sources, the majority of the Guatemalan adult population's height is stunted, as childhood stunting is a direct cause of short height in adulthood (Dewey & Begum, 2011). Stunting, an indication of failure to grow to one's full height potential, is measured by HAZ, which means height for age (Sereebutra, 2006). The World Health Organization sets the standard for healthy growth, and if a child is two standard

deviations below healthy height, the child is considered stunted (Dewey & Begum, 2011). At least 50 percent of Guatemalan infants from ages 30 to 35 months meet the criteria for being stunted and in the central mountainous region of Guatemala, 74 percent of children under the age of 5 are stunted (Sereebutra, 2006). Stunting in Guatemala is environmental, not genetic, as studies have shown that Guatemalans who live in Mexico are taller than those who live in Guatemala (“A National Shame,” 2009). Although the effects of stunting can be reversed, depending on damage already done and timing of nutritional intervention, most who are stunted in childhood will grow up to be stunted as well (Sereebutra, 2006).

Unfortunately, stunted growth in women is a cycle that affects generation after generation. Twenty nine percent of adult women of reproductive age in Guatemala are stunted, which creates developmental problems both for the mother and for her future children (Dewey & Begum, 2011). In an analysis of recent Demographic and Health Surveys, (Ozaltin, Hill, & Subramanian, 2010) it was found that the likelihood of having a child who is stunted is significantly greater for a mother who is stunted. Ozaltin et al. also found that the “effect of short maternal stature on child mortality was comparable to the effect of having no education or being in the poorest 20 percent of households” (as cited in Dewey & Begum, 2011, p. 8). This outcome is due to the stunted growth of the mother, who consequently has a smaller, narrower pelvis, which results in elevated risk of child mortality at birth due to obstructed labor (Dewey & Begum, 2011). Maternal stunting can also cause intrauterine growth restriction (IUGR), which restricts blood flow and growth of the uterus and the developing baby. Intrauterine growth restriction can

cause fetal death, fetal distress, and if the child is born alive it will most likely have an intellectual disability (Dewey & Begum, 2011).

Another way child malnutrition manifests itself physically is through weight. According to a study done comparing low birth weight babies from Guatemala and England, due to postnatal malnutrition, Guatemalan babies grew up to be both lighter and shorter later in life than the English babies (Ounsted, 1986). UNICEF statistics reveal that 1 out of every 5 Guatemalan children under 5 years old suffers from being underweight (Nybo, 2009). In Guatemala, the anemia rates of children under 5 increased from 42 to 48 percent between 2002 and 2008 (Santisteban & Valenzuela, 2010). Low weight due to undernutrition is a serious issue indeed. But, malnutrition does not necessarily signify undernutrition. Malnutrition is actually defined as “a diet containing insufficient quantities of nutrients or a diet in which one or more essential nutrients is missing or is present in the wrong proportions” (Santos de Souza, Gernandes, & Carmo, 2011, p. 132). Undernutrition is a type of malnutrition defined as “an overall deficiency of nutrients due to an inadequate intake as part of an otherwise well-balanced diet” (Santos de Souza, et al., 2011, p. 132). In other words, while one typically imagines malnutrition as undernutrition, this is not always the case, as the problem of malnutrition manifests itself in overweight as well. Overweight has grown by 87 percent in the last 43 years in Guatemala and among the poor Latin American countries, Guatemala has the highest rates of overweight (Santisteban & Valenzuela, 2010). According to Chessa Lutter, an advisor for Pan American Health Organization, “The same type of diet, that is heavy in carbs and cheap fats, which makes kids short and anemic also makes adults fat” (as cited

in Miller, 2011, p. 1). Thus, malnutrition in early life increases the likelihood of obesity in adulthood (Miller, 2011).

Not only does malnutrition affect height and weight of children, it can affect general health by creating an increased mortality rate and a high susceptibility to infectious disease for the child (Santos de Souza et al., 2011). Generally speaking, under nutrition is a cause in more than half of all deaths of children under age 5 (Papalia et al., 2008). Prenatal malnutrition specifically has fatal effects, as there are studies showing that when mothers do not get enough nutrients, their child is ten times more likely to die during adulthood (Papalia et al., 2008).

If a child lives through malnutrition and low birth weight in early life, it is likely that there will be lifelong issues in metabolic, endocrine, and cardiovascular function (Dewey & Begum, 2011). Malnutrition can increase a child's chances of having heart disease, diabetes, kidney damage, and anemia (Miller, 2011). Children, who are prenatally malnourished, especially in vitamin D, are more likely to have lower bone mineral content and osteoporosis later in life (Javaid et al., 2006). Also, being deficient in vitamin A can decrease effectiveness of the immune system by 40% (Santisteban & Valenzuela, 2010). A weak immune system is problematic because as the immune system is less effective, the child's body becomes more susceptible to two of the most common health issues of Guatemalan children: diarrhea and respiratory infections. In a study done to explore the prevalence of diarrhea and respiratory infections among Guatemalan children, it was found that half of Guatemalan children displayed at least one of these problems in a two week period (Heuveline & Goldman, 2000). One quarter had a fever, and one fifth had diarrhea and constant cough. The scientists who conducted the study

attribute such high rates of illness to malnutrition (Heuveline & Goldman, 2000). The cycle then continues to worsen, as diarrhea and infections can cause dehydration and malnutrition.

Cognitive Effects of Malnutrition

Not only is it crucial for a child to be nourished in early life for physical growth, but cognitive functions must also be nourished. As the brain is forming, certain nutrients are needed for development and malnutrition can cause both structural and functional damage to the brain (Dewey & Begum, 2011). Malnourished children show a decrease in cognitive capacity, in which the severity of intellectual disability depends on the severity of malnourishment. Severity ranges from complete mental disability to lowered academic performance and decreased IQ. According to Guatemalan nutritionist, Cyntia Tabin, chronic malnutrition stunts the growth and intellectual development of children, who later do not do well in school and drop out (as cited in Valladares, 2011). As explained in the report *Situational Analysis of Malnutrition of Guatemala*, a loss of one percent of height due to childhood malnutrition results in a 1.4 percent loss of productivity as an adult (as cited in Valladares, 2011). According to the Maternal and Child Undernutrition Study Group, children who are stunted at 24 months of age average a reduction of .9 year in schooling, school enrollment at an older age, and an increase of failing classes by 16 percent (Dewey & Begum, 2011). Many studies have shown that children who have poor nutrition in early life do worse on tests, are more likely to repeat a grade, and are more likely to have poorer verbal, spatial, reading, and overall scholastic ability (Papalia et al., 2008).

The three most common deficiencies that are known to have lasting effects on cognition and behavioral issues are protein, iron, and iodine (Scrimshaw, 1998). Widely associated with protein deficiency are the common issues of a cognitive disorder called kwashiorkor, and physical low weight called marasmus (Scrimshaw, 1998). Kwashiorkor and marasmus often occur simultaneously and have similar effects on the cognitive development of children. Studies suggest that children with marasmus-kwashiorkor have shown lower language and IQ scores (Scrimshaw, 1998). Also, a study done in Guatemala revealed that among the poor, the children with the lowest weight for age due to protein deficiency did worse on tests of sensory perception than the heavier children did (Scrimshaw, 1998). But, if there is intervention early, where the infant is given adequate levels of protein and cognitive stimulation is continued until later in childhood, it is possible that the effects of kwashiorkor and marasmus can be minimized or even reversed (Scrimshaw, 1998). Generally, it is accepted that supplementation of protein can improve cognitive damage done to protein-deficient children

The most common deficiency in the world and in Guatemala is the deficiency of iron (Scrimshaw, 1998). Iron deficiency affects brain enzymes, which causes anemia, cognitive impairments, and lowered intellectual performance. Although some studies have shown reversibility of effects of mild iron deficiency, in a study done in Guatemala, the effects of severe iron anemia could not be reversed by supplementation. Therefore, severe and early iron deficiency can result in permanent neurological damage that may be impossible to reverse later on (Scrimshaw, 1998).

Iodine deficiency is also a problem that is widespread throughout the world, and is ranked third place on a list of most common biological and psychosocial risks that are

preventable among young children (Melse-Boonstra, 2010). Often associated with the pregnant mother, iodine deficiency causes severe neurological problems with the developing fetus and is often linked with cretinism and more severe forms of mental disability. Cretinism can be caused by iodine deficiency during gestation, and results in severe mental retardation, dwarfism, deaf-mutism, and spasticity, which are largely irreversible (Melse-Boonstra, 2010).

The greatest proof of the long term impact malnutrition has on the cognition of Guatemalan children is a long term study that was done in four rural villages of Guatemala (Dewey & Begum, 2011). Beginning in 1969 to 1977, The Institute of Nutrition of Central America and Panama (INCAP) implemented a large supplementary feeding to women who were breast feeding and their children aging from birth to 7 years old (Martorell, 1992). Follow up studies were conducted in 1988-2007, up to 40 years later, which tracked the original population (as cited in Dewey & Begum, 2011). Two villages were given a supplement called Atole, which was high energy and high protein. The other two villages were given Fresco, a low energy non-protein supplement. There were many important conclusions to this study. For the first 3 years of life, child length gain was greater in the villages given Atole than the Fresco villages, but no significant difference was noted between the ages of 3 and 7 (as cited in Dewey & Begum, 2011). These results reveal that the first 3 years of life are the most opportune times to prevent stunting.

More important to the cognitive effects of malnutrition are the findings during the 1988-1989 follow up, when it was discovered that the now ages 11-26 Atole children were not only taller, weighed more, and were leaner, but they also scored higher on tests

of knowledge, math, reading, and vocabulary than the Fresco adolescents (Pollitt, 1996). In the 2002-2004 follow up when the cohort was 26-42 years old, the Guatemalans who had received Atole before age 3 had experienced increased school achievement, economic productivity, and increased intelligence scores. For men, overall wages earned also increased by 46 percent for the Atole group (Martorell, Melgar, Maluccio, Stein, & Rivera, 2010).

Psychosocial Effects of Malnutrition

As a child develops physically and cognitively, he or she is also developing emotionally and psychosocially. How a Guatemalan child forms personal identity and relates to the world is greatly affected by malnourishment, especially if he or she is already negatively affected physically and cognitively. The psychosocial aspect of development depends greatly on the family dynamics, socio-economic status of the child, and education level. In many studies, it is difficult to distinguish the effects of malnutrition from the effects of living in a poverty-stricken home, as the two often are correlated. However, research does indicate that Guatemalan children who are malnourished demonstrate decreased social skills and increased emotional problems, negatively affecting a child's sense of community, human interaction, and personal accomplishment.

Malnourishment affects infants psychosocially as they are less responsive to people, lack motivation, are more dependent, and more ill-tempered than their peers (Barrett, Yarrow, & Klein, 1982). Additionally, many studies suggest that malnutrition continues to hinder psychosocial development into later life. Prenatal malnutrition in the first two trimesters can increase the likelihood of antisocial personality disorder diagnosis

at age 18 (Neugebauer, Hoek, & Susser, 1999), and is also linked with schizophrenia later in life (Wahlbeck, Forsen, Osmond, Barker, & Eriksson, 2001). Also, children who were undernourished at age 3 were more likely to have seen a psychologist, have difficulty getting along with other children, and have decreased neuropsychological performance than their peers at age 11 (Raine, Mellinger, Liu, Venables, & Mednick, 2003).

Most revealing to the psychosocial effects of malnutrition in Guatemala were the findings in the 1982 follow up of the INCAP longitudinal “Atole” and “Fresco” study previously mentioned (Barrett et al., 1982). The social and emotional functioning of the same cohort that had participated early from 1969 to 1977 was examined and assessed at ages 6 to 8. The children were observed in small group activities with their peers, and the results revealed the importance of early infant nutrition to psychosocial development. The children who had been fed Atole, the high protein-calorie supplement, showed higher social involvement, more fascination with their environment, displayed higher capability of expressing emotions (both happiness and anger), and were more active. The children who received the Fresco, the low protein-calorie supplement, displayed passive behavior, anxious behavior, and more dependency on adults.

Also required for psychosocial development is parental guidance and stimulation. The scientists, who conducted the INCAP study (Barrett et al., 1982), in an analysis of their data, suggest that because infants have decreased motivation and depleted energy, they are less likely to respond to and connect with their caregivers. Failure to learn proper interaction early on with parents could be what inhibits further social development. This problem could be magnified if the parent has a history of malnourishment or is living in an emotionally stressful environment, such as poverty. The parent could possibly have

depleted energy and loss of motivation to be patient with the shortcomings of the child (Barrett et al., 1982). The lack of attention that accompanies uninvolved parenting causes dysfunctional caregiver-child interactions, as the parent neglects the child and in turn, the child withdraws from the parent. These children never learn how to adequately respond to their parents, which consequently can determine patterns that affect the interaction with their peers later in life (Barrett et al., 1982). It is apparent that the professionals who conducted this study believe that children who are undernourished prenatally and postnatal are more likely to develop a pattern of dysfunctional social interaction. Also supporting this opinion is a study done that observed the energy depletion of malnourished children. This is what was concluded:

Reduced activity in children, as long as growth is not affected, might seem to be of little consequence. Reduced activity, however, isolates the child functionally from the environment through lack of the exploratory activity and interaction with family members that are necessary stimuli for normal cognitive development.

(Scrimshaw, 1998, p. 358)

Another reason for psychosocial stunting in Guatemala due to malnourishment is child neglect. Neglect that so often accompanies malnourishment is not only physical, but also involves the negligence of meeting emotional needs of the child, which includes giving the child proper attention, love, and communication. This type of emotional neglect can have a permanent effect on a child, leaving him or her feeling worthless and without self-identity (Coope & Theobald, 2006). One reason that neglect continues to be a problem in Guatemala is because in Guatemalan culture, the child is of the lowest status; as “the concept of a child as an individual with rights is not commonly accepted”

(Coope & Theobald, 2006, p. 531). For this reason, neglect is common among the poor, as parents keep their children from school, the male is often absent from the child's life, and male children are shown more favorable treatment than female children (Coope & Theobald, 2006). Worsening the situation is the lack of government legislation recognizing child neglect as child abuse. Child protection practitioners in Guatemala are faced with the dilemma of funding from the government for this reason (Coope & Theobald, 2006). Even when a child is reported as neglected, intervention is rarely enacted unless the case is very severe because stable and safe group home options are limited. It is generally perceived that such children would be worse off in a group home than in their own home (Coope & Theobald, 2006).

Effects of Malnutrition on Guatemalan Society

While the physical, cognitive, and psychosocial problems associated with malnutrition have been discussed, it is important to mention the effect that such high rates of malnutrition has on society as a whole. Guatemala is a developing country that is stricken by poverty, which is an evident cause of the epidemic of malnutrition. Yet, as a result of such high prevalence of malnutrition, more poverty ensues. With half of the population's children affected by malnutrition and the implications that this has on the development of the child, the economy of Guatemala continues to suffer, as large percentages of children are failing to reach their full cognitive potential in adulthood and contribute to the work force. Thus, malnutrition is not only an effect of poverty, it perpetuates the cycle of poverty. As stated in "A National Shame," "Much research shows that children who are undernourished tend to suffer from learning difficulties and end up poorer. Proper feeding is the first step in breaking the cycle of poverty" (2009, p. 2). Malnourished children, if they live, often grow up to raise their children similarly to

how they themselves were raised, never learning that life can be different. All the while, Guatemalan society is suffering as the workforce is diminishing. Kevin Kelly, USAID/Guatemala mission director, explains: “Public awareness is growing that high levels of chronic malnutrition have far-reaching repercussions, including poverty and crippled economies that result in large numbers of disenfranchised youth migrating or engaging in criminal activities” (DuFlon & Hillary, 2011, p. 2). According to UNICEF, society pays the price for malnutrition: \$8.4 million a day for hospitalization, students failing school, and repetition of the first years of school (as cited in DuFlon & Hillary, 2011).

Possible Solutions

Because of the impact that malnutrition has on the development of the child and of the nation, it is evident that something must be done in this country to help these children. Not only is this a matter of individual importance, but as the country is made up of individuals affected by malnutrition, the society as a whole suffers. According to Scrimshaw (1998, p. 351), “community development would be more effective if the physical and cognitive capacities of their populations were not impaired by malnutrition. The tragedy is that each month and each year generations on which the future will depend are being needlessly handicapped.” As this problem not only affects the present, but the future of Guatemala, solving the problem of malnutrition should be of upmost urgency.

On the individual level, there is hope in preventing and treating malnutrition if caught early enough during the first two years of life. Effects of malnutrition on physical growth can be greatly reversed by meeting the physical need with nutritional intervention. Many clinics exist in Guatemala that meet these needs, but often families cannot afford to pay to take their children to clinics. Although some severe cognitive

damage cannot be undone, there is research that shows that meeting cognitive needs of children can improve their situation. In a study done in Jamaica, two groups of children who had been hospitalized in infancy for severe malnourishment were followed (Grantham-McGregor, Powell, Walker, Chang, & Fletcher, 1994). One group of children was shown special attention by professionals who visited their homes every week for 3 years, showing the mothers how to interact with their children and teaching them how to make toys. The IQ levels of this group were significantly higher than of the control group who had only received the physical, medical care in the hospital. The possibility of improving psychosocial problems was revealed in a Mauritian study; where 100 three to five year-old malnourished children received nutritional supplements and medical examinations and were placed in special preschools with small classes (Raine et al., 2003). At age 17 these children had lower rates of antisocial behavior and mental health problems than a control group. Thus, with the correct nutrients at the correct time, and with proper education and attention given to encourage cognitive and psychosocial development, in many cases the effects of malnutrition can be prevented and even reversed.

Nonetheless, the resources to meet individual need must come from somewhere. In a poverty-stricken country, many parents do not have the resources to help their own children; they are not educated on how to nurture their children nor do they have access to proper nutrients. Many organizations have risen to address this issue and implement change, but none have made a lasting impact on both individual and societal levels of the issue. The government has teamed up with the World Food Program to distribute a supplement called VitaCereal to villages once a month and rescue children who are

severely malnourished by taking them to clinics for emergency intervention (Loewenberg, 2009). This type of program is common in Guatemala, and is necessary and helpful. But, even with these programs it has been reported that from 1965 to 2008 chronic malnutrition has only decreased by .5 percentage points (Santisteban & Valenzuela, 2010).

Some suggest that the government needs to be doing more. Immediate nutritional intervention is absolutely indispensable, but when the food supply diminishes, the problem of poverty and lack of education still remains. More permanent help, such as implementing health educational programs, is advocated by Santisteban and Valenzuela in a report conducted by the United Nations Development Program (2010). According to the report, malnutrition in Guatemala is a vicious, chronic cycle that has been worsening through the generations. Valenzuela explains that “This is a very serious problem which is largely responsible for underdevelopment in Guatemala, and requires integrated actions at a structural level” (Santisteban & Valenzuela, 2010, p. 7). He emphasizes that this problem should be of high priority for the new government of Guatemala and for the governments of the future.

According to the report, the solution to the problem of malnutrition in Guatemala requires cooperation from the health, agricultural, and education sectors of the government. The solution is twofold. First, immediate action should be focused on nutritional intervention on both national and communal levels to at-risk populations, especially during the critical 1000 first days of life. The effectiveness of current developmental programs should be assessed, kept accountable, and there should be a guarantee that all of these programs are meeting the needs of the children for prolonged periods of time. This solution of immediate intervention is important, but temporary, and

is not enough to guarantee national nutritional security. Also required is a second level of action which is preventive, focusing primarily on the causes of malnutrition.

Implementation of programs that improve the education and health of the people of Guatemala is mandatory in any effort to reduce poverty and malnutrition rates. Carolina Siu Bermudez, head of the Institute of Nutrition of Central America and Panama (INCAP), asserts that the problem of malnutrition cannot be exterminated simply by giving people better food, but by reducing poverty, improving the education and health of women, and providing access to employment (Valladares, 2011). The report indicated the necessity of obtaining a multi-sectorial agenda on food security, which would define the strategies of tackling the problem, guarantee nutrition to all Guatemalans, and provide the authority to political and social leaders to take action.

Although the solutions proposed are reasonable, they are easier said than done, as other sources indicate that the government of Guatemala does not have the money to implement these kinds of programs. Although implementing feeding programs and improving health education would be ideal, the poverty of the Guatemalan economy still remains an obstacle. As previously mentioned, Guatemala's economy is extremely unequal: the richest 20 percent of the population possess 60 percent of the country's income, which is most likely due to a low tax rate - one of the lowest tax rates in the world (Loewenberg, 2009). If the government implemented effective tax reform, taxing the richest of the nation and using tax money to invest in effective programs to improve education, infrastructure, and nutritional food supply, the end to the cycle of malnutrition and poverty might be within reach.

The malnutrition epidemic in Guatemala is so immense that the quest to discover a solution can seem hopeless and complicated. Poverty and malnutrition have their causes

and effects, everything seems to interrelate, and there is difficulty in finding the root of the issue. However, change must be implemented, as not only individual children are suffering physical, cognitive and psychosocial consequences, but the entire society and economy is affected. There is hope for helping these children, as malnutrition is not due to uncontrollable conditions that are unchangeable, but rather to conditions that can be altered, such as poverty and lack of proper education. Change can be attained by the provision of parental education, health care and information, immediate nutritional intervention, and in these things, securing the right of every Guatemalan child to have the nutrients essentially needed to develop into a productive member of society.

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