# CURRENT HEALTH AND ENVIRONMENTAL STATUS OF THE MAASAI PEOPLE IN SUB-SAHARAN AFRICA

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## ABSTRACT

As time passes, the AIDS pandemic continues to spike, affecting an estimated 38.6 million people worldwide. In response, a satellite health clinic is being designed by two Cal Poly students to serve the Maasai people living in the Kajiado district in Southern Kenya. The Maasai have traditionally lived as pastoralists, surviving off of their cattle with which they share their water, increasing the risk for contamination. However, as the population of Kenya increases, the land the Maasai have traditionally used for grazing is shrinking. For this reason, some have turned to farming to maintain their livelihood. These factors have contributed to the desertification and deforestation of their region. As the lifestyle of the Maasai evolves, they rely more on maize than meat and dairy products for their nutrients. All of these changes have contributed to the evolution of the Maasai culture. We will address these changes in order to better understand the Maasai, as well as highlight possible further aid needed to support their survival.

*"This is a war. It has killed more people than has been the case in all previous wars and in all previous natural disasters. We must not continue to be debating, to be arguing, when people are dying."*

**Nelson Mandela**, former President of South Africa

The statistics of the global AIDS epidemic are devastating. At the end of 2005, there were an estimated 38.6 million people worldwide living with HIV (1). At a special session of the UN General Assembly in 2001, leaders from 189 Member States committed to goals aimed at reversing the global epidemic by 2015. To assess progress goals established at the historical session, the most comprehensive set of data on the response to the AIDS pandemic was compiled in the 2006 Report on the global AIDS. Key findings in the global review included important progress being made since the 2001 Special Session, yet points out an extraordinary diversity between regions and their response to HIV. In January 2003, a five-year, $15 billion Emergency Plan for AIDS Relief was initiated including support for satellite medical clinics to be built (1). The cry for the development of such clinics in Sub-Saharan Africa also comes from organizations including: Doctors Without Borders, The Harvard AIDS Institute, UNAIDS, and the World Health Organization (2).

In response to this need, two senior Cal Poly Architecture students are designing a health clinic to serve the Maasai people in the Kajiado district in Southern Kenya. This response to design a clinic spurred further interest in the Maasai people, their lifestyle, needs, and possible other areas of future involvement and aid by the Cal Poly student body.

An in depth literary review has been performed to understand the needs of the area that could provide ground for a more holistic approach to serve the Maasai. By understanding their culture, current water situation, nutrition status, and resources available, the possibilities of solving problems surpass building a clinic to prescribe medication and treat illness. Being built on this foundation of understanding of the Maasai people, a greater potential arises for a purpose-driven, holistic response.

# METHODS

## Design of Acquiring Information

Our group used various methods to gather the information we needed for this literary review. Because of the nature of the project, we could only perform a review of published versus first-hand research. The information was gathered using the Cal Poly Library, literature search engines, reliable web sites, and information requested from private organizations. This project was coordinated with the help of Blogger[1], where we relayed information and updated progress.

In order to keep our project on track, we met bi-monthly and updated each other with our progress and problems. Through these methods we have produced this research paper.

## Complications

A difficulty with this project was trying to find specific, relevant information on the Maasai people and the environment in which they lived. There was a good deal of material on tourism in the Kajiado general area, but respectable, scholarly studies of the problems we hoped to address were hard to come by. We tried to contact various organizations requesting specific information but very few replied.

# LITERARY CATEGORIES

## Culture

"We prefer 'Maasai', not 'Masai'," says a native. "'Maa-sai'," he explains, "means 'my people'"(3). His people, the Maasai tribe in Kenya and parts of northern Tanzania, are one of the most visible cultural groups in Africa today. Maasai women weave bold colors and beautiful designs into the beaded jewelry that adorns men and women alike. The young Maasai men, the warriors of the tribe, have long hair that is grown out and shaped for the whole duration of their service as a warrior. When a warrior returns from a successful

1 Blogger: an online password protected communication network, site projectkenya.blogspot.com

lion hunt, the whole tribe celebrates this historical accomplishment. This distinctive way of life and their strikingly tall figures have established them as the face and the emerging voice of Africa's struggles. Although many Maasai customs are often viewed through our Western romanticized lenses, the crises that these people face in preserving their identity and ensuring a future are very real and demand our attention.

Researchers estimate the total Maasai population to be about 883,000 with approximately half of the people living in Kenya and the other half in Tanzania (4). It is hard to say for certain how many there may be because the Maasai have a peculiar tendency to distort their numbers for the census takers that stems from their overall distrust of modern government. They live simply, preferring to be left to their own cooperative forms of government and want only land on which their cattle can graze.

Cattle are valued above all else and a man's wealth is measured in proportion to the number of cattle he owns. It also has a spiritual significance since the Maasai believe that they were granted exclusive rights and dominion over all the cattle (5). Of course, cattle also serve as an essential part of the Maasai daily diet. However, because the Maasai care for their cattle as they would a child (in fact, a typical prayer asks, "May Creator give us cattle and children"), they prefer to eat the meat of other livestock, using cattle mainly for their milk. Recently, in the worldwide onset of expansion and privatization that leaves not even rural Africa alone, Maasai herdsmen have been pressed to find new grazing lands and water sources. The increasing difficulty of doing so has forced many Maasai to turn from their traditional pastoral, semi-nomadic lifestyle and incorporate a more agricultural economy.

## Environmental

Kenya's population grows at a rate of 2% every year, which is slower than it was in past decades, around 4%, but very fast compared to most countries (6). Along with this growing population comes an increasingly higher utilization of natural resources without the consideration of maintaining a sustainable eco-balance (7). Currently, Kenya has several prominent environmental problems; most of which stem from poverty and overpopulation. The specific problems we chose to focus on are desertification[2], global warming, and deforestation.

## Desertification & Deforestation

Desertification in Kenya is partly a result of both overgrazing and deforestation. Overgrazing in the Rift Valley region by the domestic livestock belonging to the Maasai people has led to desertification and even decreased diversity in species (8). Overgrazing also undermines possible agricultural production as it degrades the soil quality. Soil erosion occurs by water runoff and wind, which can lead to desertification of the land (8, 9). Soil erosion has caused a problem when Maasai have tried to farm the land versus their traditional practice of grazing.

The state's issue of desertification is very pressing; furthermore, Peter N. Macharia of the Kenya Soil Survey conducted a study involving local farmers to compile possible interventions the Maasai people could employ to halt and even reverse the desertification process. The hopes of the study were to create more awareness and empower the Maasai of the practical ways to combat desertification. The research identified useful trees to plant around homes for shade, to use as woodlots on their farms to provide fuel, and to act as windbreaks. These specific trees include: Grevillea robusta, Cassia spectabilis, C. siamea, Schinus molle, Croton megalocarpus, Leucaena leucocephala and Azandiracta indica. The study also specified trees useful for fencing, because cut wood has to be annually replaced due to termites. The suggested trees include: Commiphora africana, C. stuhlmanii, Euphorbia tirucalli, Erythrina abyssinica, Carissa edulis and Agave sisalana (9). This study exemplifies the value in consulting with the local Maasai to determine solutions to identified problems. Further solutions to this problem include creation of windbreaks and planting native plants to slow soil erosion.

Deforestation is also a significant problem in Kenya, even though forests only account for a small percentage of its area. According to a UN report, population growth is the main cause of deforestation, as forests are cleared for agricultural land to support a burgeoning population (10). Deforestation is also linked to drought and flooding because the forests provide an area

2 desertification: the rapid depletion of plant life and the loss of topsoil at desert boundaries and in semiarid regions, usually caused by a combination of drought and the overexploitation of grasses and other vegetation by people

for water catchments. As the forest is depleted, the likelihood of drought and flooding increase significantly.

### International Involvement

The United Nations Conference on Global Warming just concluded in Nairobi. They formed a plan to reduce global warming and emissions. Secretary General Kofi Annan is recorded saying, "The impact of climate change will fall disproportionately on the world's poorest countries, many of them here in Africa" (11). Most importantly, in order for Kenya's delicate ecosystems to be preserved, the world must take action to combat this global problem. The Kyoto Protocol is a great first step in this direction, but to protect the people of Kenya who depend on the land for their well-being, specifically the Maasai, more extensive action must be taken by global bodies such as the UN.

In order to get rid of these problems, the government and NGOs must be involved. Organizations need to start taking progressive action to reverse the effects of these problems. The government, with the help of the UN, must put into place studies and programs to combat desertification and deforestation and help reverse the effects of global warming. Fortunately, in Kenya, positive actions are being taken to change the deforestation trend. Wangari Maathai, who won the Nobel Peace Prize in 2004, founded the Green Belt Movement, which plants trees throughout Kenya and other parts of Africa. Before 1997, 20 million trees were planted and have survived (12). Support of this kind of endeavor is imperative to the survival of the traditional lifestyle of the Maasai living within Kenya.

## WATER STATUS

As water is a necessity for survival, the quality of water consumed is a major deciding factor in a person's health. Because of water's dramatic impact on physical well-being, it is especially important to understand the status of water consumed by the Maasai people in order to assess their health status. The following survey of water quality and availability addresses Maasai communities near the Kenya-Tanzania border.

## Water Accessibility

Accessibility is a deciding factor in whether or not water is obtained. A survey conducted by Kusiluka et al. in 2003 found that among 128 people from the Bagamoyo district, where many Maasai communities reside, and the Dodoma rural district along the Tanzania-Kenya Border, 9 percent report water as "readily available," 50 percent report it as "not easily available," and 40.6 percent report water availability as "problematic" (13). Water availability is influenced both by source distance and competition for water. The average distance traveled to the closest water source in the Bagamoyo district was 2.9 km ± 3.0 km, the farthest distance being as much as 15 km away. A majority of those that resided in the Bagamoyo district obtained water for domestic uses from ponds, dams, and taps. Ponds and dams were also the main sources of water for animals. In the Bagamoyo district, few villagers are financially capable of constructing their own water sources; most water sources in the Bagamoyo district were created by the government or by the villagers working with the government. Knowledge of sustainability was also scarce with only 39.1 percent of those surveyed aware of resource maintenance and reusability (13).

In the Kajiado district, there is less than 500mm of rainfall every year (14). Due to the shortage of water, Maasai herders have a difficulty keeping their cattle alive. Because cattle are a staple to many families' economic well-being, the decline of cattle makes it difficult for families to pay for food and schooling for their children (15). Not only is water important for cattle, but it is necessary for other livestock as well. In the Dodoma and Bagamoyo district study, of the 128 people surveyed, 71.9 percent reported water shared with cattle, sheep, and goats. While water shortage is problematic, shared water between households and animals becomes a larger issue where sanitation is concerned. The Dodoma and Bagamoyo districts study indicated that 71.1 percent of the respondents shared water sources with other households (13).

## Water Cleanliness & Contamination

Diseases associated with contamination by animal excreta include cholera, typhoid, shigellosis, meningitis, and hepatitis A and E. Viruses, protozoa,

and bacteria are also obtained from water sources contaminated with human or animal feces. Symptoms of these diseases and viruses include "diarrhea, stomach cramps, nausea, vomiting and low-grade fever" (13). An African Medical and Research Foundation (AMREF) study by Rukunga et al. in 2002 revealed that 79 percent of water sampled in the Kajiado and Kitui districts contained gross fecal contamination (16). Another study conducted by Conroy and Elmore-Meegan in 1996 on the benefits of solar disinfection found the presence of fecal coliform bacteria in the drinking water of Maasai communities, which was increasing the severity of diarrhea (17). Contaminated water has a grave impact on Maasai communities, preventing performance of daily duties and decreasing the quality of lives.

Several studies confirmed the decrease in water contamination by human feces with a latrine near the water source. Another AMREF study conducted by Rukunga et al. in 2003 in the Isinya division of Kajiado District revealed decreased microbial load when the water source was near a latrine (18). The Bagamoyo and Dodoma districts study also revealed that diarrheic cases were most abundant in the Chamakweza village, which had no latrines. Both studies also proposed that an influential factor of water sanitation was hygiene education. The "hygiene practice such as washing hands without soap prior to eating food" was uncommon in the Bagamoyo district's Chamakweza and may be a contributor to viruses and diseases (13). Hygiene education in the Isinya division of Kajiado District also helped in drastically decreasing microbial load (16).

Another contributing factor to the poor quality of water in the Kajiado District may be the agricultural use of pesticides and fertilizers. Because "tenancy arrangement in the irrigated land parcels demands that agricultural yields are high to recover costs," many farmers are using fertilizers and pesticides without restraint and to excess. Most are also uneducated in the safe use of pesticides; farmers applied pesticides without wearing any protective gear. Artificial fertilizers are believed to be causing dense growth of algae, aquatic weeds, and sedges. With the dry climate of the region, "explosive growth of toxic algae species can be expected," harming humans and killing livestock (13).

Major issues that the Maasai people have with accessing healthy water are a result of resource shortages and lack of sufficient education on the subject. With financial aid and training, the Maasai may improve the quality and availability of sufficient drinking water, thus improving the quality of their lives.

## HEALTH STATUS

### Prevalence of HIV/AIDS

Although the Maasai operate on a daily basis as a fairly egalitarian society, the traditional governing figure is usually the laibon[3]. Unfortunately, not even the laibon has a solution to the tragedy of AIDS and HIV that has spread throughout the Maasai people.

The United Nations Department of Economic and Social Affairs estimates that 39 million people today are living with HIV/AIDS and 20 million affected reside in Sub-Saharan Africa (21). Of the 38 countries in Africa that are affected, Kenya, home of the Maasai, is one of the top ten most affected countries. Ten to twenty percent of the population has contracted some form of the disease. At a prevalence rate that hovers just under 20%, nearly one in every five adults in Kenya has HIV/AIDS. The consequences of this epidemic are widespread. The numbers of children left behind in the wake of this disease are devastating. Another United Nations report identifies at least half a million children in Kenya who were orphaned as a result of the AIDS epidemic (22). Future generations have been impacted in other ways as well. Because HIV/AIDS greatly affects the younger, sexually-active members of the Maasai, the part of the society that would normally be able to contribute economically and socially has been rendered effectively invisible.

The sexual practices of the Maasai require immediate attention and redress in order to curb the rising rate of infection. Whenever possible, young girls are married to much older men as soon as the girls reach puberty in order to prevent the birth of children out of wedlock. But until marriage, it is normal for girls to have sexual relationships with any of the young warriors and these relationships will often even continue throughout marriages

3 Laibon: an elder practiced in the ways of healing whom the people will consult when misfortune arises

as well. As for the men, polygamy is hardly frowned upon. Clearly, confusion and a lack of knowledge about HIV/AIDS play a large part in the spread of this disease.

Of those who already have the disease, there are several further complications. One large, obvious problem is that many of the Maasai with HIV/AIDS are not aware of their diagnosis because of the lack of clinics to run tests for them. For those who are fortunate to have a clinic nearby, there is still a cultural stigma that prevents people from getting tested. Women especially fear testing because if they test positive, they believe that their husbands will abandon them. Another problem that clinics face is the unavailability of necessary medical resources to treat HIV/AIDS. Antiretroviral treatments, which are widely successful in the United States and often reduce mortality by up to a hopeful 80%, are simply too expensive for many rural Kenyan clinics. Furthermore, sticky legal barriers prevent the production and import of antiretrovirals in the area. With more than 33% of new babies in this country being born infected with HIV/AIDS and 50% of those children dying before the age of two because they and their mothers cannot receive proper treatment, something has to be done. (23)

Fortunately, people today are taking steps in that direction. Global aid associations are promoting health education and medical communication via print, school programs, and anti-AIDS clubs in schools. Volunteers with Doctors Without Borders are donating their time in Kenya to provide free counseling and testing. People who lack the time or skill to be involved personally are taking measures to support groups such as Adopt-A-Doctor and Kenya AIDS Intervention. Every day, more people are becoming aware of the Maasai and the larger problems that they represent and every day, there is another chance to bring hope and help to the Maasai people.

## Other Health Issues

A study interviewing residents of 30 homesteads, seven schools, and three health care centers found that the main health concerns were malaria, GI problems, and respiratory infections. Respiratory infections have been noted mainly in children due possibly to their attire not providing enough warmth during cold mornings and nights. The mothers interviewed stated that the

most common diseases among their children included malaria 79%, diarrhea 71%, pneumonia 52%, and others including worms, malnutrition, and dental problems. The hypothesized causes of these stated conditions are contaminated water, consumption of contaminated foods, and poor ventilation of air in their living spaces (24).

### Medical Care Perceptions

A study published in the Western Journal of Nursing Research discovered that 29% of 189 women delivered their babies in a clinic and the remainder delivered their babies at home. The low delivery rate in clinics partially results from the lack of transportation to clinics while pregnant and limited places to stay before and after labor near health clinics (25).

During the rainy season, the Maasai typically migrate. This can pose difficulty in accessing proper health care. The wild animals in the area also limit them from traveling far distances to access health care when sick. These issues raise the need for more health clinics for the mobile Maasai. Regarding the Maasai's acceptance of traditional health care, P. Wanzala, J. Hassanali, P. Kibet, and H. Dossajee observed that elder support is imperative for acceptance by the community. Therefore, it is essential to have the support of local leadership, which spurs community involvement and approval (24).

## NUTRITIONAL STATUS

When observing the health of the Maasai, we considered their nutritional intake to study whether they are a well-nourished people. It is hard to pinpoint a specific reason why a people eat the way they do. Many factors come into play including the group's economical status, their cultural beliefs about certain foods, access and availability of foods, and health status of workers needed to harvest certain foods. With these ideas in mind, we attempted to understand the Maasai's evolving diet pattern.

### Traditional Diet

The Maasai have traditionally lived off of their grazing cattle by consuming the milk, meat, and blood from their livestock. The consumption of blood, which contains high protein and is beneficial to the immune system, occurs

only on special occasions (25). In Kajiado where the Maasai reside, livestock and livestock production account for 71 percent of their income (26). Although their cattle are a huge resource, they have begun to minimize cattle consumption. The Maasai do not consume milk and meat during the same meal because they do not want to consume dead (meat) and live (milk) products at the same time; they believe this will help reduce the amount of cattle slaughtered. They also slaughter certain cattle (steers) only during special ceremonies (27).

Consumption of plant foods is uncommon due to the thought that green vegetables were meant for livestock feed (28). However, there has been an increased need to overgraze land and plant foods are more readily consumed. Farming is becoming more prevalent, although farming has been looked down upon because once land has been farmed, it is no longer suitable for cattle grazing. The consumption of maize, rice, potatoes, and cabbage is becoming more prevalent (25). A study done by J.K Nyoro, a Senior Research fellow with Tegemeo Institute and Dr. Wilson Nguyo, the Director of Tegemeo Institute at Egerton University, shows that the Maasai living in Kajiado consume 60% of their calories from maize, 7% from rice, 5% from potatoes, 4% from wheat, 3% from bananas, and 21% from other sources probably of animal origin (28).

## Nutrition and Pregnancy Practices

When pregnant, the Maasai traditionally consume a modified diet. They are advised by TBAs[4] to consume a restricted diet after the 6th month of pregnancy with the belief that they will have an easier delivery and a healthier baby. They consume fewer meals, drink more water, and tend to watch their cattle, which limits their access to foods (24, 28). Anemia is also prevalent due to a primary maize and milk diet.

Almost immediately after birth, mothers are given a diet rich in iron, protein, and fat. The first food a child is given is fat, even before breast milk (28). This practice goes against FNRIs recommendation to exclusively breastfeed an infant up until the 6th month (29). Maasai women typically gain around 11% of their weight while pregnant while the US and Europe gain around

4 TBAs: Traditional Birth Attendants, who aid and advise women during pregnancy

15-25% during pregnancy. One concern of diet restriction is giving birth to an infant with LBW (low birth weight), predisposing that infant to many medical problems including heart disease, lung disease, hypertension, and diabetes (30). However, Maasai infants born with LBW are around 13%, which is not remarkably high compared to the US and Western Europe (27). Although these traditions contradict practices in the US, they have been passed down from previous generations through experience.

## Child Nutrition

The growth of 2,000 children was observed in 1989, which discovered little wasting in the children, but some stunting. Stunting was seen less in boys indicating possible cultural favoritism towards boys. Appropriate growth was observed in the first year indicating proper breastfeeding techniques; however, stunting was observed after the second year indicating poor nutrition while weaning allowing an increased susceptibility to infection (24).

## Nutrition and AIDS

Significant findings point to a link between nutrition and the delay of the progression of HIV to AIDS. Poor growth is common in HIV-infected children and has a significant adverse effect on survival, independent of the degree of immune deficiency (31). Research has even suggested that the nutritional status of individuals may reduce the chance of HIV infection, delay the genesis of the disease and death, and decrease the risk of HIV transmission between mothers and offspring before and after birth (32). As stated by Loevinsohn and Gilespie, "failure to maintain nutritional status weakens immunity and increases susceptibility to opportunistic infections, which in turn undermine nutritional status and hasten the onset of full-blown AIDS" (33).

As pastoralists, Vitamin A deficiency was unheard of due to their high consumption of milk (their main form of Vitamin A). However, signs are pointing to an increased prevalence of this deficiency within the Maasai. It can occur during dry seasons and severe drought and is seen in non-pastoralists. Vitamin A deficiency relates to HIV placing those deficient with an increased susceptibility to genital ulcers (26). In view of these findings it is even clearer that a holistic approach is central to prevention, retention, and

reversal of the AIDS epidemic manifested through the link between conventional medicine and the science of nutrition.

## CONCLUSION & SUGGESTIONS

This paper uncovers the very colorful culture and nature of the Maasai people. While researching their lifestyle and practices, many differences appear when compared to Western behaviors. These cultural differences must be considered when thinking of education or outreach to the Maasai people.

**Pressing topics of potential education to Maasai include:**

- Benefits of planting trees for shade, windbreaks, and prevention of drought or flood
- Benefits of planting native plants to prevent soil erosion
- Sanitation concerns with shared water between households and animals
- Proper pesticide use including wearing proper protection
- Reduce the practice of sexual promiscuity resulting in a greater prevalence of contracting HIV
- Promote testing of HIV among women
- Educate Traditional Birth Attendants on the importance of appropriate weight gain during pregnancy and other sanitary birthing practices
- Benefits of exclusive breastfeeding
- Promote the consumption of green and orange vegetables to increase Vitamin A intake

Certain efforts performed by NGOs and other concerned organizations are noted in this paper. However, a further review of case studies focusing on the specified issues would be beneficial in order to understand the success and hardship of aid efforts. Some highlighted projects that would be beneficial include the success and strategy of educating the Maasai about benefits of stricter hygiene and sexual practices, exclusive breastfeeding, proper nutrition, and sustainable environmental practices.

Beyond issues present within the Maasai people, many lessons can be learned from them and their lifestyle. They are rich with traditions and care for their community. When addressing ways to positively affect a culture, it is important to remember that many lessons can be learned from them as well. Hopefully, the information gathered will provide a foundation for further

involvement of the diverse Cal Poly campus to bring positive changes in the health and survival of such a beautiful people as the Maasai.

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