



ISSN NO. 2320-5407

Journal homepage: <http://www.journalijar.com>

INTERNATIONAL JOURNAL
OF ADVANCED RESEARCH

RESEARCH ARTICLE

AN INVESTIGATION INTO TYPES AND EFFECTS OF HUMAN DISEASES ASSOCIATED WITH TOURISM ON LOCAL COMMUNITIES IN AND AROUND THE MAASAI MARA NATIONAL RESERVE, KENYA

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Manuscript Info

Manuscript History:

Received: 12 December 2013

Final Accepted: 22 January 2014

Published Online: February 2014

Key words:

Types, Effects, Human Diseases, Tourism, Local Communities, Maasai Mara National Reserve, Kenya

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Abstract

Despite the promise of prosperity that is the allure of tourism expansion, there is growing evidence of a list risk of negative impacts on the health and wellbeing of local populations. The study sought to determine the various types of human diseases prevalent in and around Maasai Mara National Reserve (MMNR) and how their occurrence is influenced by tourist activities in MMNR. The study population constituted local communities in the area. In this regard, purposive and simple random sampling procedures were employed. The study employed a cross-sectional survey design utilizing observation, key informant interviews, analysis of secondary data, and semi-structured interviews as main methods of data collection. An interview schedule was used as the main instrument of data collection during the study. Both qualitative and quantitative techniques of data analysis were employed. The salient findings of the study were that tourist activities have brought about changes in the socio-economic and physical environment, which have also predisposed the local residents to various health hazards. It was also found that Malaria, HIV/AIDS, Gonorrhoea, Typhoid, Amoeba, Tuberculosis, and Cholera, the main human diseases generally found in the area were related to tourist activities. The study therefore concluded that tourism had an effect on the local communities in and around the MMNR. Based on the findings, the study recommended that the government through the Kenya Tourist Board (KTB) and other stakeholders should ensure that strategies were in place to reduce disease occurrence in the area

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INTRODUCTION

According to a study on The national tourism master plan in the Republic of Kenya (GoK, 2000), the types of tourism experiences that bring tourists to Kenya include beach resort, golf tourism, wildlife and ecotourism, mountain and highland resort, cultural tourism, rail safari and cruise, private ranch tourism, village tourism, and special interest tourism. The study further indicates that wildlife and ecotourism, cultural tourism, village tourism, and special interest tourism attracts tourism in the Maasai Mara National Reserve (MMNR). Although not officially stated, a good percentage of foreigners who visit Kenya often indulge in sex tourism or at least as part of their activities during their trip (Chissam, 1996; Munene, 2013; Omondi, 2003; Sindiga, 1999).

Munt (2003) explains that tourism-related consumption has three stages of impact: first, prior to departure, tourists purchase travel-related clothing and equipment, which may be produced under conditions that undermine the social and ecological sustainability of the producing communities. Second, when tourists travel long distances to tourist destinations, they create considerable atmospheric pollution and other impacts on the global environment. Third, upon arrival at the tourist destination, tourists often continue their accustomed habits of consumption, even though

these destinations may not have the infrastructure requirements to manage those consumption patterns. The researcher focused on the second and third stages of impact.

Following arrival at tourist destination, the tourism industry typically strives to host tourists according to the standards and amenities of their country of origin. These hospitality standards mimic and encourage the high consumption lifestyles of developed countries. For instance, luxury hotel rooms, with high levels of energy and water consumption, are given highest ranking or “stars” in international hotel ranking. These “luxury” consumption standards, using current technologies, are themselves globally unsustainable worldwide (Mason & Cheyne, 2003).

The most immediate observable impacts of introducing these high consumption practices into lower consumption communities are:

1. Degradation of local water and soil quality with direct impact on local health and economies as a result of lack of adequate water, drainage, waste water, and waste management infrastructure to manage high volumes of water produced as a result of higher levels of consumption.
2. Reduced access by local residents to land, housing and marine resources through, among other things, reallocation of those community resources to foreign tourist residents and inflation of local prices.
3. Destruction of traditional sources of income and livelihood (Bachman, 1980).

The above literature is a major pointer to the unfolding events in and around MMNR. The roads and other communication infrastructure are in a state of disrepair, with observable evidence of environmental degradation through land and air pollution (Daily Nation, 2007, October 23, p. 13). Freeman (2002) concurs with this when he reports that the impact of road construction into inaccessible or poorly serviced areas (like MMNR) has health impacts. The impacts result from contact by road construction workers with the residents of areas adjacent to the road, who are usually poor or unsophisticated folk who may not be aware of health risks. They therefore end up being exposed to diseases carried by the workers including STIs. Post-construction transmission risks are also related to increased traffic due to better roads as observed by Freeman.

In the MMNR, it has been observed that some members of the local communities especially the youths engage in activities like commercial sex, crime-theft, lack of interest in education, child labour, and migration, among others. The issue this paper sought to explore was whether these were attributed to the tourist activities in the study area or not.

Concurring with these sentiments is Gun (2008) who comments that the negative effects from tourism are also likely to occur when the level of visitor use of resources is greater than the environment's ability to cope with this use within the acceptable limits of change. Uncontrolled conventional tourism poses potential threats to many natural areas around the world. It can put enormous pressure on an area and lead to impacts such as soil erosion, increased pollution, discharges into the sea, natural habitat loss, increased pressure on endangered species and heightened vulnerability to forest fires. It often puts a strain on water resources, and it can force local populations to compete for the use of critical resources.

Sinclair (2000) holds the same sentiments and says that tourism development can put pressure on natural resources when it increases consumption in areas where resources are already scarce. Water, and especially fresh water, is one of the most critical natural resources. The tourism industry generally overuses water resources for hotels, swimming pools, golf courses and personal use of water by tourists. This can result in water shortages and degradation of water supplies, as well as generating a greater volume of waste water. In dryer regions like the Mediterranean, the issue of water scarcity is of particular concern. Because of the hot climate and the tendency of tourists to consume more water when on holiday than they do at home, the amount used can run up to 440 litres a day. This is almost double what the inhabitant of an average Spanish city use according to Sinclair (ibid.)

Golf course maintenance can also deplete fresh water resources (Manyala, 2006); in recent years golf tourism has increased in popularity and the number of golf courses has grown rapidly. Golf courses require an enormous amount of water every day and, as with other causes of excessive extraction of water, this can result in water scarcity. If the water comes from wells, over pumping can cause saline intrusion into groundwater. Golf resorts are more and more often situated in or near protected areas or areas where resources are limited, exacerbating their impacts.

Tourism can also create great pressure on local resources like energy, food, and other raw materials that may already be in short supply. Greater extraction and transport of these resources exacerbates the physical impacts associated with their exploitation. Because of the seasonal character of the industry, many destinations have ten times more inhabitants in the high season as in the low season. A high demand is placed upon these resources to meet the high expectations tourists often have especially; proper heating and hot water. This observation is supported by the study done in Kenya on the effects of tourism by Jones (2008).

Important land resources include minerals, fossil fuels, fertile soil, forests, wetlands and wildlife. Increased construction of tourism and recreational facilities has increased the pressure on these resources and on scenic landscapes (Sindiga, 1996). Direct impact on natural resources, both renewable and non-renewable, in the provision of tourist facilities can be caused by the use of land for accommodation and other infrastructure provision, and the use of building materials. Forests often suffer negative impacts of tourism in the form of deforestation caused by fuel wood collection and land clearing. For example, one trekking tourist in Nepal – an area already suffering the effects of deforestation – can use four to five kilograms of wood a day (Giannico, 2004). Tourism can cause the same forms of pollution as any other industry: air emissions, noise, solid waste and littering, releases of sewage, oil and chemicals, even architectural/visual pollution.

Transport by air, road and rail is continuously increasing in response to the rising number of tourists and their greater mobility. For instance, Traube (2006) observed that International Civil Aviation Organization (ICAO) reported that the number of international air passengers worldwide rose from 88 million in 1972 to 344 million in 1994. One consequence of this increase in air transport is that tourism now accounts for more than 60% of air travel and is therefore responsible for an important share of air emissions. One study estimated that a single transatlantic return flight emits almost half the CO₂ emissions produced by all other sources (lighting, heating, car use, and many more) consumed by an average person yearly (Traube, 2006).

Transport emissions and emissions from energy production and use are linked to acid rain, global warming and photochemical pollution. Air pollution from tourist transportation has impacts on the global level, especially from CO₂ emissions related to transportation energy use. It can contribute to severe local air pollution. Some of these impacts are quite specific to tourist activities. For example, especially in very hot or cold countries, tour buses often leave their motors running for hours while the tourists go out for an excursion because they want to return to a comfortably air-conditioned bus (Smith, 2001).

Price (2000) noted that noise pollution from airplanes, cars and buses, as well as recreational vehicles such as snowmobiles and jet skis, were an ever-growing problem of modern life. In addition to causing annoyance, stress, and even hearing loss for humans, it causes distress to wildlife, especially in sensitive areas. For instance, noise generated by snowmobiles can cause animals to alter their natural activity patterns.

In areas with high concentrations of tourist activities and appealing natural attractions, Price further noted that waste disposal was a serious problem and improper disposal could be a major despoiler of the natural environment – rivers, scenic areas, and roadsides. For example, cruise ships in the Caribbean have been estimated to produce more than 70,000 tons of waste each year. However, some cruise lines were actively working to reduce waste-related impacts. Solid waste and littering can degrade the physical appearance of the water and shoreline and cause the death of marine animals.

In mountain areas, trekking tourists generate a great deal of waste. Tourists on expedition leave behind their garbage, oxygen cylinders and even camping equipment. Such practices degrade the environment with all the detritus typical of the developed world, in remote areas that have few garbage collection or disposal facilities. Some trails in the Peruvian Andes and in Nepal frequently visited by tourists have been nicknamed "Coca-Cola trail" and "Toilet paper trail" (Giannico, 2004, p. 44).

Construction of hotels, recreation and other facilities often leads to increased sewage pollution. Wastewater has polluted seas and lakes surrounding tourist attractions, damaging the flora and fauna. Sewage runoff causes serious damage to coral reefs because it stimulates the growth of algae, which cover the filter-feeding corals, hindering their ability to survive. Changes in salinity and siltation can have wide-ranging impacts on coastal environments. And sewage pollution can threaten the health of humans and animals.

According to Gun (2008), often, tourism fails to integrate its structures with the natural features and indigenous architecture of the destination. Large, dominating resorts of disparate design can look out of place in any natural environment and may clash with the indigenous structural design. A lack of land-use planning and building regulations in many destinations has facilitated sprawling developments along coastlines, valleys and scenic routes. The sprawl includes tourism facilities themselves and supporting infrastructure such as roads, employee housing, parking, service areas, and waste disposal.

Gun (2008) and Western (1992) observe that attractive landscape sites, such as sandy beaches, lakes, riversides, and mountain tops and slopes, are often transitional zones, characterized by species-rich ecosystems. Typical physical impacts include the degradation of such ecosystems. An ecosystem is a geographic area including all the living organisms (people, plants, animals, and microorganisms), their physical surroundings (such as soil, water, and air), and the natural cycles that sustain them. The ecosystems most threatened with degradation are ecologically fragile areas such as alpine regions, rain forests, wetlands, mangroves, coral reefs and sea grass beds. The threats to and pressures on these ecosystems are often severe because such places are very attractive to both tourists and developers.

Physical impacts are caused not only by tourism-related land clearing and construction, but by continuing tourist activities and long-term changes in local economies and ecologies. The development of tourism facilities such as accommodation, water supplies, restaurants and recreation facilities can involve sand mining, beach and sand dune erosion, soil erosion and extensive paving. In addition, road and airport construction can lead to land degradation and loss of wildlife habitats and deterioration of scenery. In Yosemite National Park (US) for instance, the number of roads and facilities have been increased to keep pace with the growing visitor numbers and to supply amenities, infrastructure and parking lots for all these tourists (WHO, 2006). These actions have caused habitat loss in the park and are accompanied by various forms of pollution including air pollution from automobile emissions; the Sierra Club has reported "smog so thick that Yosemite Valley could not be seen from airplanes." This occasional smog is harmful to all species and vegetation inside the Park (Price, 2000).

Deforestation and intensified or unsustainable use of land Construction of ski resort accommodation and facilities frequently requires clearing forested land. Coastal wetlands are often drained and filled due to lack of more suitable sites for construction of tourism facilities and infrastructure. These activities can cause severe disturbance and erosion of the local ecosystem, even destruction in the long term. Marina Development of marinas and breakwaters can cause changes in currents and coastlines. Furthermore, extraction of building materials such as sand affects coral reefs, mangroves, and hinterland forests, leading to erosion and destruction of habitats. In the Philippines and the Maldives, dynamiting and mining of coral for resort building materials has damaged fragile coral reefs and depleted the fisheries that sustain local people and attract tourists (Smith, 2001).

Overbuilding and extensive paving of shorelines can result in destruction of habitats and disruption of land-sea connections (such as sea-turtle nesting spots). Price (2000) notes that coral reefs are especially fragile marine ecosystems and are suffering worldwide from reef-based tourism developments. Evidence suggests a variety of impacts to coral result from shoreline development, increased sediments in the water, trampling by tourists and divers, ship groundings, pollution from sewage, over fishing, and fishing with poisons and explosives that destroy coral habitat.

Alteration of ecosystems by tourist activities habitat can be degraded by tourism leisure activities. For example, wildlife viewing can bring about stress for the animals and alter their natural behaviour when tourists come too close. Safaris and wildlife watching activities have a degrading effect on habitat as they often are accompanied by the noise and commotion created by tourists as they chase wild animals in their trucks and aircraft. This puts high pressure on animal habits and behaviours and tends to bring about behavioural changes. In some cases, as in Kenya, it has led to animals becoming so disturbed that at times they neglect their young or fail to mate (Jafari, 1992).

Effects of Tourism on the Health of Tourist

There are plenty of publications available in developed countries describing health hazards to tourists planning to travel to countries and places with developing economies. Although normally very general in their contents, and many times based on perceptions or projections rather than concrete facts, these publications respond to most of the concerns potential travellers have. A recent version of the book published in Canada under the title "Don't Drink the Water" (Canadian Public Health Association, 1994) describes a long list of potential risks and suggests ways and

means to avoid exposure to these risks. Tourists can feel the health impacts very early in their journey, at the onset of jet lag or sea-sickness. Although they pose no major health risks, these two problems can cause considerable distress, mainly in elderly people and those with pre-existing health conditions.

Most attention is normally placed on the occurrence of diarrhoeas caused by parasites, bacteria or virus. Most of the travellers are not exposed to these micro-organisms in their environment of origin, making them prime victims in some of the tourist places. Mainly associated with the consumption of contaminated food or water, such diarrhoeas rarely require intensive or extensive medical care. *Escherichia coli*, *shigella* and *salmonella* are among the most frequent agents of diarrhoeas in tourists. These micro-organisms are also present in swimming pools and coastal waters where they are sometimes related to gastrointestinal, respiratory and skin infections (Zampieri, 1998).

The consumption of contaminated seafood has been shown to be associated with the occurrence of Hepatitis A. Shellfish and, very specifically the bivalves, concentrate the microorganisms, exposing consumers to high doses of infectious agents. In some instances, the consumption of seafood, specifically carnivorous fish, has been linked to Ciguatera, which is an intoxication of tourists due to the presence of high concentrations of Cigua-toxins produced by algae (Salvato, 2000).

Outbreaks of Legionnaires disease have gained significant visibility in recent years. A respiratory disease caused by bacteria called *Legionella pneumophila* is associated with the water and the air conditioning systems in hotels and other closed environments. There are many more potential biological health risks to which unprotected non-immune tourists may be exposed. Some of the more frequently identified agents are *entamoeba*, *vibrio cholerae*, *giardia*, helminths and the virus, which cause gastroenteropathies. All of these are associated with the consumption of unsanitary food and water (Giannico, 2004).

Another group of health risks to which travellers are often exposed according to Frechtling (2002) are those transmitted by vectors like mosquitoes, ticks, lice, fleas and mites. Malaria, dengue, yellow fever and lyme disease are among the vector-transmitted diseases sometimes diagnosed among tourists.

Most of the above health problems can be adequately controlled through the application of well-known procedures for food handling and environmental sanitation. As a general statement, it could be said that a clean environment is a seal of quality for tourists, since it indicates the concern local authorities have with environmental health matters. It is legitimate to say that the environment is a major determining factor for tourists' health and that an adequately maintained environment not only attracts tourists, but it is also a very effective measure to protect their health. Investment in the environment is, therefore, cost-effective input to tourism (Western, 1992).

The appearance of the virus responsible for the human immuno-deficiency (HIV) and the epidemic of acquired immune deficiency syndrome (AIDS) brought about a very special chapter in the health aspects of travelling and tourism. Sexually transmitted diseases, on the rise in the world, require an urgent change in behaviour vis-a-vis occasional sexual contacts which are greatly responsible for the spread of HIV and the continuous growth in the number of AIDS cases (Harries, 2000).

From the above, it is evident that responsibility for tourists' health lies not only with local authorities but also with prospective tourists who must have a proactive position on this issue. Since tourism-related diseases are not equally distributed in all places, it is very important to seek as much information about the travel destination as possible. This attitude provides an adequate basis for observing immunization requirements and recommendations. While yellow fever is the only disease for which some countries require presentation of an International Certificate of Immunization (ICI), there are several additional vaccines available to tourists. Among the frequently recommended ones for travellers are the vaccines for Typhoid, Hepatitis B, poliomyelitis and rabies (Giannico, 2004).

In conclusion, it should be said that while recognizing the potential health risks involved in travelling and tourism, there are plenty of ways to reduce or eliminate such risks. This requires a concerted effort by local authorities and by potential travellers. Health education and health promotion, including environmental health, are fundamental to bringing about appropriate attitudes and behaviour. Environmental sanitation and preventive medical measures should always be employed by authorities and by travellers (Gun, 2008).

Effects of Tourism on the Health of Local Communities

The bibliographic search by the International Institute of Tourism Studies (Pan American Health Organization, 2004) in 2002 identified among the 147 citations collected, 36 dealing with the impact of tourism on the health of residents. Most of these documents and publications were written in the last 10 years, indicating a new trend in looking at the health impacts of tourism on host countries.

Sexually transmitted diseases and environmental degradation brought about by tourism seem to be among the main concerns within this context. Some of the texts also deal with aspects of drug addiction and the import of cultural values from other countries. Nevertheless, the positive impacts are also identified and discussed. Beneficial changes including earning foreign currencies, development of labour markets and the improvement of local infrastructures, such as the provision of health and environmental services, are also recognized.

There is little doubt that promiscuous behaviour has contributed significantly to the import and spread of HIV/AIDS and other sexually transmitted diseases. Initially, HIV/AIDS was strongly linked to homosexuality, in the last 10 years the transmission has been more and more through heterosexual contacts. Some tourists tend to have behaviours more relaxed than those they have at home. This is one of the major reasons for alcohol overuse, use of drugs, promiscuous sexual behaviour, and neglect of protective habits (Bachman, 1988).

Most of these problems can be dealt with through health promotion methodologies and strategies. This should be accepted by promoters of tourism and by host authorities. Tourist health promotion ought to become an integral component of tourism promotion. Although there are several successful cases in this regard, it is far from becoming a standard procedure. It is also urgent that health professionals become advocates and agents for the promotion of local communities' health.

In America, there is a very special situation related to the potential health impacts on host communities (Harries, 2000). A very strong region-wide campaign for the eradication of immuno-preventable diseases has produced important results. Since September 1994, the American region has been declared free of the transmission of the wild virus-causing poliomyelitis. In other regions of the world, this exceptional result is yet to be achieved. This poses a potential possibility of re-introducing the disease in this region. Health authorities are maintaining strong monitoring mechanisms in all countries of the region.

In the Kenyan context, the major development challenges in the Trans Mara, the district hosting MMNR have been identified as population growth, poverty, HIV/AIDS, gender inequality, disaster management and environmental conservation and management (GOK, 2008) which may be attributed to tourist activities. All these are socio-economic issues that may have an effect on the overall health (Sindiga, 1996) of the local communities. This study, therefore sought to examine the effects of tourism on the health of local communities.

Statement of the Problem

Globally, international tourist arrivals has been increasing steadily from 69 million people in 1960 (Omondi, 2003; World Tourism Organization, 2001) to 940 million in 2010 (World Tourism Organization, 2011) This global tourism expansion, boosted by the interplay of global investment, values, tastes and travels alongside the eagerness of tropical low-income countries to attract new revenues, has led to the dramatic restructuring of an increasing number of previously isolated tourists' destinations.

Despite the promise of prosperity that is the allure of tourism expansion, there is growing evidence of a risk of negative impacts on the health and wellbeing of local populations (Frechtling, 2002; Cater & Goodall, 1998; Buttler, 2000; Gossling, 2000). As the effects of tourism are felt at a local level, it is valuable to study how communities are responding to such changes.

Previous studies (Sindiga, 1996; Holden, 2001) on communities in the tourist attraction sites have noted the negative impact of tourism on the local economy, but in abstract and with no clear focus on health impacts (Pearce, Morrison & Rutledge, 2003). Therefore, the study sought to understand the effects of tourism on health of the local communities in and around Maasai Mara National Reserve. This was not just important for knowledge creation, but also for those interested in improving the lives of the people living in areas with tourist activities.

Limitations of the Study

This study was carried out in Trans Mara District, which hosts the MMNR. In terms of knowledge, the author was mainly concerned with the types of diseases prevalent in and around MMNR; the level of awareness of the diseases among local communities due to tourism in the study area; the coping strategies employed by local communities towards the prevailing disease conditions; the effects of tourist related diseases and policy recommendations on how to remedy the health situation in and around MMNR.

The main limitation of the study was the fact that being a pastoralist community, and due to the fact that the research was mainly done during the dry season, it took a long time to locate most of the households. In addition, it was more common to find women at home rather than men, and yet, their culture does not allow them to speak to strangers about themselves. The author therefore had to visit the households late in the evening when the men were likely to be around. Secondly, the majority of the local community members were illiterate and could not converse in the English language. This posed a language barrier. The author had to interview the respondents using a Maasai speaking research assistant who was not always available, given that he was engaged elsewhere. This prolonged the data collection period.

MATERIALS AND METHODS

This study used the mixed methods research design (Creswell, 2003). This design utilizes both quantitative and qualitative approaches. Cross-sectional survey was used to systematically gather information necessary for decision-making (Kothari, 2004). The target population for the study was the local communities in and around the MMNR. These communities were chosen because they are the hosts to all visiting groups to the area and they also are the ones that bear the immediate positive and negative effects of tourism in the study area. The study also targeted the lodges outside the protected area (namely Fig Tree, Mara River, Mara Simba, Sopa Lodge, Siena Spring, Buffalo, Voyager, Mara Safari Club) because they were easily accessible even to the local communities. Also targeted were the conventional practitioners, alternative medicine practitioners, the district administration and active conservancies.

The sample size selection was done using simple random sampling procedure (Kothari, 2004). This involved choosing of the local community members residing in and around MMNR by a random sampling logic, where each and every member of the study population was given an equal chance to participate in the study and thus, the sample size selected was representative. The population for the local communities staying in and around the MMNR was close to 100,000 (GOK, 2004). The sample size of the local communities was determined as recommended by Fisher (1993).

The area of study, the MMNR was selected because it is a renowned tourist destination in Kenya. Having determined the sample population, the author in line with the objectives of the study went ahead and selected the most desirable elements in the study area for inclusion in the sample. These included 3 selected officials from MMNR tourist facilities. Also included in the sample were those in charge of the Trans Mara Municipality, the district administration officer, an official from Mara Conservancy, which is one of the prominent development agencies in the area, a prominent herbalist and the medical officer of health (MOH). These were the key informants for the study, under the assumption that they had crucial in-depth information on issues of tourism and health impacts in the study area. Purposive sampling, therefore, allowed for selection of sample elements that gave in-depth understanding on most of the issues of concern to the study using an interview schedule.

Simple random sampling was used to select 46 households from each of the five divisions, that is Kilgoris (47), Kirindon (47), Keyian (47), Lolgorian (46) and Pirrar (46) as units of analysis giving a total of 233 households which when added to the 7 key informants give a total of 240 respondents according to the Fisher formula. Data triangulation was used in the study. This involved a combination of interviewing, observation and document analysis to provide cross-data validity checks. It also involved using several data sources. The research instruments used in the study were detailed questionnaires for the local communities, interview guides for the focus group discussions and observation schedules.

This study employed both qualitative and quantitative methods of data analysis. Qualitative analysis involved the derivation of explanations and making of interpretations of the findings based on descriptions. The concern was on

the narrative descriptions of the types of diseases prevalent in and around the MMNR whose occurrence would be attributed to tourist activities, the level of awareness of the diseases, the effects of the diseases and the coping mechanisms employed by the local communities. In qualitative analysis, the use of inferences was important. Quantitative analysis involved the derivation of statistical descriptions and interpretation of data by use of descriptive statistics that rely purely on numerical values. Quantitative data was presented in the form of frequency tables, percentages and means.

After data collection, responses from all questions were cross-checked to facilitate coding and processing for analysis using Statistical Programme for Social Sciences (SPSS Version 12.0) computer package. Statistical analyses of data were done using descriptive statistics (means, percentages and frequencies).

Physiographic Conditions of the Study Area

According to the Ministry of Planning and National Development for Trans Mara District of 2008 (GOK, 2008), the topography of Trans Mara District comprises two major categories; the highlands, which lie between 2,200m and 2,500 m above sea level, and the plateau, which rises from 900 to 2,200m above sea level.

The highlands consist of Osupuko, Kapune, Meguara and Shankoe hills in Keiyian Division. The highland areas are the main source of permanent and seasonal rivers in the District. The major rivers, which originate from these areas, are the Mara River and its tributaries, Mogor, Enkare, Entituak, Shartuka, Orerai and Siteti which drain into Lake Victoria. The plateau covers the eastern part of Kirindon Division, and the southern part of Lolgorian Division, parts of Maasai Mara, Murgan, Soit in Kirindon Division, Masurura in Keiyian Division, Kerinkan, Olopikidoge, and Angata Barikoi in Lolgorian Division. The District enjoys medium temperatures ranging from 14.8^oC to 20.3^oC. The highest temperatures occur in February and the lowest in June/July. This range of temperatures is as a result of the influence of high altitude in the District. Other modifying factors are cool winds blowing from Lake Victoria mainly from the month of August to November and also between February and April (GOK, 2008). Odinga (2001) describes the climate of Trans Mara District in detail and says that the rainfall amount and regime in this area are influenced by the passage of Inter-tropical Convergence Zone giving rise to a bi-modal rainfall pattern. The breezes from Lake Victoria add to the moisture. Hailstorms are occasionally reported in the West and the Highlands north of the District.

The long rains occur between February and June reaching its peak in April while the short rains are experienced between August and November. The areas which receive a lot of rainfall are Keiyian Division and the highlands West and North of Kilgoris Division. The terrain both on the highlands and on the plateau permits agriculture and livestock activities. Crop production is concentrated on the highlands while livestock development takes place on the lower grounds of the plateau.

The land in the District falls under trust land and individual land. Trust land covers about 82% of the entire district. The group ranches are found in Lolgorian, Kirindon, Pirrar and Keiyian divisions. The main activity in these ranches is livestock rearing. Most of indigenous forest reserves are also found in the trust lands (Odinga, 2001).

Geology and Soils

The Ministry of Planning and National Development for Trans Mara (GoK, 2008) describes most of the soils in and around the Mara ecosystem as of volcanic origin, the fertility ranging from high to very low. The soils of the southern plains and parts of the Maasai Mara National Reserve were developed on biotitic gneiss, with volcanic ash mixture. These soils are brown to dark grey clay, seasonally waterlogged but better drained than the clay of moderate to low-fertility soils. The central plains have deep friable silt-loam to clay-loam, derived from biotitic gneiss, with volcanic ash mixture. The area consists of five main soil types. These are red friable clay, brown to dark brown calcareous loams, derivatives of volcanic loamy sands and shallow stony soils. These soil types along with other edaphic and biotic factors determine the flora and fauna communities in the area, which in turn determine the touristic activities.

Vegetation and Wildlife in the Area

The area has four major vegetation types, determined by different types of soils and the climate of the area. These are bush and wooded grassland (derived from evergreen thickets), semi-evergreen thickets and associated types, grasslands and dry plains and the riverine forests. Among the impressive wildlife feature is the annual migration of

wildebeest, zebra and gazelle, hunted by predators that include the elephant, black rhino, buffalo and the big cats (cheetah and leopard), hippo, crocodiles and about five hundred bird species (Kenya Wildlife Services, 2007).

RESULTS AND DISCUSSION

The study sought to determine the various types of human diseases prevalent at Maasai Mara National Reserve and how their occurrence is influenced by tourist activities in MMNR. To address this objective, the findings in this paper have been sub-divided into two main sub-sections: one on the diseases prevalent in MMNR and the other on how tourism in MMNR has influenced disease incidences in the area.

Types of Human Diseases in MMNR

Respondents were asked in an interview schedule to score on a list of various human diseases, the disease they experienced as a community in their locality for the last 11 years (the average years they had lived in the area). The score was on a Likert scale guided by the following instructions: 1 for strongly disagree, 2 for disagree, 3 for undecided, 4 for agree, and 5 for strongly agree. The study found that the local community living in and around Maasai Mara National Reserve had experienced several types of human diseases in the area. Details on responses recorded on the various types of diseases were as summarized in Table 1 below.

Table 1: Types of Human Diseases experienced by the Local Community in and around MMNR

Human Diseases		(SDA)	(DA)	(U)	(A)	(SA)	Total
Pneumonia	N	140	15	5	30	50	240
	%	58.3	6.3	2.1	12.5	20.8	100
Malaria	N	10	25	25	140	40	240
	%	4.2	10.4	10.4	58.3	16.7	100
HIV/AIDS	N	15	15	20	50	140	240
	%	6.3	6.3	8.3	20.8	58.3	100
Amoeba	N	30	35	15	60	100	240
	%	12.5	14.6	6.3	25	41.7	100
Tuberculosis	N	15	25	30	120	50	240
	%	6.3	10.4	12.5	50	20.8	100
Gonorrhoea	N	15	25	40	120	40	240
	%	6.3	10.4	16.7	50	16.7	100
Cholera	N	50	20	20	140	10	240
	%	20.8	8.3	8.3	58.3	4.2	100
Typhoid	N	40	25	25	80	70	240
	%	16.7	10.4	10.4	33.3	29.2	100

SDA-Strongly disagree; DA-Disagree; U-undecided; A-Agree; SA-Strongly agree

Responses in A and SA indicated that the disease had been experienced in the area while those in DA and SDA indicated that the disease had not been experienced in the area. From the scores it is evident that HIV/AIDS had the highest (n=190) number of respondents saying that they had experienced it. This was followed by Malaria (n=180), then Tuberculosis (n=170). Others included Gonorrhoea (n=160), Cholera (n=150), and Typhoid (n=150) in that order. The findings also indicate that environmental pollution in the study area is high. However, whether all these diseases can be attributed to tourist activities at Maasai Mara National Reserve or not was the main interest of the study.

During a focus group discussions in Keyian, one of the members had this to say:

Sisi wamaasai hatukuwa na Ukimwi. Huu ugonjwa umeletwa na kuongezeka kwa sababu ya Malaya na watalii ambao wanakuja kuburudika hapa na baadaye hata vijana na wazee wetu wanaathirika wanapojiingiza kwa haya mambo. (We the Maasai people did not have AIDS. The disease was brought by and continue to increase due to increase in prostitutes and tourists that come to entertain themselves in the area and later on, they infect the local youths and men as they interact with them).

This implies that the tourist activities have had an influence on the rate of HIV/AIDS spread and prevalence in the area. When the author visited a dispensary at Lolgorian Centre, statistics showed an increasing trend in terms of

HIV/AIDS prevalence in the area, from 2.9% in 1995, to 5.3% in 2006 and 8.4% in 2008; figures that were described by the report as “Drastic” and were attributed to high seasons when tourist activities in the area increased. Similar trends were recorded among the new HIV/AIDS infections in the area.

With regard to Malaria, the two water points at Olimismis and Olorien were blamed for breeding Malaria causing mosquitoes. In an interview with one of the health officers, this is what she told the researcher:

Look at the trends in Malaria in Olimismis and Olorien ... It seems that they have to do with the two water points located in these places. These are areas, which in early 1990s had no serious problems with Malaria. However, with the construction and completion of the dams in 1996, Malaria prevalence in the two divisions is the highest. I cannot remember the last time the public health officers sprayed the area against the vectors, though I have been here for the last six years.

This means that despite the fact that Malaria is caused by the mosquito vector, the breeding and life cycle of the vector seem to have been enhanced by the creation of dams to support wildlife and tourist hotels in Maasai Mara National Reserve. Yet, no strategies had been put in place by the government and other agencies to deal with the problem.

Pollution is not a disease as such but was highly mentioned by the respondents as one of the health hazards that have been brought about by the MMNR. During data collection, the author experienced the dusty roads, which when it rained turned muddy; littered roads, and clearance of some of the areas that had initially been preserved by the locals for their livestock grazing to create routes/paths for tourists.

Reports from the main health centre at Lolgorian showed an increase in Typhoid and cholera, especially in wet seasons. These may be due to the poor drainage system observed in the area. Attempts to control soil erosion were not seen as in other parts of the rift valley like Baringo. When it rained, the water carried dirt, amongst it human and animal waste, that went directly into the rivers and springs used by the locals to provide drinking water. It was observed that most of the local residents do not dig pit latrines.

A more striking observation is the fact that findings in Table 1 indicate that behaviour-related diseases are the most common ones experienced by residents in and around MMNR. For instance, sexually transmitted diseases like HIV/AIDS and gonorrhoea had the highest positive response on their existence.

Bachman (1988) reports tourism in Kenya has reinforced the influence of the westernized elite, with young people imitating not only western clothing, but also behaviour and life –styles of the European and American visitors including their ethical and moral codes. Mann and Tarantola (1996) report that engagement in commercial sex and alcohol consumption (which are common in tourist environments) portend a catastrophic spread of HIV among local communities.

From the several group discussions, it was the perception of the local communities that lifestyle changes in the area were as a result of increased tourist activities. This change affected almost all their areas of life, from clothing, food, to housing. This was also the case with tuberculosis, which is an airborne and respiratory disease, but also closely associated with HIV/AIDS as an opportunistic infection.

From the findings, it can be deduced that changes in behaviour and lifestyle activities of the local community members was partly due to natural desire for change and majorly due to diffusion as a result of contact with “outsiders” who visited the area in support of the tourist activities. When asked to rank, in terms of frequency of occurrence, the various human diseases that the respondents had stated, the scores were as recorded in Table 2.

Table 2: Ranking of Human Diseases experienced in and around MMNR

Health Problems		SDA)	(DA)	(U)	(A)	(SA)	Total	Rank
HIV/AIDS	n	15	15	20	50	140	240	1
	%	6.3	6.3	8.3	20.8	58.3	100	
Malaria	n	10	25	25	140	40	240	2

	%	4.2	10.4	10.4	58.3	16.7	100	
Environmental pollution	N	20	10	30	100	80	240	3
Gonorrhoea	%	8.3	4.2	12.5	41.7	33.3	100	
	N	15	25	35	120	55	240	4
Tuberculosis	%	6.3	10.4	14.6	50	22.9	100	
	N	15	25	30	120	50	240	5
Amoeba	%	6.3	10.4	12.5	50	20.8	100	
	N	30	35	15	60	100	240	6
Cholera	%	12.5	14.6	6.3	25	41.7	100	
	n	50	20	20	140	10	240	7
Typhoid	%	20.8	8.3	8.3	58.3	4.2	100	
	n	40	25	25	80	70	240	8
Pneumonia	%	16.7	10.4	10.4	33.3	29.2	100	
	N	5	140	15	30	50	240	9
	%	2.1	58.3	6.3	12.5	20.8	100	

Key: SDA-Strongly disagree; DA-Disagree; U-undecided; A-Agree; SA-Strongly agree

According to the findings in Table 2, HIV/AIDS was highly ranked according to occurrence followed by Malaria and then environmental pollution as the most challenging health issues among local communities in and around the Maasai Mara National Reserve. The findings also tally with the national trends where malaria and HIV/AIDS are the leading health challenges in Kenya (National Aids Control Council, 2007, p. 2).

Effects of Tourism on Health of the Local Communities in MMNR

Examining the link between tourist activities and health conditions was a core aspect of the study. In this regard, respondents were given statements to rate how tourism and tourist-associated activities have influenced health conditions in the study area. The rating was along the degree of agreement or disagreement.

Findings in Table 3 showed that tourism activities in and around Maasai Mara National reserve had influenced the health of the local communities in the area. Tourism was found to have contributed to residents engaging in immoral acts such as prostitution which had then contributed to sexually transmitted diseases such as gonorrhoea, syphilis and AIDS (n=220). The health risk here was the fact that tourist activities predisposed tourists and members of the local community to higher chances of contracting HIV/AIDS.

In an interview, one of the key informants had this to say:

Eneo hili limevamiwa na wasichana wadogo ambao wanatafuta watalii. Hii imekuwa shida kubwa sana. Hata watoto wetu wamejiunga nao na hii tabia yao ya umalaya itatumaliza. Kila mara tunazika watu kwa ajili ya ukimwi.

Meaning that this area had been targeted by young girls (to mean commercial sex workers), who target tourists. This according to the informant was a major problem and even young people from the local community had joined them in commercial sex. That all the time, they area were burying people dying out of HIV/AIDS related illnesses.

Although the relationship between tourism and commercial sex is not linear, it is evident that sex is consistent with the motivation that underlies tourism (Ryan & Kinder, 1996; Stabler, 2004). Sindiga (1996) reports that there is something in tourist behaviour that encourages prostitution. Shaw and Williams (1997), Omondi (2003), Mann and Tarantola (1996) and Wickens (2002) seem to concur.

Studies done at the coast of Kenya on socio-cultural impacts of tourism have shown that a myriad of social problems, including high drop-out rates from schools by male children, drug peddling, petty crimes, family disputes and prostitution, are attributed to tourism (Migot-Adholla et al., 1982). A vibrant migration stream of Luo, Kamba, Kikuyu and Luhya women has been found to have moved to the Kenyan coast to try earn a living through commercial sex (Sindiga, 1999). The same scenario of migrants was replicated in and around MMNR with the conclusion that the same case applied.

Akama and Sterry (2002), in their study on Cultural tourism: strategies for the new millennium, have found that various forms of unwanted behaviour have been slowly taking root in and around MMNR. These include prostitution, alcoholism, smoking and drug taking. That the Maasai youth were being influenced by tourist behaviour and more of the tourists were engaging in commercial sex with the local communities. They also found that health problems such as STIs, TB, dysentery that were uncommon in the widely dispersed traditional Maasai environment had increased and were concentrated in the cultural manyattas in and around MMNR.

According to Dann (2000), even the language of tourism promotion is wanting. Although it describes the destination and its people in sexually permissive terms, it locates erotic feelings in the tourists. The accents used are on immediate gratification and instant pleasures, which are constant offers. An excerpt from a Swiss pamphlet promises,

holidays with the most beautiful women in the world.... everything you want -erotic girls or boys, massages, shows, dances,

Thailand has a reputation as a 'sex tourism' destination, Seychelles as 'Islands of love'. Tourists have also been assured of anonymity. More generally, sex, the fourth after sun, sea and sand, has been both an implicit and an explicit part of tourism for many years (Jafari, 2002). Kenyan beach holidays appear to have increasingly gained the image as 'sex safari' (Migot-Adhola, 1982) while the Maasai Mara is often described as the "best get away" (Sindiga, 1999).

Tourism was also found to have contributed to a bad state of roads, which had also acted as a health hazard to the residents (n =190). Tourism had also contributed to environmental degradation through land and air pollution, which had negatively affected the environment and health status of local residents (n =190). The common denominator in the various responses given in the same table showed that tourist activities in and around Maasai Mara National Reserve had brought about significant changes in the social and physical environment in the area, which had led to deterioration of the health conditions in the area.

Table 3: Tourism and Health Conditions in and around MMNR

EFFECTS		(SDA)	(DA)	(U)	(A)	(SA)	Total
Tourism have contributed to degradation of local water which leads to water borne disease and other infections in eyes ears, skin and gastrointestinal	n	21	22	10	137	50	240
	%	0.8	9.2	4.2	57.1	20.8	100
Tourism have contributed to lack of drainage and waste water management contributing to poor health	n	30	25	25	140	20	240
	%	12.5	10.4	10.4	58.3	8.3	100
Tourism have contributed to inadequate waste management infrastructure which eventually leads to poor health	n	20	35	35	125	25	240
	%	8.3	14.6	14.6	52.1	10.4	100
Tourism have contributed to inflation denying locals access to health care which then make the locals succumb to poor health	n	10	20	30	20	160	240
	%	4.2	8.3	12.5	8.3	66.7	100
Tourism have contributed to roads in state of despair which then have acted as an health hazard to the residents	n	20	10	20	30	160	240
	%	8.3	4.2	8.3	12.5	66.7	100
Tourism have contributed to environmental degradation through land and air pollution which has negatively affected health status of local residents	n	25	15	10	110	80	240
	%	10.4	6.3	4.2	45.8	33.3	100
Tourism has contributed to residents engaging in immoral acts such as prostitution which has then contributed to sexually transmitted diseases such as gonorrhoea, syphilis and AIDS	n	0	10	10	140	80	240
	%	0	4.2	4.2	58.3	33.3	100
Tourism has led to over use of water resources for hotels swimming pools golf courses and personal use of waters	n	25	25	5	120	20	240

	%	10.4	10.4	20.8	50	8.3	100
Tourism has created great pressure on local resources like energy food and other raw materials that are already in short supply in the locality hence contributing to poor health in the locality	n	5	10	50	75	100	240
	%	2.1	4.2	20.8	31.3	41.7	100
Construction of tourist facilities like roads has contributed to health hazards in the locality	n	30	30	50	105	25	240
	%	12.5	12.5	20.8	43.8	10.4	100
Tourism has contributed to air emissions noise solid waste and littering which has affected the health of the locals	n	10	35	35	145	15	240
	%	4.2	14.6	14.6	60.4	6.6	100
Tourism have contributed to lack of water leading to low agricultural activities in the area contributing to food scarcity in the locality	n	5	20	50	160	5	240
	%	2.1	8.3	20.8	66.7	2.1	100
Redirection and overuse of freshwater for hotels swimming pools and landscaping purposes in tourism facilities have led to the local population having less or no clean drinking water which in turn puts them at risk of contracting diseases	n	10	25	35	145	25	240
	%	4.2	10.4	14.6	60.4	10.4	100
Garbage generated by tourists has posed another public health hazard for host communities as apart from its unaesthetic appearance it has created breeding sites for disease-carrying arthropods and rodents	n	10	35	25	25	145	240
	%	4.2	14.6	10.4	10.4	60.4	100

SA- Strongly Agree; A- Agree;U-Undecided; D-Disagree; SD- Strongly Disagree .

CONCLUSION AND RECOMMENDATIONS

Evidently, most of the human diseases identified during the study have been precipitated by the increasing tourist activities in the study area. The government and the NGOs in the area should thus step up their campaigns against the spread of not only HIV/AIDS, but also sanitation aspects of the area. The threat now is not the HIV/AIDS, as the awareness is there, but other illnesses that may threaten the lives of the local communities in and around the MMNR.

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