

**UTILIZATION OF PRE-TRAVEL HEALTH SERVICES
AMONG KENYAN TRAVELERS DEPARTING JOMO
KENYATTA INTERNATIONAL AIRPORT, NAIROBI -
KENYA**

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Departing Jomo Kenyatta International Airport, Nairobi - Kenya**

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**A thesis submitted in partial fulfilment for the degree of Master of
Science in International Health in the Jomo Kenyatta University of
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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University

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DEDICATION

This work is dedicated to *Katholischer Akademischer Auslander- Dienst* (The Catholic Academic Exchange Service) for awarding me a scholarship that enabled me to undertake a Master of Science degree in International health. I also dedicate this thesis to my family and Fr. Lance Nadeau for their tireless support.

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ABBREVIATIONS AND ACCRONYMS

GP	General Practitioners
HIV	Human Immunodeficiency Virus
IEC	Information, education and communication
IHR	International Health Regulation
JKIA	Jomo Kenyatta International Airport
KAA	Kenya Airports Authority
KNBS	Kenya National Bureau of Statistics
KNH	Kenyatta National Hospital
LLC	Limited Liability Company
LLMI	Low and Low-Middle Income
OR	Odds Ratio
SARS	Severe Acute Respiratory Syndrome
STD	Sexually Transmitted Diseases
UMHI	Upper Middle and High Income
UoN	University of Nairobi
US	United States
WHO	World Health Organization
WTO	World Trade Organization

DEFINITION OF TERMS

Drugs for self-medication	This is medication given to an international traveller by a health care provider in their home country to be used as prophylaxis or to treat specific diseases for which the health care provider perceives the traveller as susceptible upon assessing both their individual and trip characteristics
Duration of stay	This is a term in travel medicine, used to describe how long an international traveler stays abroad
Pre travel health services	These are any services offered to international travelers in order to prevent illness resulting from exposure to hazards related to the trip.
Pre-travel consultation	The act of visiting a specialist in travel medicine with an aim of having risk assessment and information on expected risks as well as how to mitigate or eliminate such risks
Pre-travel Health Advice	This is health information received by a traveller prior to departure, geared towards preventing illness during travel and while abroad
Vaccination	This refers to a preparation given to a traveller for purposes of triggering the body to elicit an immune response so as to prevent the traveller from acquiring infections in the event where exposure is expected.

ABSTRACT

Geographical movement of people poses a threat to the transmission of infectious diseases. Kenya is among the vulnerable countries with regard to disease transmission since it's a major transport hub in East Africa, yet data about availability and uptake of pre-travel health services is limited. The main objective of this study was to assess utilization of pre-travel health services among departing international travelers at Jomo Kenyatta International airport. A cross-sectional analytical study was conducted to determine uptake of pre-travel health services. Systematic sampling method was used to get a sample of 384 participants among international departing travelers at the waiting lounge while 4 key informants were chosen purposively to determine availability of pre-travel health services. Self-administered questionnaires were used amongst travelers and key informant interviews were conducted amongst managers at the port health department in Jomo Kenyatta international airport. Data analysis was performed using Stata 15.0 (StataCorp, Limited Liability Company, 2017) for quantitative data and thematic content analysis was used for qualitative data to address the objective on availability. Results were presented in form of tables, graphs, charts and text. Descriptive analysis and logistic regression on the dependent variable was done to determine the predictors of seeking pre-travel health services where $p < 0.05$ was considered significant. This study received ethical approval from Kenyatta National Hospital/University of Nairobi ethical committee. Informed consent was sought from the respondents before agreeing to participate in the study on a voluntary basis. Of the respondents, 70.6% (271/384) knew at least one health service offered to international travelers. The most sought after pre-travel health service was vaccination 71% (266/375) while only 13.9% (52/375) travelers sought pre-travel health advice on how to stay healthy while abroad. Generally, travelers had a positive attitude towards pre-travel health services with 348 (90.6%) perceiving vaccination before travel as important. Adjusted for other variables knowledge of health services [OR=0.09, $p < 0.001$], history of travel [OR=3.4, $p = 0.017$] and perception on importance of travel vaccination [OR=0.31, $p = 0.001$] were found to be predictors of seeking pre-travel health services. Main responses from key informant interviews were used to report on availability of pre-travel health services where it was determined that Kenya focuses more on international arrivals and there are no travel clinics to offer a comprehensive pre-travel health service package in a one stop place. This study concludes that travelers know and go for vaccination but drugs for self-medication and pre-travel health advice were not popular hence remained underutilized. Awareness on importance of travel vaccination and existence of pre-travel health services increases likelihood of a traveler going for pre-travel health services. Additionally, pre-travel health services available to international travelers departing the country are not comprehensive and little attention is paid to them compared international arrivals thus exposing those departing to travel related hazards. This study recommends that the port health department explores more avenues of reaching out to international travelers including media, mobile applications and internet with information on the role of pre-travel health advice as well as drugs for self-medication in ensuring a healthy stay abroad. There is need to fund more research to ascertain factors associated with utilization of pre-travel health services and causes of variations across various groups and finally, the government

needs to develop structures and travel clinics that will ensure all pre-travel health services are offered to international travelers in a holistic approach under one roof.

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Data provided by World Tourism Organization indicates that tourism has grown by 500% globally in the last 25 years. In the year 2014, there were 1.161 billion arrivals registered globally, which was a tremendous increase from 540,511,673 arrivals in the year 1995. Although globalization promotes economic development and international travel, it exposes travelers to risks such as motor vehicle injury, drowning, malaria, complications of cardiovascular conditions especially during winter as well as travelers' diarrhoea. In addition, casual sex without regular protection continues to be common among travelers (WHO, 2010). Based on the countries being visited, 20% to 60% of international travelers reported health problems including traveler's diarrhoea and respiratory infections (Barrett & Brown, 2016). Globally, cumulative data have shown a risk of 3 to 6 cases per 1000 persons/month of staying abroad for Hepatitis A which is the most common form of viral hepatitis. The most severe consequence of travel associated risks is death which occurs in approximately 1 per 100000 international travelers (Sanford & Fung, 2016).

As outlined in the international health regulations (2005) areas of work for implementation developed in 2007, World Health Organization (WHO) commits to assisting state parties to implement the requirements of the regulations well as including giving travel as health advice (Gostin & Katz, 2016). The primary goal of pre-travel health services is to assess risks depending on the trip and individual characteristics of the traveller so as to give evidence based interventions to mitigate or eliminate those risks. This is after recognition that most of the travel related diseases and injuries can be prevented. Globally, institutions such as World Health Organization as well as Centres for Disease Control (CDC) continue to provide timely updates on disease outbreaks in different countries, major global events and their possible effects on human health with the aim of not only protecting travelers but also citizens of the host countries (Chen *et al.*, 2014). Despite this, only 5% of

travelers were shown to utilize travel health clinics in Australia (Heywood *et al.*, 2012). In another study conducted among travelers in Dubai, only 22.8% of travelers sought pre-travel health advice prior to departure while less than half (44%) of respondents perceived the risk associated to international travel (Omer *et al* 2015). Countries like Australia, United States and the United Kingdom have websites and travel health specialists who provide country specific real time health information to departing international travelers.

In Africa, several studies on knowledge attitude and practices of travelers have been published in Egypt latest being the study in 2018 where majority of the respondents (87.9%) did not seek pre-travel health services despite being educated (El-Ghitany *et al.*, 2018) The East Africa Community had the highest growth rate of eight per cent per year from 1995 to 2014 compared to other regions in Africa (WTO, 2014) yet the researcher did not find publications on utilization of pre-travel health services.

In Kenya there has been an increase in the number of air passengers handled by Kenya Airports Authority from 7,516,000 in 2010 to 8,882,000 passengers in 2014. More than two thirds of these passengers travelling by air pass through Jomo Kenyatta International airport (KNBS, 2015). General practitioners continue to provide the largest proportion of travel health advice as well as immunisation while there is growing need for the provision of these services in a more holistic approach to ensure international travelers stay healthy while abroad (Ropers *et al.*, 2008). In 2017, World Health Organization had an external evaluation of the core capacities of Kenya with regards to implementing International Health regulations of 2005. After the evaluation, it was recommended that the government needed to have a budget allocation for implementation of IHR (2005) and incorporate these regulations in the existing legislation. This would go a long way in ensuring pre-travel health consultation is prioritised to protect departing international traveler's health and secure the country against importation of diseases. This study sought to assess utilization of pre-travel health services while focusing on availability of the services, awareness among travelers as well as factors that influence utilization of these pre-travel health services.

1.2 Statement of the Problem

The global transportation network provides epidemic pathways (CDC, 2013). In 2008, there was a case of international travelers departing Mexico spreading a novel influenza A virus unintentionally where 16 out of 20 countries with the highest international arrivals from Mexico confirmed cases of the infection related to the travelers (Fadel et al., 2008). WHO after a convention in Geneva released a publication titled international travel and health. This publication states that every traveller especially those going to developing countries ought to visit a travel health clinic (usually up to date with any new developments in international health) or a medical practitioner 4-8 weeks every time before going for an international trip (WHO, 2012). Kenya is part of the international community hence the government has a role in preventing both exportation of diseases to destination countries as well as importation of infection as the international travelers return from abroad.

As at the time this study, there was no data available on whether international travelers departing the country utilize pre-travel health services despite studies elsewhere showing pre-travel health consultation as effective in reducing illness while abroad. For example, in a retrospective cohort study, antimalarial drugs were used by 86% of travelers going to a malaria endemic zone with no case of malaria reported on return from abroad while only 19.3% of travelers who never sought pre-travel health services used antimalarial drugs and as a result 3 cases were reported (Tafuri *et al.*, 2014). Similarly, another study found out that seeking pre-travel health services reduce the need for medical aid while abroad and consequently the burden of disease as a result of travelers acquiring infections while abroad. This study therefore sought to establish services available as well as knowledge, attitude and practices of the travelers towards pre-travel health services.

1.3 Justification

Going for of pre-travel health services prior to departure ensures that international travelers take the necessary precautions in prevention of illnesses there by decreasing the burden on primary care that would result in the event of travelers returning home from abroad with a disease. Each traveller needs to realize the value of health and the

risks that international travel may pose. In addition, it is every traveller's responsibility to weigh the personal risk versus benefits of a particular itinerary (Chen *et al.*, 2014). World Bank's latest estimate of Gross National income per capita saw Kenya transform from a low income country to a lower-middle income country. The improved economic performance has in return attracted more activities as far as international travel in Kenya is concerned (World Bank, 2015). Returning from abroad with an infectious disease results in great economic losses to the individual if they are quarantined. In addition, the ministry of health has to divert personnel and other resources to help control the disease in case of outbreaks (Chen & Wilson, 2013). This was witnessed in 2014 during Ebola outbreak in West Africa where more than 2000 people died of the disease and over 3 million people in mining and agricultural sectors lost their jobs (Adegun, 2014). Further, 48 deaths were documented as a result of yellow fever in South Sudan as a result of yellow fever during the 2003 outbreak. Although not so frequent such outbreaks adversely affect the economy causing unrest and loss of lives. The effects of imported infections can be irreversible as in the case of active polio that affected a three year old girl in Garissa in 2015. After genetic sequencing the virus was discovered to have originated from Nigeria and imported to Kenya through Somalia (CDC, 2013).

This study aimed at assessing the situation in Kenya hence conducted among departing international travelers to avoid recall bias since pre-travel health services should be sought prior to travel and to allow for random sampling after passengers check in which would be a challenge for international arrivals who rarely seat in a common place. Jomo Kenyatta international was selected for this study because it's international and the busiest airport in Kenya made hence a preferred site for this study due to possibility of getting respondents with different characteristics as well as different travel destinations hence ensuring both internal and external validity.

1.4 Objectives

The objectives of the study were as follows;

1.4.1 Broad objective

The broad objective of this study was to determine the level of utilization for pre-travel health services among Kenyan travelers departing Jomo Kenyatta International Airport.

1.4.2 Specific objectives

This study had three specific objectives;

1. To assess knowledge, attitude and practices on pre-travel health services among Kenyan travelers departing Jomo Kenyatta International Airport Nairobi, Kenya.
2. To determine factors associated with utilization of pre-travel health services among travelers departing Jomo Kenyatta International Airport Nairobi, Kenya.
3. To establish the pre-travel health services available for Kenyan international travelers departing Jomo Kenyatta International Airport Nairobi, Kenya.

1.5 Research questions

The research questions for the study were;

1. What is the level of knowledge, attitude and practices on pre-travel health services among Kenyan travelers departing Jomo Kenyatta International Airport Nairobi, Kenya?
2. What are the factors associated with utilization of pre-travel health services among travelers departing Jomo Kenyatta International Airport Nairobi, Kenya?
3. What are the pre-travel health services available for Kenyan international travelers departing Jomo Kenyatta International Airport Nairobi, Kenya?

1.6 Significance of the study

This study will inform travel agents, Kenya Airports Authority (KAA) and Port health officials of the existing gaps in the provision of pre-travel health services to international travelers. The ministry of health can also use it to inform policy development and guidelines on pre-travel health services delivery as well as development of IEC materials on pre-travel health advice. There are no previous studies on pre-travel health services in Kenya. This study offers insights into the current state of travel medicine in Kenya and creates awareness on the need for further research around this topic not only in Kenya but across the African continent. In addition, the results of the study will create awareness among international travelers on the need to take up pre-travel health services available. This will increase uptake of pre-travel health consultations hence reducing chances of travelers acquiring infections.

1.7 Limitations of the study

This research had some limitations though. The researcher was not allowed to access Very Important Persons (VIP) Lounges hence it was not possible to collect data from travelers using those lounges. Additionally, since this was a cross-sectional study, the results could not be used to analyse practices of Kenyan international travelers departing JKIA over a period of time.

CHAPTER TWO

LITERATURE REVIEW

2.1 Background

International travelers are exposed to many risks that can be eliminated or mitigated once pre-travel health services are sought at the right time (WHO, 2012). The overall aim of International Health Regulations is to ensure WHO member states to which they are binding put in place safety measures for international travelers as well as ensure destinations and traveler's countries of origin, are protected from exportation and importation of infectious diseases respectively (WHO, 2008). Whereas international travel has not been a priority area for many countries especially the less developed, transportation of infectious diseases during travel poses a threat to globalization and can greatly comprise economic growth of countries that benefit from tourism (CDC, 2012). Countries like Australia have incorporated IHR standards with local laws including the *National Health Security Act 2007*. The country has additionally developed an elaborate website providing real time information to both international travelers as well as health care providers offering pre-travel health services to international travelers which is also the case with other countries like the United States and the United Kingdom (Heywood *et al.*, 2012).

For most African countries, travel health information on various destinations is provided by Centres for Disease control and World Health Organization websites. This partly serves the purpose but there are shortcomings in that health advice provided is not personalized and does not therefore take into account the specific individual and trip characteristics of the international traveler. Additionally, the traveler may get information but other services such as travel immunizations, drugs for self-medication and post travel assessment need to be provided by a travel health specialist or a qualified medical practitioner. Research publications on this topic are also rare except in Egypt despite the threat and risk of disease transmission posed by globalization that has made movement from one part of the globe to another within a short period of time possible (CDC, 2013).

According to Kenya National Bureau of Statistics (2015), Kenya earns close to 1 billion US dollars through tourism and being a WHO member state compels the country to implement the International Health Regulations (KNBS, 2015). In 2017, WHO had an external evaluation of the core capacities of Kenya with regards to implementing IHR and having a budget line for IHR (2005), ensuring existing laws are reviewed to incorporate IHR and fast tracking the Bioscience Bill that was expected to outline roles and mandates of various sectors in implementation of IHR were some of the recommendations given to the Kenyan government. WHO further recommended expansion of clinical and isolation facilities at points of entry in the country (WHO, 2017). International travelers are exposed to many hazards that can become fatal in the event that proper interventions are not put in place. Such hazards include;

2.1.1 Traveler's Diarrhoea

Diarrhoea is the most common illness among travelers. The incidence rate among international travelers to developing countries is 60%. Of those who develop diarrhoea, 20% end up being bedridden while 40% are forced to change their itinerary due to discomfort associated with the disease. Diarrhoea can result from a wide range of microbes including *Escherichia Coli* (responsible for 25% of the infections), Shigella and Salmonella among others. Viral causes may not be easy to diagnose while parasitic infections that cause diarrhoea are the least common (Shah *et al.*, 2009).

Travelers' diarrhoea can last up to 4 days if left untreated. The main mitigation measure among travelers is pre-travel advice on hygiene while abroad as well as self-treatment and fluid replacement should prevention fail and diarrhoea occurs (Barret & Brown, 2016). Drugs used routinely to treat diarrhoea include loperamide and flour quinolone antibiotics. These however are not recommended for pregnant travelers. During a study to determine co-occurrence self-treatment of diarrhoea among Americans travelling to developing countries, 46% of respondents reported to have developed travelers' diarrhoea; a quarter of those who developed diarrhoea had fever and vomiting as the commonest symptoms while 83% of these travelers

managed to treat themselves which is a good sign that complications from traveller's diarrhoea can be avoided if awareness on prevention measures such as avoiding uncooked food as well as self-treatment is offered prior to taking an international trip (Hill and Ryan, 2008).

2.1.2 Respiratory infections

Respiratory tract infections are the most common risks among travelers secondary to diarrhoea. A study to investigate health problems in a large cohort of Americans travelling to developing countries found out that 26% of respondents reported respiratory tract symptoms while abroad and 84% of these travelers took some form of medication (Hill & Ryan, 2008).

Elsewhere, data collected by the Geosentinel surveillance network were analysed and the most significant predictors for developing specific categories of respiratory tract infections while abroad were age, sex, reason of travel. Lower respiratory tract were common among male and aged travelers. Influenza was associated with travelers visiting friends and a trip duration of longer than 30 days. . International travel aids in spreading of disease outbreaks as in the case of the SARS outbreak in 2003. Evidence based international travel recommendations were the measures taken by World Health Organization to serve as a safety net when national surveillance fails (Gao *et al.*, 2003).

2.1.3 Insect borne Infections

Insect borne infections have mainly been reported among travelers who visited rural tropical regions. Insect borne infections are less common than travelers' diarrhoea but the outcome after an infection is more severe and more likely to be presented to hospital. Vectors include mosquitoes, flies, ticks, bed bugs, spiders among others. As many as 30,000 travelers from industrialized countries acquire malaria annually. The risk is highest in Sub Saharan Africa and Oceania. In the general population, malaria occurred in 207 million people while 627,000 died in 2012. 90% of all those deaths occur in Sub-Saharan Africa (Freedman *et al.*, 2016).

The proportion of all imported malaria among travelers visiting friends and relatives was 80% in 2015 (Pavli & Maltezou, 2010). Dengue is an arboviral disease transmitted by mosquitoes. It is estimated to cause 50-100 million infections each year in more than 100 tropical and Subtropical countries. The incidence rate of dengue among Peace Corps volunteers was 1.12 per 1000 volunteer months. Globally, there appears to be 3 cyclical patterns of dengue incidence among travelers with difference by region in 2013, there was a dengue outbreak in Luanda Angola. The outbreak was most likely caused by an endemic virus strain while the risk of importation from Angola was most likely through travelers from Portugal and South Africa due to the highest number of travelers between Angola and these countries (Shaywitz & Ausiello 2013).

Yellow fever is a mosquito borne flaviviral haemorrhagic fever endemic to parts of Africa and South America. One in seven patients develops severe, frequently fatal disease characterized by multi-organ involvement (Gaucher *et al.*, 2008). Travelers to areas where the risk is true are advised to get vaccinated though proper advice needs to be given based on the travelers' characteristics to prevent possible adverse reactions associated with the vaccine (WHO, 2013). Table 2.1 shows the vectors travelers can be exposed to depending on their destination and the diseases such vectors transmit.

Table 2.1: Diseases transmitted to travelers on exposure to arthropods

Class	Vectors	Diseases
Mites	Harvest bug	Rickettsioses (Scrub typhus),
	Tick	borreliosis, arbovirus, Q fever
Insects	Fly	African trypanosomiasis, Onchocerciasis
	Gnat	Leishmaniasis. Bartonellosis
	Mosquito	Malaria, lymphatic filariosis
		Arboviruses
	Lice	Rickettsioses, borrioses
	Flea	Plague, rickettsioses
	Bug	Chagas disease
	Horse fly	Loiasis

2.1.4 Sexually transmitted infections

Travelers have substantial sexual risk behaviour. Casual sex is usually not expected, and the most important predictor is traveling without a steady partner. The study recommended that every client of a travel clinic who will travel without a steady partner to read the STI information, to take condoms along, and to be vaccinated against hepatitis (Matteelli *et al.*, 2013). Despite concerted efforts to control sexually transmitted diseases (STDs) worldwide, they still remain a major public health problem. Out of the 25 organisms known to be transmitted sexually, travelers are at greater risk of acquiring HIV and other STDs in developing countries in view of the high prevalence rates in these countries, particularly after sexual exposure to local sex workers (Coovadia & Hadingham, 2013). Some of the STDs acquired during international travel are more likely to be resistant to standard antimicrobial regimens for the STDs. HIV, gonorrhoea, syphilis, non-specific urethritis, hepatitis B, hepatitis C, and other STDs are a significant risk for travelers who engage in unprotected sex, especially with overseas sex workers. It is recognized that barrier contraceptives provide considerable protection against STDs, but they are not regarded as 100% protective. Sexual abstinence and sexual monogamy with a 'known' partner carry a much lower risk than the safest of 'safer sex' practices. However, in the event of a sexual exposure to a new partner in the country being visited, prior hepatitis B immunization and the consistent and proper use of a latex condom are strongly advised, followed by proper medical investigations and physical examination on returning home, before sexual activity is resumed (Pearce, 2011).

The risks of acquiring HIV are highest in Africa, followed by South Asia. Special precautions are required by those going to work in healthcare settings in high HIV prevalence countries. Travelers may benefit from advice about safer sex, condom use, emergency contraception and vaccination against hepatitis B. In special circumstances a starter pack for HIV post-exposure prophylaxis should be considered. Following return travelers should consider attending specialist services for a screen for sexually transmitted infections and HIV if they are concerned about exposure whilst travelling. A number of reports suggest that travel clinics need to pay more attention to the sexual health of travelers (Coovadia & Hadingham, 2013).

2.1.5 Other risks

Altitude illness causes substantial morbidity and occasional deaths among travelers. Incidence and severity depend on the speed of ascent, the altitude achieved, the amount of exertion and degree of acclimation. Symptoms include headache, nausea, light-headedness and insomnia which occur in more than 25% of persons who rapidly ascend to 2500m or higher. On rare occasions it can result to high altitude pulmonary and cerebral oedema (Benner, 2007). Travelers may not fully understand their destination and if pre-travel health advice is not sought prior to travel they may be exposed to many other risks such as culture shock, accidents and injuries, unsafe food and water, animal bites, heat stroke and extortion, anxiety and depression, blood borne infections among others (table 2.2). Precaution measures however reduce the risk of such illness and events (LaRocque *et al.*, 2013).

Table 2.2: Classification of hazardous exposure to international travelers

Category	hazardous exposure
Communicable diseases	<ul style="list-style-type: none">• Meningococcal meningitis• Respiratory Tract infections (Upper and Lower)• Influenza• Tuberculosis• Bacterial Pneumonia• Blood borne Diseases• Diarrhoeal Diseases• Zoonosis
Non-communicable diseases	<ul style="list-style-type: none">• Trauma<ul style="list-style-type: none">i. Stampede Traumaii. Motor vehicle traumaiii. Slaughter related injury
Environmental hazards	<ul style="list-style-type: none">• Fire-related injury• Sunburn• Heat stroke, heat exhaustion• Dehydration

2.2 Pre-travel health services available to international travelers

Pre-travel health services refers to health services offered to international travelers not only for purposes of preventing spread of infectious diseases but also to aid travelers in avoiding environmental risks with an aim of ensuring their personal safety. A comprehensive pre-travel services package involves 5 elements namely; assessing the traveller's personal health status, assessing the risks involved in the anticipated trip, preventive advice, suitable vaccinations and health assessment post travel (WHO, 2013).

Pre-travel health services should ideally be offered by health workers who opt to specialize in travel medicine. Their roles as outlined by World Health Organization in 2012 include; advising traveller to visit a travel health clinic (preferably 4-8 weeks) prior to the date of departure. The travel can however seek pre-travel health services later including on the actual day of travel to avoid challenges at points of entry in case of mandatory vaccinations but full immunity may not be guaranteed. Additionally, they educate travelers on any unforeseen risks associated with travel and how to mitigate them besides encouraging travelers to consider taking health insurance. Health care providers also play a vital role of informing travelers on procedures for obtaining assistance while abroad. The WHO further spells out the responsibilities of the international traveller which include; making the decision to take an international trip, visiting a health clinic including when already vaccinated and obtaining travel health insurance. The international travelers also need to be cognisant of health risks involved in their trip and taking precautions which include carrying a medical kit and drugs for self-medication as advised at the travel clinic as well as reporting to a medical practitioner after their trip in the event they return with a disease (WHO, 2012).

This is especially for the travelers with very demanding itineraries or some special health conditions. For travelers who are healthy, pre-travel health services can be sought from general practitioners or other sources a part from vaccines that must be given in designated centres recognized by the World Health Organization. Advice on how to stay healthy while abroad can also be obtained from internet sources such as

the Centre for Disease Control website (CDC, 2013). Risk assessment is performed to balance the traveler's wellbeing considering their individual characteristics such as age or pre-existing medical condition and their trip characteristics for example, the season, planned activities or the duration of travel among others. Health advice should be given on the vaccinations relevant to the trip, how to keep away insects, malaria prophylaxis if travelling to an endemic area, travel medical insurance and available options to seek help in case one falls ill while abroad among others. Post travel, the traveller can be reassessed and treated or referred in the event they acquired an infection depending on need (Schlagenhauf *et al.*, 2010).

World Health Organization listed a number of special groups who required special attention during international trips. Based on age, international travel is contraindicated for new born babies less than 48 hours. All young children require assessment since they are more sensitive to altitude changes and have may need special care in terms of the vaccines given and antimalarial prevention measures. They also get easily dehydrated in case of diarrhoea or vomiting. Aged people are not advised against international travel but seeking pre-travel health services should be a priority to them. Pregnant women are allowed to travel except when their expected date of delivery is close (3rd trimester). Travel to high altitudes (>3000m), drugs for elf medication as well as to areas where malaria and viral hepatitis E should be avoided during pregnancy. A yellow fever exception certificate is issued when traveling to areas that require a yellow fever vaccination certificate since it's not safe in pregnancy. Also, persons with disability are allowed to travel but when accompanied by someone else and after having their health status checked. Additionally, people with chronic illness should also go for check-ups to ascertain that their trip characteristic do not result in harm or complications. This group should also have enough supply of medication used preferably in duplicate to cushion against loss (WHO, 2012). In Kenya no data is available on the pre-travel health services offered to departing international travelers hence the reason for this study.

2.2.1 Immunization and travel health

According to WHO (2013), international travel health guidelines vaccines have been sub-divided into three categories. Required vaccines are only given for few diseases. One is yellow fever vaccine for which specific recommendations by WHO are available depending on whether the traveller is coming from or traveling to a yellow fever area. The vaccine must be given 10 days prior to travel for purposes of validity during entry into a foreign country. It also has to be given from a designated vaccination centre as listed by World Health Organization. Polio and meningococcal vaccines are required for Saudi Arabia pilgrims taking part in Hajji due to the high risk. Consultation before travel provides the traveller an excellent opportunity to update routine immunizations (Mernish, 2010). Vaccinations should be received at least two weeks before departure to allow for an immune response. A study conducted by Zwar and Streeton revealed that approximately one third of the respondents went for health services only within two weeks of departure (Zwar & Streeton, 2007). Most travelers perceive travel vaccinations as important though not all get immunised prior to travel. A study conducted among Dubai travelers showed 96.2% perceived the importance of vaccination (Omer *et al.*, 2015).

Selective vaccines include cholera, hepatitis A, rabies and typhoid fever among others. These vaccines are administered based on risk and susceptibility of the travels on a given trip. Routine vaccines are given even to non-travelers but failure to receive vaccine exposes the travelers. There are mandatory vaccinations such as yellow fever for those going to countries listed by WHO, vaccination against meningococcal disease and polio is required for those attending the Saudi Arabia pilgrimage. Seeking pre-travel health services can be a great opportunity to get routine vaccinations (Rogers *et al.*, 2016).

2.2.2 Self-medication during travel

Self-medication during travel refers to the art of treating self-diagnosed illnesses or symptoms when one is abroad. When proper education is received earlier, self-medication can be used to avoid severe disease and complications especially in the event a traveller is not in a position to promptly seek health services while abroad

due to the nature of the trip (Freedman, 2016). Some of the commonly used drugs by international travelers include antihistamines, malaria prophylaxis, pain killers and oral rehydration salts, nasal decongestants, eye drops, insect bites treatment among others. Rifaximin can also be used by travelers to manage travelers' diarrhoea. This should however be used after proper health education in a travel clinic prior to departure (DuPont, 2008). A study among high risk US travelers revealed that 70% of the respondents had antimalarial drugs (LaRoque *et. al.*, 2012). Elsewhere, 35% of Spanish travelers reported to using malaria prevention drugs (Lopez & Bayas, 2007).

2.2.3 Pre-travel health advice

If a traveller visits a travel clinic, a health professional should inform them about the hazards/threats they are likely to encounter during their expected trip and how to mitigate them. The health practitioners working in such clinics ought to be well vast with up to date knowledge on current trends in global health issues. Commonly discussed topics include how to prevent insect bites, necessary immunizations, and prevention of food borne illnesses, drugs for self-medication as well as the risks posed by environmental factors and activities planned during the trip (Gheradin, 2007).

Despite pre-travel health advice being important in preparing a traveller for any health eventualities while abroad, studies have shown travelers do not often seek the service as in the case of a study conducted to determine utilization of pre-travel health services among Australian students where only 32% of study participants sought pre-travel health advice from a health professional (Heywood *et., al* 2012). In a different study, only 24% of Umrah pilgrims sought pre-travel health advice and less than half (46.3%) of the respondents did not perceive getting information on how to stay healthy while abroad as important (Aziz *et al.*, 2018).

Uptake of pre-travel health advice is related to traveler's characteristics as well as those of the trip as shown by a study conducted among travelers in Greece where travelers visiting friends and relatives were less likely to seek pre-travel health services (Pavli *et. al.*, 2009). International travel is often associated with casual sex with random partners especially for travelers going for vacations hence need for

preventive measures such as condoms and sex education prior to travel (McNulty *et al* 2010).

2.3 Sources of pre-travel services

A few studies have been conducted to find out where travelers seek pre-travel health advice. From a recent study among national and international travelers in Egypt, data analysis showed that 58.9% of international travelers sought pre-travel advice. This advice was obtained from various sources including travel agent (23.2%), private clinics (23.5%) health insurance (16.8%) while 12.6% got information from the internet (ElSherbiny & Wafik, 2011). Another study done among US International Travelers departing from Boston Logan Int. Airport in US found out that the internet as well as primary care health workers were the most common sources of pre-travel health services and advice (LaRocque *et al.*, 2013). In the study conducted in India the most common source of information on existing yellow fever guidelines were embassies cited 38% of the respondents (Tiwari & Gupta, 2017). There have been questions on if travelers have access to travel health advice from a qualified source. General practitioners are an important source of pre-travel health advice for traveller though there's not much data showing primary health care provider barriers to provision of pre-travel health advice (Hatz & Chen, 2013). Considerable variability in the advice provided by general practitioners has been found in studies elsewhere. It has also been speculated that public health is generally better equipped to offer complete updated advice as compared to private practitioners (Clift and Page, 2015).

2.4 Knowledge, attitude and practices of international travelers in relation to pre-travel health services

Risk of mortality and morbidity increases when one is travelling abroad. Even a traveller going for a business trip to North America, staying in a five star hotel is more likely to be unwell than if the traveller remained at one's own office or home. In addition, most of the international travelers are not prepared adequately before commencing their journey, especially those travelers visiting their friends (Youk, *et al*, 2007). For communicable diseases, almost all the authorities and travel health experts agree that food borne diseases account for over half of the travel related

health problems, followed by respiratory tract infections, fever and sexually transmitted diseases (Marchand, 2017).

It is very important that travelers recognize the need for seeking travel health services prior to their trip abroad. A study among Dubai travelers showed that only 22.8% of respondents had sought pre-travel health advice (Omer *et al.*, 2015) despite 95% knowing it's important in avoiding health problems while abroad. Ensuring that travelers seek travel health advice in a timely manner is also not easy. Ideally this should be done at least 6-8 weeks before travel (Keystone *et. al*, 2012). A study conducted at Muscat International Airport in Oman showed that although half of the travelers involved in the study thought that pre-travel health advice was good, travel medicine services were underutilized with only 22.5% of travelers seeking pre-travel health advice and 6,9% of the study group reported practice of any pre-travel preventive measures (Al-Abri *et al.*, 2016).

2.5 Independent predictors of seeking pre-travel health services

All travel is associated with health risks which varies based on the characteristics of the traveller as well as the journey. There are several characteristics of a traveller than can determine their health seeking behaviour. These include, age (young versus old), sex (female versus male), basic health condition, vaccination history, perceived risk of travel, health problems as well as strength or travelers will to achieve goals on the intended travel (Shady *et. al.*, 2015). Additionally, journey characteristics such as destination (places to be visited, high altitude or low altitude, political stability, cultural difference, burden of diseases), the season (rainy versus dry), duration of visit, accommodation (whether overcrowded or built to standards), purpose of travel, transportation means and political environment among others can influence whether a traveller seeks pre-travel health services or not (Selent *et al*, 2012).

The risk of various insect borne diseases depends on the geographical habitats of the vectors concerned usually higher in temporal and tropical regions. In the aspect of non-communicable diseases, most of the problems are caused by skin conditions for travelers visiting tropical regions and developing countries, followed by vehicle

related injuries and pressure-sickness (Sands *et al.*, 2016). The region of residence as well as the country of birth has also been shown to contribute to differences in health seeking practices including the uptake of pre-travel health advice, where Asians travelers were shown to be less likely to report seeking pre-travel health advice compared to Western travelers (Heywood *et al.*, 2012). A different study among travelers who were departing from Boston Logan international airport in US indicated that being born from a foreign country, travelling singly, and visits of less than two weeks as well as travel vacation being the reason for travel predicted higher odds of not pursuing health information among travelers to LLMI countries. Business travelers were more frequently reported having insufficient time to pursue health information prior to departure than did other classes of travelers (LaRocque *et al.*, 2013).

A study conducted at Bangkok airport in Thailand showed that the odds of seeking pre-travel health services increased as the age of respondents increased. Additionally, the study showed that respondents visiting two or more countries were 2.38 times more likely to seek pre-travel health services compared to those visiting one country (Heywood *et al.*, 2012). In a different study conducted among Spanish travelers showed Tourists were more likely to be vaccinated as compared to business travelers (Lopez and Bayas, 2007). Elsewhere, a study conducted in Qatar Doha showed having gone up to secondary school was associated with higher uptake of pre-travel health services (Al-Hajri *et al.*, 2011).

Older travelers, those who attained higher education levels, travelers who were married and those who were planning to visit more than one country were seen to have a higher likelihood of seeking pre-travel health services in the study conducted among Saudi Arabia travelers. Equally those who had higher attitude scores sought pre-travel health services more. As an individual's age increases they become more conscious of their health and develop chronic conditions that increase the frequency of hospital visits in addition to decreasing willingness to risks with regards to their health. Moreover a traveler visiting more than one country is likely to be exposed to more adverse conditions in comparison to a traveler visiting a single country. It is this fear of exposure to many hazards that prompts the traveler to seek pre-travel

health services (Aghamdi *et al.*, 2014). Those with chronic illnesses visit a health care provider before travel for drugs refill hence more likely to get other pre-travel health services especially advice on how to stay healthy while abroad. Other studies like in the case of Shady *et al.*, (2015) found that a traveler's destination significantly influenced pre-travel seeking behaviour of travelers. Destinations in Africa increased chances of travelers going for pre-travel consultation. Some communicable diseases such as Malaria are endemic in parts of Africa (Sub-Saharan Africa) but can be life threatening especially to international travelers. Equally, West Africa has reported cases of Ebola outbreaks on several occasions in the past hence travelers to these regions need to be well informed on any environmental or social factors that may adversely affect their health prior to the actual visit (WHO,2013).

Frequent international travelers are a high risk group unlike those traveling out of their home country for the first time. According to WHO traveling many times decreases risk perception and makes travelers confident that they know what to do. The risk with this is that there are emerging and re-emerging diseases for which the traveler may not be well informed about unless they seek timely health information from a qualified health practitioner. On the contrary, first time travelers are anxious about their trip and being in a foreign country hence find out as much information as they can prior to the trip (WHO, 2012).

2.6 Conceptual framework

The dependent variable in this study was utilization of pre-travel health services. There are several independent variables that determine whether a traveler seeks pre-travel health services prior to departure. Firstly, the services need to be available. Secondly, the traveler must have knowledge on their existence and be equally willing to seek the services. Knowledge and attitude of the travelers determine the risk perception thus influencing their utilization of pre-travel health services. Lastly, individual and trip characteristics of the traveller play major role in determining whether one seeks pre-travel health services or not. For example, a person who makes an unplanned business trip with a very short duration to prepare is less likely

to seek pre-travel health services in comparison to someone who plans to take a vacation abroad in a years' time.

Likewise, travelers will in most cases go for pre-travel health services because they know the services exist.

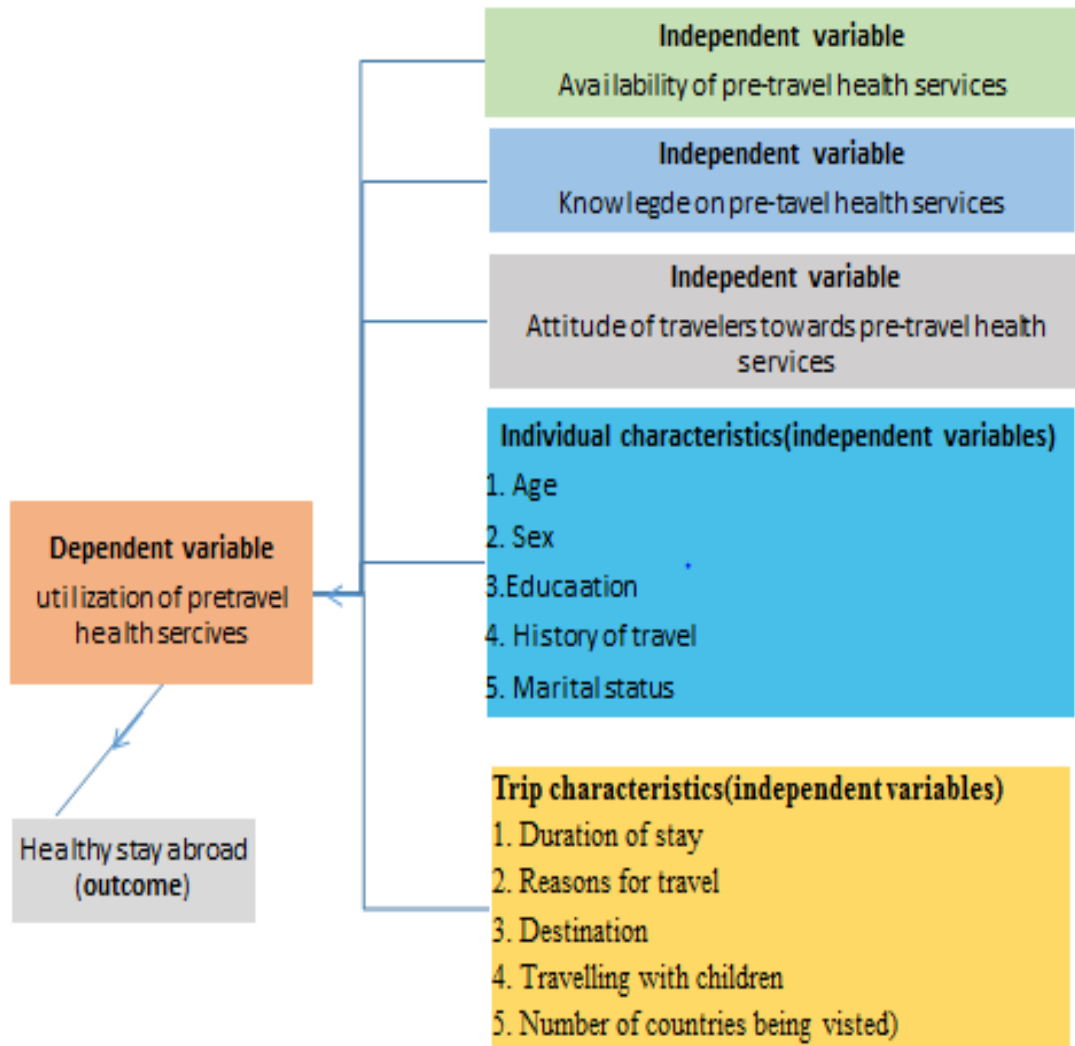


Figure 2.1: Conceptual framework

CHAPTER THREE

METHODOLOGY

3.1 Study site

The study was conducted at Jomo Kenyatta International Airport (JKIA) which is Kenya's largest aviation facility (over 55,222m²), and is the busiest in East Africa. Its importance as an aviation centre makes it the pace setter for other airports in the region. Currently, Jomo Kenyatta International Airport serves a daily average of 19,000 Passengers from Africa, Europe and Asia. It is located in Embakasi, 15 kilometres to the south-east of the Nairobi Business District. Data was collected in terminal 1A, 1C and Terminal 2 which are the international departure terminals each with a waiting lounge. The airport had 19 airlines for international flights, 8 for local flights while 6 airlines were offering cargo services. There are direct flight connections to over 50 countries in Europe, the Middle East, Far East and the African Continent. It being an international and the busiest airports in Kenya made it a preferred site for this study due to possibility of getting respondents with different characteristics as well as different travel destinations hence ensuring both internal and external validity. Since travelers are expected to be seated at the waiting lounge for 30 minutes to one hour prior to boarding this gave a great opportunity for the researcher to collect data.



Figure 3.1: Map showing the study location; *Source: Google earth*

3.2 Study design

This research was a cross sectional analytical study among international travelers departing Jomo Kenyatta International airport. This study design was best for this particular study as it allowed for analysis on how different variables such as travelers characteristics and reasons for travel influence pre-travel health consultation at that point in time. In addition, data was collected from travelers without putting in place any intervention to influence their current behaviours with regards to seeking pre-travel health services.

3.3 Study variables Dependent variables

The dependent variable in this study was utilization of pre-travel health services while, the independent variables included knowledge on health services offered to international travelers, sex, age group, education level, expected duration of stay, reason for the visit, travel destination, history of past travel, perceived risk and marital status.

3.4 Study population

The study targeted Kenyan travelers departing Jomo Kenyatta International airport who had attained the age of 18 years and above.

3.5 Inclusion Criteria

The study included Kenyan international travelers who were;

- i. 18 years of age or older.
- ii. willing to participate in the study on a voluntary basis and without any incentive

3.6 Exclusion Criteria

This study excluded the following category of travelers

- i. Travelers who could not read and write English or Kiswahili
- ii. Those predetermined to be extradited travelers

3.7 Sample Size Determination

In this study the researcher wants to know proportion of travelers with certain characteristics as far as seeking pre-travel advice is concerned hence the below formula by Daniel 1999 was used due to its applicability in predicting prevalence.

$$\text{sample size} = \frac{Z^2 * P(1 - P)}{d^2}$$

Where;

n = sample size,

Z = Z statistic for a level of confidence which is 1.96,

P = expected prevalence or proportion (since similar study had not been done, 0.5 was used for calculation purposes)

d = was used as absolute error or precision (in this study it was set at 5%, d=0.05).

$$\text{sample size} = \frac{1.96^2 * 0.5(1 - 0.5)}{0.05^2} = 384$$

The sample size for key informants was 4. These were chosen purposively to inform the researcher on pre-travel health services available for international travelers and included the heads of the port health department at JKIA and the nursing officer in charge of the clinic offering services to departing international travelers. The four were chosen based on their cadre and vast experience supervising the operations of the port health department especially international arrivals and departures.

3.8 Sampling techniques

Respondents were recruited from the departure terminals (Terminals 1A, 1C and 2) at the waiting lounges. To choose 384 participants among the travelers, systematic sampling method was applied. Prior to departure, travelers are expected to be seated at the lounges for 30 minutes to 1 hour before boarding a flight at the air side. It is at this point when travelers were waiting that sampling was done. As the travelers were seated at the departure waiting lounges, the researcher explained to them on the purpose of the study using information sheets and politely requested to know those who had a Kenyan passport to whom small printed cards labeled from number one to ten were distributed. Every traveler who got a paper labeled 3 was then chosen to take part in the study. A total of 30 questionnaires were filled on a daily basis to achieve 384. Since there were three waiting lounges, 10 questionnaires were filled from each lounge per day. Key informants to be interviewed were chosen purposively and comprised of those involved in supervision of the health services offered to international travelers, chosen due to their first-hand knowledge on the subject.

3.9 Data Collection tools

Quantitative data was collected using self-administered questionnaires (Appendix III) distributed by research assistants. The first section of the questionnaire captured the respondents individual and trip characteristics. The other sections contained the questions that were used to assess KAP and examine the utilization of pre-travel health advice among the travelers. Respondents were asked to indicate if they pursued health information from specific sources such as internet and if they were carrying prescription medication related to the trip prior to travel. Respondents were provided with participant's information sheets(Appendix I) to help them understand the objective behind conducting this research as well as make an informed decision on whether to consent or not. Since there are two official languages in Kenya, all the tools were translated to Swahili (Appendix II, IV and VI) to allow respondents chose the language they were more likely to understand for accuracy of results.

Qualitative data was collected using a key informant guide (Appendix VII). The 4 key informant interviews were conducted to address issues regarding availability of pre-travel health services as well as existing gaps during provision of these services. Key informant interviews with the managers who directly supervise provision of pre-travel health services in port health department were conducted to determine pre-travel health services available to international travelers.

3.10 Training of Research Assistants

During data collection 2 public health interns were engaged as research assistants primarily because they already had basic knowledge on the research topic as well as to arouse their interest in research through mentorship and exposure working alongside the researcher. The research assistants were trained on the rationale of the study and methodology including how to consent respondents, content and use of data collection tools, research protocol as well as maintaining privacy and confidentiality after which they signed a short-term contract on condition that they would ensure secrecy during the entire data collection process. The research assistants were then allowed to administer questionnaires in a stage managed set up to ensure proficiency during actual data collection.

3.11 Pre-test

A pre-test was conducted at JKIA a week prior to the actual study since it's the only airport in Kenya having international travellers with many diverse international destinations in Kenya to ensure reliability and validity of the study questionnaire. The one week gap between the pre-test and actual study was to minimize the chances that a traveller who took part in the pre-test was also selected for the actual study. The essence of the pre-test was to help the researcher ensure that data collection tools address the study objectives. Questionnaires were administered to a group of 38 Kenyan international travelers at Terminal 2. This group was selected on convenience, for the purpose of correcting the questionnaire and detecting potential unanticipated problems. The researcher explained to the participants that their responses would not be included in the main study but would help in making improvements to the study tool. The researcher then administered the questionnaire, asked participants to think out loud and observed as they responded which allowed her to gauge if it was easy to read and understand. Arising from this, all issues that were not matching were addressed.

3.12 Data Collection process

First each of the respondents got a detailed information sheet which was read and any concerns addressed. After this, the respondent would be given a consent form to sign before fully filling the questionnaire and handing it back to the researcher. After collecting data a short debriefing session was held between the researcher and the research assistants. Key informants were interviewed by the researcher after scheduling time based on the preferences and convenience of each key informant. Equally the researcher explained the main purpose of the study to the key informants and asked general questions to build rapport. The interview guide was then used to maintain consistency of responses with different key informants. The researcher was conscious of the key informant's nonverbal cues during the interviews. Notes and summaries were made by the researcher with the consent of the key informants. After the interview the researcher thanked the key informants and then did a detailed write up that was also used during analysis.

3.13 Data Management and analysis

The data collected using the questionnaires was coded and keyed into the computer using Stata 15.0 (StataCorp LLC, 2017) then secured. Filled questionnaires were stored under lock and key. Frequency tables were generated to clean the data and check for any errors. Data related to the knowledge, attitude and practices of travelers towards pre-travel health services was presented in the form of tables, bar graphs and charts then discussions. Chi square was used to check for significant association between the dependent and independent variables while bivariate logistic regression analysis was done to determine the strength of associations. Multivariate regression analysis was conducted to determine the associations that remained strong after controlling for confounders. Qualitative data from key informant interviews was analysed through thematic content analyses.

3.14 Ethical Considerations

The researcher sought permission to access restricted areas in the airport where data collection was done. Prior to actual data collection, the research proposal was submitted for ethical review at KNH/UON (Appendix VIII), and the suggestions by the review board were taken into account. After approval a copy of the approved proposal and a request letter were submitted to the ministry health requesting for permission to carry out the study at JKIA. The approval letter from the Ministry of health was then submitted to Kenya Airports Authority that processed temporary gate passes to access restricted areas for the researcher and 2 research assistants. During research, informed consent was sought from the study participants and those who were not willing to participate in the research process were not compelled to. This research was non-invasive and the data collection forms did not bear the name of the respondents; they were identified by a study identity code number for confidentiality. Respondents' data was secured and only used for the sole purpose of meeting the objectives of this study. This research was published (Appendix IX) and therefore data would be destroyed after the researcher graduated. Participants were also informed that there were no direct benefits or incentives to them for their participation in the research.

CHAPTER FOUR

RESULTS

4.1 Introduction

This study was conducted during the months of August and September in the year 2017. During the study, 384 international travellers completed the self-administered questionnaire issued to them prior to departure at terminals, 1A, 1C and terminal 2 waiting lounges. Additionally, 4 key informants were interviewed to address the objective on services available to Kenyan international travellers departing Jomo Kenyatta International airport. This chapter contains a summary the social demographic characteristics of respondents and key informants as well as presentation of findings that have been subdivided into sections that align with the specific objectives.

4.2 Social Demographic Characteristics

4.2.1 Quantitative results

A total of 384 questionnaires were administered, fully filled and analyzed. The mean age of the respondents was 37.2 with a mean standard deviation of 10.6. The minimum and maximum age recorded were 19 years and 74 years, respectively. Of the respondents 247 (64%) were male while 137 (36%) were female. More than half of the respondents 227 (59.1%) were married while those who were separated 7(1.8%) were the least in number. Regarding education, 139 (36.2%) of all respondents had a first degree certificate while only 2(0.5%) of all respondents had never attended school at all. Data analysis presented in table 4.1 below revealed that majority 287 (74.7%) of the respondents were travelling to other African countries. A total of 60 (15.6%) reported be first time travelers. The research sought to determine the number of countries being visited and 231 (60.2%) of respondents were visiting one country.

Table 4.1: Individual and trip characteristics of respondents at JKIA, 2017

Sex	Frequency	Percentage
Male	247	64.3
Female	137	35.7
Marital Status	Frequency	Percentage
Single	142	37
Married	227	59.1
Separated	7	1.8
Divorced	8	2.1
Education Status	Frequency	Percentage
Never attended school	2	0.5
Primary	7	1.8
Secondary	100	26.0
Certificate/Diploma	62	16.1
First Degree	139	36.2
Masters	64	16.7
PhD	10	2.6
Travel destination	Frequency	Percentage
Africa	287	74.7
Middle East	40	10.4
America	22	5.7
Asia	16	4.2
Europe	13	3.4
Australia	6	1.6
Duration of travel	Frequency	Percentage
<2 weeks	154	40.1
2 weeks - <3 months	120	31.3
3 months or more	110	28.6
Travel group	Frequency	Percentage
Traveling alone	346	90.1
Traveling with children (<16 years)	38	9.9
Number of countries being visited	Frequency	Percentage
One	231	60.2
2 or more	153	39.8
Start time of preparation for the trip	Frequency	Percentage
Less than one month ago	209	54.4
More than one month ago	175	45.6
History of previous travel	Frequency	Percentage
Travelled from home country before	324	84.4
No history of previous travel from home country	60	15.6

There were various reasons for travel and the category with the least number of travelers was that of those travelling for missionary work with 9(2.3%) of total respondents. The most popular reason for travel was business or attending conventions with 194 (50.5%) as shown in figure 3.

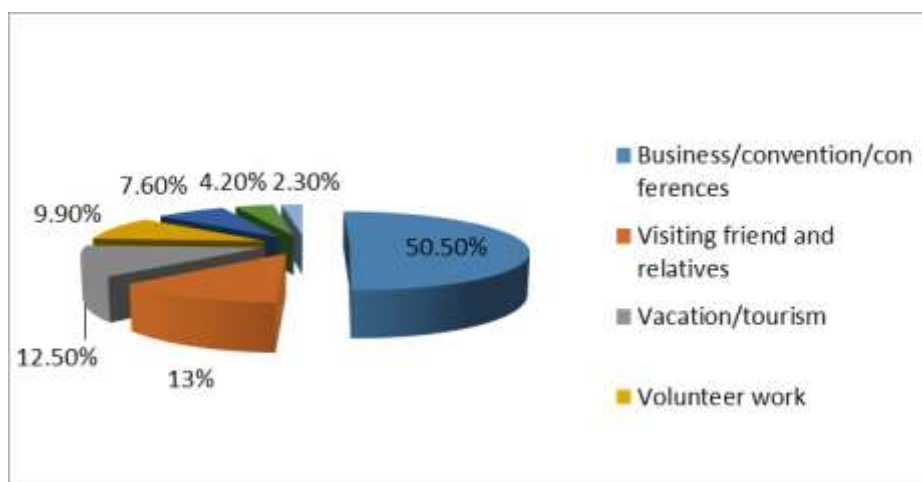


Figure 4.1: Reasons for travel among travelers at JKIA, 2017

4.2.2 Qualitative results

The table 4.2 shows a summary of the characteristics of the key informants. There were a total four key informants out of which three were female and one male. The selection of key respondents was based on their managerial position as well as the years of experience working as port health officers specifically those directly supervising provision of health services to travellers. The key informants were interviewed to determine what pre-travel health services are available to international travellers departing the country.

Table 4.2: Characteristics of the key informants at JKIA, 2017

Gender	Age	Working tenure (years worked for JKIA)
Female	35	7 years
Male	55	3 years
Female	42	15 years
Female	45	15 years

4.3 Knowledge, attitude and practices of respondents in relation to utilization of pre-travel health advice

4.3.1 Knowledge on pre travel health services

Of the total respondents, 271 (70.6%) knew of some health services offered to international travelers while 113 (29.4%) were not aware of any health services offered to international travelers. Of the 271 (70.6%) of respondents who knew services offered to international travelers 224 (82.6%) knew of vaccination, 30 (11.1%) health advice given to international travelers, while 11 (4.1%) did know of drugs for self-medication. Full body medical examination was reported as part of other services known to them (table 4.3).

Table 4.3: Services offered to international travelers that were known to respondents at JKIA, 2017

Services offered to international travelers	Frequency	Percentage
Vaccination	224	82.6
Health advice on how to stay healthy depending on destination	30	11.1
Drugs for self-medication	11	4.1
Others	7	2.2
Total	n=271	100

Majority of the respondents that is 276 (63.9%) indicated vaccination before travelling is important to avoid health problems as shown in the table 4.4. To note also is that 19 (4.4%) of respondents did not know the importance of vaccination prior to travel.

Table 4.4 Importance of pre-travel services among travelers at JKIA, 2017

Importance	Frequency	Percent
To avoid health problems	276	63.9
To avoid challenges at point of entry.	81	18.8
To take vaccination	46	10.6
Don't know	19	4.4
To take prophylaxis	10	2.3
Total	432	100

Of the respondents, 112 (29.17%) were unaware of any existing travel recommendations or guidelines on yellow fever while majority, 272 (70.83%) were aware of some existing travel recommendation guidelines. In the table 4.5, 141 (45.1%) of the respondents got to know of yellow fever guidelines from the Kenyan government, 91 (29.1%) from World Health Organization while 72 (23.2%) knew from CDC.

Table 4.5 Sources of information on yellow fever guidelines among travelers at JKIA, 2017

Information source(tick all that apply)	Frequency	Percentage
Kenyan government	141	45.1
World Health Organization	91	29.1
Centre for disease control and prevention	72	23.2
Others	8	2.6
Total	312	100.0

4.3.2 Attitude of international travelers towards seeking pre-travel health services

Majority of the respondents, 348 (90.6%) perceived vaccination as important prior to travel while 36 (9.4%) thought vaccination prior to travel is not important. Similarly, most of the respondents, 287(74.7%) thought it was important to visit a health care provider when already vaccinated while 97(25.3%) said thought it wasn't important to visit a health care provider when already vaccinated. Of the respondents 350(91.1%) believed getting information on likely health risks prior to travel reduces chances of falling sick while abroad and 34(8.9%) perceived getting information prior as unlikely to reduce chances of getting sick while abroad. Fear of acquiring infections while abroad was reported in 259 (67.4%) of the respondents while 125 (32.6%) were not afraid of acquiring infections abroad.

When asked about their level of satisfaction, 278 (72.4%) of respondents said they were satisfied with the pre-travel health services offered to them while 106 (27.6%) expressed dissatisfaction

The researcher sought to know the reasons for dissatisfaction and 44 (47.3%) reported dissatisfaction because only vaccines are given. Other reasons for dissatisfaction were that no advice is given reported by 29(31.2%) and the cost of vaccination being high was reported by 20 (21.5%) of the respondents (Figure 4.2).

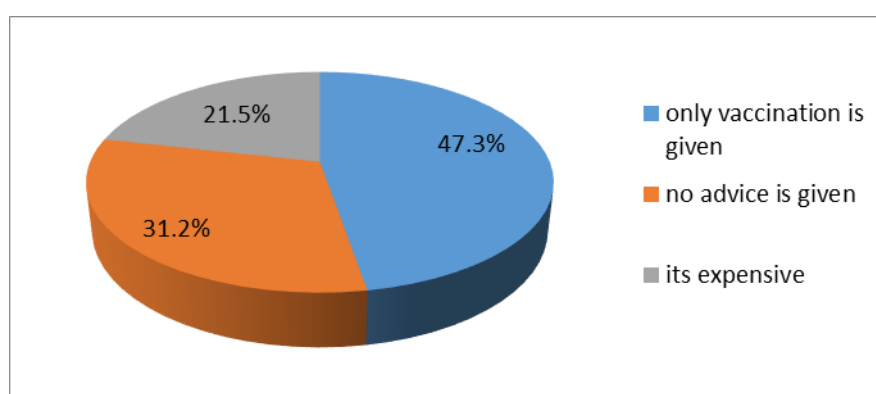


Figure 4.2: Reasons for dissatisfaction among travelers at JKIA, 2017

4.3.3 Practices of international travelers with regards to seeking pre-travel health services

Vaccination was the most sought after pre-travel health service. Table 4.6 shows 266 (65.0%) of the respondents received vaccination while 62 (15.2%) never received any health services.

Table 4.6: Pre-travel health services received by international travelers at JKIA, 2017

What pre-travel health services did you receive?(n=375)	Frequency	Percent
Vaccination	266	65.0
I never got any services	62	15.2
Health advice on how to stay healthy depending on the destination	52	12.7
Drugs for self-medication	27	6.6
Others	2	0.5
Total	375	100.0

Half of the respondents, 159(50.3%) obtained pre-travel health services from government designated vaccination centres. The least utilized sources were internet where 12 (3.8%) with respondents and general practitioners who were consulted by 6(1.9%) of the respondents as shown in table 4.7.

Table 4.7: Sources of pre-travel health services sought by international travellers at JKIA, 2017

Sources of pre-travel health advice	Frequency	Percent
Government designated vaccination centres	159	50.3
Private clinic	63	20
Health insurance	40	12.6
Travel agent	36	11.4
Internet sources	12	3.8
General practitioners	6	1.9
Total	316	100.0

Figure 4.3 shows the time during which international travelers sought pre-travel health services. The least category was that with those who sought the services less than one week before departure, 35(9.1%). It was noted that 62(16.4%) of the respondents never sought any pre-travel health services.

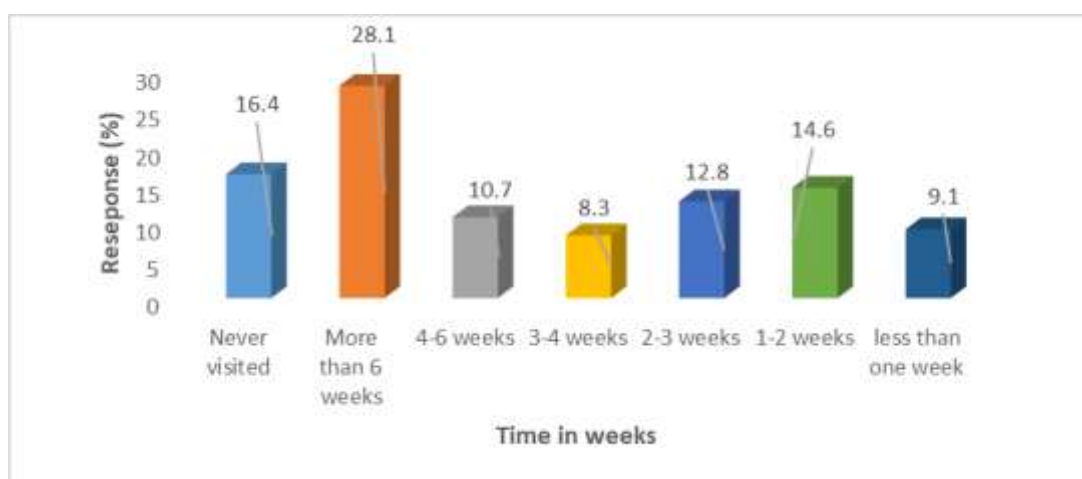


Figure 4.3: Time of seeking pre-travel health services among travelers at JKIA, 2017

As shown in table 4.8 26(39.4%) of the travelers who never sought pre-travel health services reported they did so because they knew what to do when abroad, 19(28.8%) did not know where to get the services from while 13(19.7%) got the services from their family doctor.

Table 4.8: Reasons for not seeking pre-travel health services among travelers at JKIA, 2017

Reason	Frequency	Percent
Nobody informed me	4	6.1
Because I know what to do	26	39.4
I don't know where to get the advice from	19	28.8
I used my family doctor to get information	13	19.7
It's far away from me	3	4.5
Other	1	1.5
Total	66	100.0

Nearly half of the respondents, 171 (44.6%) had not used self-medication in their previous travel while 153(39.8%) of the respondents admitted to have used self-medication during previous travels. The rest of the respondents 60(15.6%) were first time travelers as shown in figure 4.4.

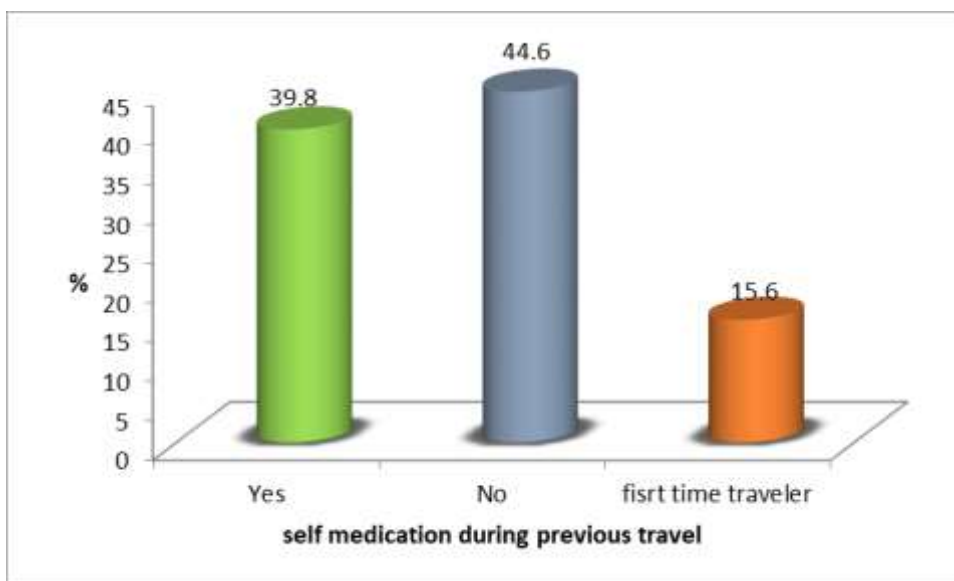


Figure 4.4: Use of self-medication among travelers at JKIA, 2017

When the immunization status of children was assessed, 23(60.5%) of those travelling with children said they were fully immunized while 15(39.5%) of children travelling were not fully immunized.

Yellow fever and hepatitis B vaccines were the most common vaccines received by the respondents with 68.8 % (264) and 102(26.6%) of total travelers vaccinated against these diseases respectively. The least common was the influenza vaccine where only 9% (35) of respondents had received it as shown in table 4.9.

Table 4.9: Types of vaccines received by respondents prior to travel (JKIA, 2017)

Vaccine	Immunization status	Tally	Percent
Cholera	No	304	79.2
	Yes	80	20.8
Yellow fever	No	120	31.3
	Yes	264	68.8
Hepatitis A	No	313	81.5
	Yes	71	18.5
Hepatitis B	No	282	73.4
	Yes	102	26.6
Polio	No	333	86.7
	Yes	51	13.3
Tetanus	No	340	88.5
	Yes	44	11.5
Typhoid	No	339	88.3
	Yes	45	11.7

4.4 Factors affecting utilization of pre-travel health services

Chi square test was done to determine association between utilization of pre-travel health services and the independent predictors at 95% confidence interval. The proportion of respondents who reported having sort pre-travel health services were shown to differ by their knowledge on health services offered to international travelers [X^2 (1, n = 384) =66.3, p = <0.001] and awareness on existing yellow fever guidelines [X^2 (1, n = 384) =11.2, p = <0.001] as shown in table 4.10 below. Those who knew of health services offered to international travelers were 9.8 times more likely to seek pre-travel health services compared to those who did not know any health services offered to international travelers, OR=9.88 [95%CI, 5.325,18.358]p=<0.001. Equally, those who were aware of existing recommendations on yellow fever were 2.5 times more likely to seek pre-travel

health services compared to those who did not know, OR=2.53 [95% CI, 1.453,4.413] p=0.001.

Similarly, there was a significant relationship between seeking pre-travel health services and respondents perception regarding visiting a health care provider when already vaccinated [X^2 (1, n = 384) =18.2, p = <0.001] where those who reported they would visit a health care provider when already vaccinated were 3.2 times more likely to seek pre-travel health services in comparison to those who reported they would not visit a health care provider when already vaccinated OR=3.28 [95% CI, 1.864,5.782]p=<0.001 In addition, the chi square test of association revealed that there was significant association between perceived importance of vaccination before travel and seeking pre-travel health services[X^2 (1, n = 384) =6.09, p = <0.001] where those who thought vaccination before travel is important were 2.56 times more likely to seek pre-travel health services compared to those who never thought vaccination before travel is not important, OR=2.56 [95% CI, 1.188, 5.528] p=0.016. On the contrary, the proportion of respondents who reported having sought pre travel health services was shown not to differ significantly by age[X^2 (1, n = 384) =1.76, p = 0.18] marital status [X^2 (1, n = 384) =0.559, p = 0.45] , sex [X^2 (1, n = 384) =0.065, p = 0.8] and other trip characteristics.

Table 4.10: Predictors to seeking pre-travel health services as per bivariate regression (JKIA, 2017)

Independent predictors	variable category	Did not utilize Pre-Health Services	Utilizeed Pre-Health Services	Total	Odds Ratio [Confidence Interval] p value	Chi Square value (p-value)
		N=62	N=322	N=384		
Gender	<i>male</i>	39 (62.9%)	208 (64.6%)	247 (64.3%)	1.07[0.612,1.890]0.798	0.065[0.8]
	<i>female</i>	23 (37.1%)	114 (35.4%)	137 (35.7%)		
Marital Status	<i>Married</i>	28 (45.2%)	129 (40.1%)	157 (40.9%)		0.559[0.45]
	<i>Single</i>	34 (54.8%)	193 (59.9%)	227 (59.1%)	1.23 [0.712,2.130]0.455	
age group	<i>35 years and below</i>	34 (54.8%)	147 (45.7%)	181 (47.1%)		1.761[0.18]
	<i>more than 35 years of age</i>	28 (45.2%)	175 (54.3%)	203 (52.9%)	1.45 [0.837,2.496]0.186	
education level	<i>Less than Secondary</i>	17 (27.4%)	92 (28.6%)	109 (28.4%)	1.06[0.576,1.945]0.854	0.034[0.85]
	<i>Above Secondary School</i>	45 (72.6%)	230 (71.4%)	275 (71.6%)		
travel destination	<i>Outside Africa</i>	15 (24.2%)	82 (25.5%)	97 (25.3%)	1.07[0.568,2.016]0.833	0.045[0.83]
	<i>Within Africa</i>	47 (75.8%)	240 (74.5%)	287 (74.7%)		
history of previous travel	<i>yes</i>	55 (88.7%)	269 (83.5%)	324 (84.4%)		1.054[0.30]
	<i>no</i>	7 (11.3%)	53 (16.5%)	60 (15.6%)	1.55[0.668, 3.585]0.308	
Start time of preparation for the trip	<i>less than a month ago</i>	36 (58.1%)	173 (53.7%)	209 (54.4%)		0.394[0.53]
	<i>more than one month ago</i>	26 (41.9%)	149 (46.3%)	175 (45.6%)	1.19[0.688,2.067]0.530	
Number of countries being visited	<i>one</i>	38 (61.3%)	193 (59.9%)	231 (60.2%)		0.04[0.84]
	<i>2 or more</i>	24 (38.7%)	129 (40.1%)	153 (39.8%)	1.05[0.606,1.848]0.842	
Reasons for the trip	<i>Study/Missionary,others</i>	32 (51.6%)	158 (49.1%)	190 (49.5%)		9.42[0.15]
	<i>Business trip</i>	30 (48.4%)	164 (50.9%)	194 (50.5%)	1.22[0.210,7.159]0.820	
Duration of the trip	<i><2 weeks</i>	25 (40.3%)	128 (39.8%)	153 (39.8%)		0.413[0.81]
	<i>2 weeks- <3 months</i>	21 (33.9%)	99 (30.7%)	120 (31.3%)	1.08[0.575,2.053]0.799	
	<i>3 months or more</i>	16 (25.8%)	95 (29.5%)	111 (28.9%)	1.25[0.620,2.558]0.523	
knowledge of health services offered to international travellers	<i>yes</i>	17 (27.4%)	254 (78.9%)	271 (70.6%)	9.88[5.325,18.358]<0.001	66.3[<0.001]
	<i>no</i>	45 (72.6%)	68 (21.1%)	113 (29.4%)		
perception on vaccination prior to travel	<i>Percieved importance</i>	51 (82.3%)	297 (92.2%)	348 (90.6%)	2.56[1.188,5.528]0.016	6.092[0.014]
	<i>did not perceive importance</i>	11 (17.7%)	25 (7.8%)	36 (9.4%)		
perception on visiting health care provider when already vaccinated	<i>thought its important</i>	33 (53.2%)	254 (78.9%)	287 (74.7%)	3.28[1.864,5.782]<0.001	18.126[<0.001]
	<i>thought its not important</i>	29 (46.8%)	68 (21.1%)	97 (25.3%)		
Awareness on existing travel recommendations on yellow fever	<i>aware</i>	32 (51.6%)	235 (73.0%)	267 (69.5%)	2.532[1.453,4.413]0.001	11.205[<0.001]
	<i>not aware</i>	30 (48.4%)	87 (27.0%)	117 (30.5%)		
Fear of acquiring new infections	<i>yes</i>	37 (59.7%)	222 (68.9%)	259 (67.4%)	1.5[0.857,2.625]0.156	2.033[0.15]
	<i>no</i>	25 (40.3%)	100 (31.1%)	125 (32.6%)		
Travelling with children	<i>yes</i>	5 (8.1%)	33 (10.2%)	38 (9.9%)	1.30[0.487, 3.477]0.599	0.278[0.60]
	<i>no</i>	57 (91.9%)	289 (89.8%)	346 (90.1%)		

Multivariate regression analysis was conducted and results presented in the model shown in table 4.11. With regard to seeking pre-travel health services, there was a statistically significant difference between those who had history of travel and those who had not travelled out of their home country before where the later were 3.4 times more likely to seek pre-travel health services, OR=3.46 [95% CI, 1.253, 9.571] p=0.017 adjusted for sex, age and other independent variables in the model.

Contrary to the results in the logistic model, there was no statistically significant difference in pre-travel health services seeking behaviour between those who were not aware of existing yellow fever guidelines and those who were aware in the multivariate logistic regression model OR=0.96 [95% CI, 0.462, 1.995] p=0.914 adjusted for other factors in the model.

Adjusted for other factors in the model, perception on vaccination prior to travel and knowledge on health services offered to international travelers still revealed a statically significant difference where those who did not think vaccination before travel is important as well as those who did not know of any health services offered to international travelers were less likely to seek pre-travel health services, OR=0.30 [95% CI, 0.155, 0.606] p=<0.001 and OR=0.09 [95% CI, 0.045, 0.188] p=<0.001 respectively.

Table 4.11: Predictors to seeking pre-travel health services as per multivariate regression (JKIA, 2017)

variable	Odds Ratio	Std. Err.	z	P>z	[95% conf.	Interval]
Sex						
Female	0.9053744	0.3055	-0.29	0.768	0.467223	1.754414
age group						
Above 35 years of age	1.23521	0.4193	0.62	0.534	0.63499	2.402785
education						
Above Secondary School	0.7092289	0.2877	-0.85	0.397	0.320202	1.570903
destination						
Within Africa	0.8651586	0.3378	-0.37	0.711	0.402471	1.859761
trip duration						
2 weeks- <3 months	0.8424636	0.3235	-0.45	0.655	0.396853	1.788433
3 months or more	0.8993841	0.3808	-0.25	0.802	0.392235	2.062266
history of previous travel						
No	3.463905	1.7961	2.4	0.017	1.253703	9.570558
Start time of preparation for the trip						
more than a month ago	1.252187	0.4171	0.68	0.5	0.651765	2.405733
Awareness on existing travel guidelines on yellow fever						
No	0.9604966	0.3583	-0.11	0.914	0.462304	1.995557
Fear of acquiring new infections during travel						
not afraid	0.6808672	0.2338	-1.12	0.263	0.347294	1.334836
knowledge of health services offered to international travelers						
did not know of any health services offered	0.0927274	0.0333	-6.62	<0.001	0.045837	0.187584
perception on vaccination prior to travel						
never thought vaccination prior to travel is important	0.3072401	0.1066	-3.4	0.001	0.155588	0.60671

4.5 Availability of pre-travel health services

The major pre-travel health services offered were indicated as vaccinations, treating those who fall sick prior to departure, health education to the travelers who go for enquiries, inspection of food before departure, as well as advising on the importance of acquiring genuine health documents such as yellow fever certificate. Vaccinations available for travelers at JKIA were yellow fever life time vaccine for those

travelling to endemic regions as well as polio vaccine given once every year for travelers going to India. It was however noted that the focus is mainly on international arrivals as they are perceived to pose a greater risk because of their potential to introduce diseases. One of the informants said:

“I am not sure we do much for the travelers departing beside vaccination against yellow fever or polio, but advice can be given upon request. The traveller has to take personal initiative to get this service”

Pre-travel health services are offered depending on the targeted recipient. Both individual and trip characteristics are critical factors for consideration with respect to type of pre travel health service to be provided. There is no much attention given to the departing travelers hence the responses given were centred on variations during yellow fever vaccination. Two of key informants said:

“There are no structures that I know of. Here at JKIA there are various committees’ including national civil aviation, security committee and airport facilitation committee that usually meet at regular intervals. Port health officers use such meetings held at intervals to pass information intended for travelers but mostly when there are disease outbreaks”

“Structures are there for international travelers arriving into the country but not those departing to other countries”

When asked of what other institutions are involved in offering pre-travel health services, the respondents agreed that it’s the mandate of port health department, under the ministry of health. However, there are both government and private travel vaccination designated centres working under port health.

“There are no other institutions involved; this is the mandate of the port health department under the ministry of health”

An enquiry was made to determine how the key informants were promoting the practice of seeking pre-travel health services among departing travelers. The study noted that the respondents were not directly involved. Port health officers solicit the help travel agents to pass information to departing travelers as one of the female respondents noted:

“We do not often visit the terminals where departing passengers are handled. However whenever we meet travel agents, we request them to ensure travelers get vaccinated depending on their destination”

All the key informants agreed that the avenues used to reach the departing travelers with pre-travel health services are inadequate. One of them stated:

“It’s not adequate. Information is passed through a third party hence can be easily distorted. Additionally, this category of travelers is always in a hurry hence talking to them during that time is mostly perceived as an inconvenience”

When asked about their knowledge on existing guidelines and policies used by the ministry of health in provision of pre-travel health services, the informers responded as follows:

“Curative medicine is given too much priority at the expense of preventive medicine. Port health officials use International Health Regulations to develop standard operating procedures. Otherwise there are no guidelines besides the WHO ones”

“Policies made by WHO are adopted for use in the country and implemented as they are”

The port health department in Kenya is facing many challenges as far as offering pre-travel health services is concerned which include, shortage of both human and financial resources, periodic shortage of vaccines as well as language barrier as noted by the key informants :

“We face many challenges such as shifting of mandates due to lack of clear guidelines and inadequate human resource. In addition there are no training forums to build competence and efficiency of port health officers in provision of travel medicine services as well as port health officers being the least paid compared to all port employees”

“We often have periodic shortage of vaccines as well as travelers finding the cost of vaccination as too high (yellow fever vaccination goes for KS 3500 while polio vaccine goes for Ksh. 1000)”

The informers had suggestions on how uptake of pre-travel health services by departing international travelers could be improved which included setting up travel clinics where travelers access all health services in one place as well as creating awareness through the media.

“It would be very helpful if the government put a travel clinic where travelers can get all pre-travel health services in a one stop place. I think TV adverts to create awareness on the existence of health services for travelers before departure can really help”.

CHAPTER FIVE

DICUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussion

Although pre-travel health consultation reduces the risk of harm as a result of exposure to hazards while abroad, a number of surveys have shown that high proportions of travelers disregard their travel health risks and in extension seeking pre-travel health services (Heywood *et al*, 2012). This work has established that some of the pre-travel health services offered to international travelers such pre-travel health advice are underutilized by international travelers departing Jomo Kenyatta International Airport.

5.1.1 Knowledge, attitude and practices of respondents with regard to seeking pre-travel health services

Having knowledge regarding pre-travel health services offered to international travelers affects the behaviour of the traveller in relation to taking precautionary measures (WHO, 2012). The results of this study showed that majority of the respondents 70.6% knew at least one health service offered to international travelers in Kenya. However, 29.4% were not aware of such health services which depicts an existing gap as far as knowledge of pre-travel health services is concerned. Vaccination was the most popular pre-travel health service known to 82.6% which was higher than 57.1% reported in the study conducted at Muscat international airport in Oman (Al-Abri.*et al.*, 2016). Vaccination is also available in both private and government designated vaccination centres as reported by key informants explaining why it was the most sought after pre-travel health service 65%. Only 11.1% of the respondents knew of health advice as a service offered to international travelers which was lower than 48% in the study conducted at the Qatar Doha International airport (Al-Hajri *et al.*, 2011). In addition, only 4.1% of the study participants were aware of drugs for self-medication as a pre-travel health service. This is equally in line with key informants who reported that there are no avenues to provide travelers with information unless the traveller takes a personal initiative.

Seeking pre-travel health services is mainly for prevention where one gets information on how to stay healthy when abroad, vaccination as well as drugs for self-medication.

Majority of the respondents, 63.9% were able to associate seeking pre-travel health services with avoiding health problems while abroad unlike in the case by Omer *et al.* (2015) where only 34% of the travelers were able to associate seeking pre-travel health services with avoiding health problems. However, 18.8% thought pre-travel health services are important so as to avoid challenges at points of entry. This implies that this proportion of respondents do not seek services because they value their health but rather out of fear of being denied entry in to another country which was in line with key informants report of having recalled fake yellow fever vaccination certificates that are often acquired illegally just to help the traveller cross the border.

According to this research study, 70.83% of travelers were aware of existing travel recommendation guidelines. The most common sources of yellow fever recommendations or guidelines according to the respondents were the Kenyan government (45.1%) and WHO (29.1%). In the study conducted in India by Tiwari and Gupta (2017) the most common source of information on existing yellow fever guidelines were embassies cited 38% of the respondents.

Generally travelers had a positive attitude towards pre-travel health services. Majority of them 90.6% of the respondents perceived the importance of vaccination of the respondents as in the case of 96.2% in the study by Omer *et al.*, (2015) among Dubai international travelers. When the attitude is positive, services available and accessible then the uptake increases significantly unlike when services are available but the perception is negative (CDC, 2013). A positive attitude towards pre-travel health services was reported where 287 (74.7%) of the respondents indicated it is important to visit a health care provider even when already vaccinated similar to the study conducted by LaRocque *et al.*, (2013) where travelers registered positive attitude (82%).

Majority 91.1% of the respondents said receiving information on likely health risks prior to travel reduces chances of falling sick while abroad and 67.4% were afraid of

acquiring infections during their trip. This means despite only 13.9% obtaining pre-travel health advice the respondents perceived it as important. This is contrary to a study conducted in Qatar Doha where poor risk perception was reported with 32.6% of the respondents indicating they were not afraid of acquiring new infections when abroad (Al-Hajri *et al.*, 2011).

Of the respondent 72.4% were satisfied with the pre-travel health services given. This is despite the fact that that no advice or drugs for self-medication is given. According to the study by Omer *et al.*, (2015), 32.4% of the travelers were not satisfied and the single cause of dissatisfaction reported by the majority of respondents (33.3%) was that only vaccination is given as in the case of this study where 47.3% of dissatisfied respondents cited the same reason.

Variations exist on the pre-travel health seeking behaviour of travelers as per the existing literature. Based on this study, its only 15.2% of total respondents who never got any health services prior to departure yet pre-travel health advice was obtained by only 12.7% of respondents. The implication of the latter could be that departing international travelers may not have been aware of potential hazards associated with the trip which reduces likelihood of them taking precautionary measures. The finding of low uptake of pre-travel advice is also below the findings of other similar studies such as a study in Muscat international airport in Oman where 22.5% obtained pre-travel health advice with others indicating nobody told them about the service (Al-Abri *et al.*, 2016). Almost three quarters 70.97% of the respondents indicated to have received at least one vaccine for purposes of travel. Carrying drugs for self-medication was not a common practice among respondents since only 15.2% had drugs for self-treatment in case of a health problem such as diarrhoea while abroad which can be life threatening in case medical attention is not sought promptly (WHO, 2012). Elsewhere, a study among pilots in the United States showed that though 31% of respondents travelling to malaria endemic regions perceived themselves as susceptible, only 46% were not even aware of how to obtain antimalarial medications thus recommending early notification and creating awareness on where to easily get this prophylaxis (Selent *et al.*, 2012).

The most common source of pre-travel health advice among respondents was from government designated centres where 50.32% of the respondents sought pre-travel health services. Health insurance, travel agents, private clinics and general practitioners were other mentioned sources that were less popular among the respondents showing the need for the government to lay down a structure that informs the traveller of the options they have as far as access to information prior to departure is concerned. From the study there is under-utilization of the internet 3.8% in the delivery of pre-travel health services despite key informant interviews revealing lack of adequate avenues to pass information to departing international travelers. This implies that despite the growth in social media and internet use, this has largely remained an under-utilized resource in offering pre-travel health services. This is contrary to the study done by LaRocque *et al.*, (2012) who found out that the internet as well as primary care health workers were the most common sources of pre-travel health services and advice. The study among Korean travelers found that more half (58%) of respondents obtained pre-travel health advice from internet sources (Youk *et al.*, 2007) a clear sign that the ministry of health can further explore internet as an avenue for passing information to travelers. The guidelines on travel medicine developed by WHO recommend that the ideal timing for seeking pre-travel health services is 4–6 weeks prior to the day of departure in order to educate the traveller on possible health risks as per the destination and allow the body time to acquire immunity (WHO, 2012). A study conducted by Zwar and Streeton (2007) revealed that approximately one third went for health services only within two weeks of departure, while in this study 23.7% sought health services within two weeks prior to departure. This poses a risk of travelling before acquiring immunity since some vaccines need time as in 10 days in the case of yellow fever vaccine.

While time has previously been reported as a reason for failing to seek pre-travel health services as in the case of the study among Korean travelers where 28% indicated they had no time seek pre-travel health services ((Youk *et al.*, 2007), in this study 39.8% of the respondents who did not seek pre-travel health services said they knew what to do. However, WHO warns against travelers assuming they know what do which culminated in governments being advised to pay attention to frequent international travelers who still pose a risk of importing disease despite their

confidence (WHO, 2012). Slightly more than half of the respondents 198 had not used self-medication during their previous travel. This could either mean they had never fallen ill or they hadn't carried any drugs for self-treatment. A study among high risk US travelers revealed that 70% of the respondents had antimalarial drugs (LaRoque *et al.*, 2012) while 35% of Spanish travelers reported to using malaria prevention drugs (Lopez & Bayas, 2007). Since these drugs such as antihistamines and oral rehydration salts can be lifesaving there is need to create awareness so travelers stay healthy while abroad.

5.1.2 Factors associated with utilization of pre-travel health services

Several factors have been shown to affect pre-travel health seeking behaviour of international travelers elsewhere. In this study, age was not a significant predictor to seeking pre-travel health services [$X^2 = 1.76$, $p = 0.18$] as was the case in the studies conducted by Shady *et al.*, (2015) and the one conducted by Al-albri *et al.* (2016) where [$X^2 = 0.9$, $p = 0.6$]. However, respondents odds of seeking pre-travel health services increased as their age increased and respondent who was above 35 years was 1.45 times more likely to seek pre-travel health services compared to those aged 35 years and below [OR=1.45, $p=0.185$]. This may have been due to increased frequency of hospital visits as people age. Equally the study conducted at Bangkok airport by Heywood *et al.*, (2012) showed that the odds of 'seeking pre-travel health services increased as the age of respondents increased [OR=2, $p<0.05$].

In other studies as in the case of Heywood *et al.* (2012), males are more likely to take risks hence the higher odds of seeking pre-travel health services among females compared to travelers who were male [OR=1.75, $p=0.03$]. There was no statistically significant association between a person's sex and seeking pre-travel health services [$X^2 = 0.065$, $p = 0.8$] among Kenyan international travellers.

In the study conducted by Shady *et al.* (2015) reasons for travel as well as destination were found to be independent predictors of seeking pre-travel health services [OR=3.8, $p= <0.001$], [OR=0.39, $p=<0.001$], and [OR=1.6, $p=<0.05$] respectively. Those with a longer duration of stay were less likely to seek pre-travel health services as was the case in the current study although the difference was not

statistically significant [OR=1.25, p=0.52] which could be attributed to more robust preparation when travel is long term.

African countries especially the less developed are associated with more risks compared to developed Western countries as stipulated by Heywood *et al.* (2012). This would create an expectation that the likelihood of those going to African destinations seeking pre-travel health services would be higher as was the case in the study by Shady *et al.* (2015) where those going to African Countries were more likely to seek pre-travel health services compared to those going to Asian countries [OR=1.37, p=<0.05]. In this study, there was no statistically significant difference between those whose destinations were African countries and those going out of Africa [OR=1.07, p=0.833].

According to WHO (2012) publication, those with history of travel have higher likelihood of being already vaccinated against some diseases such as yellow fever and also assume they know what to do thus do not seek pre-travel health services. Though there was no statistically significant difference between history of travel and use of pre-travel health services in the bivariate regression model [OR=1.5, p=0.308] the difference was significant when history of travel was adjusted to other variables in the multivariate logistic regression model where first time travelers were 3.4 times more likely to seek pre-travel health services compared to those who had travelled before [OR=3.4, p=0.017]. History of travel was also found to be a predictor in the study conducted by Lopez Velez *et al.* (2007) where those with a history of travel obtained less vaccinations (20.9%) compared to first time travelers (52.9%).

The perception a traveller has towards vaccination influences whether they would see a need to visit a health care provider for vaccinations. Those who never thought vaccination before travel was important were 0.31 less likely to seek pre-travel health services compared to those who thought vaccination before travel is important. [OR=0.31, p=0.001]. This could be attributed to the travelers view on importance of vaccination being dependent on the traveller's perceived risk which translates to seeking pre-travel health services. Moreover, those who did know of any health services offered to international travelers had very low chances of seeking pre-

travel health services in comparison to travelers who knew of the health services that are offered to international travelers [OR=0.09, $p < 0.001$] adjusted to other factors in the multivariate logistic regression model. This matches the findings of the study by Shady et al. (2015) who also found out that knowledge of travel health clinics increased chances that a traveller went for pre-travel health consultation [OR=4.1, $p < 0.001$]. Knowledge in many studies according to literature precedes seeking pre-travel health services.

5.1.3 Availability of pre-travel health services

The key informants provided insights into the existing gaps during provision of pre-travel health services to departing international travelers. As outlined by WHO, a comprehensive pre-travel services package involves 5 elements namely; assessing the traveller's personal health status, assessing the risks involved in the anticipated trip, preventive advice, suitable vaccinations and health assessment post travel (WHO, 2013). The major pre-travel health service offered to departing international travelers is vaccination which was reported by both the travelers (65%) and key informants. This is contrary to the study in Bangkok airport where only 12% went for vaccination (Heywood *et al*, 2012). There exist gaps in provision of pre-travel health advice and drugs for self-medication explaining why only 12.7% and 6.6% of respondents received these services respectively. The government therefore needs to recognize the role played by departing travellers in exportation of diseases to other countries as well as their potential to import infectious diseases upon return. This would necessitate designing interventions that would motivate international travellers to seek pre-travel health services by ensuring government designated vaccination centres have adequate well trained health workers who can evaluate a traveler and offer appropriate advice and drugs for self-medication as need be. One key informant noted;

“I am not sure we do much to travelers departing beside vaccination against yellow fever or polio but advice is given upon request.”

A traveller's characteristics determine susceptibility while trip characteristics determine the possible risks a traveller may be likely to encounter. It is such

assessment that informs what information, prophylaxis or vaccinations a traveller should receive prior to travel (WHO, 2013). In Kenya the focus is on vaccinations (received by 65% of total respondents who filled the questionnaire) hence any description of variations was centred on yellow fever immunization. World health organization lists special groups of travelers which include the immunosuppressed, pregnant women, persons with disability and children (WHO, 2012). During travel, these groups except those who have disability but in good health status receive a yellow fever exemption certificate to avoid challenges at points of entry due to potential harm that may result from vaccination. There is need to ensure that the port health department is strengthened and those involved in provision of pre-travel health services are able to classify all special groups who require more attention due to their increased vulnerability. Not all special groups were known to key informants as in the case of the key informant who said that;

“The only group of people I can categorize as special are those going for Hajji, otherwise, I can’t think of any other”

This is contrary to the findings by Gherardin (2007) whose study revealed that provision of quality pre-travel health involved looking out for accuracy, currency and responsiveness of services offered while putting into consideration possible risks, applicable vaccines, drugs and other commodities that improve health

Whether a departing traveller gets pre-travel health advice is entirely dependent on whether or not they take the personal initiative. According the key informants, the port health department at JKIA are mainly focused on securing the country from introduction of diseases by arriving passengers as opposed to protecting Kenyans leaving to other countries due to staff shortage. The system is more reactive than proactive since vaccinating travellers as they return from their trip is a missed opportunity to protect the individuals from acquiring illnesses from abroad (WHO,2012).One key informant noted;

“Our focus is more on arriving passengers due to the risk they pose to the country in case they come in with an infectious disease”.

Having established structures through which departing international travelers can get all the health services promotes utilization of pre-travel health services (Heywood et al., 2012). In Kenya there are no structures to guide provision of health services especially information since the Kenya Airports Authority (KAA) website only gives a list of designated vaccination centres and requirements for international arrivals. This was also depicted by the quantitative results as only 12.7% got information on how to stay healthy while abroad. Information as in the case of a disease outbreak is passed through various existing airport committee during meetings as there is no existing health committee. The limitation with this is that when third parties are involved the information is at higher risk of being distorted or not being emphasized as it should be when being passed to the travelers. If structures were to be established, it means a traveller would be able to access holistic services as far as international travel is concerned.

“There are no structures that I know of. Port health officers take advantage of other departmental meetings held at intervals to pass information intended for travelers especially in the event of disease outbreaks”.

In another study, CDC and private practitioners were mentioned as other institutions that provide some pre-travel health services (LaRocque *et al.*,2013) the key informants in Kenya reported that apart from port health department under the Ministry of Health no other institution is involved. This means that besides designated vaccination centres there exists no known or accredited travel health clinic offering holistic services to international travellers hence have limited access to travel advice and drugs for self-medication. Unless a traveller researches on their own using internet sources which were not equally popular among departing international travelers who participated in this study. One informant reported;

“There are no other institutions involved; this is the mandate of the port health department under the Ministry of Health”.

It's the mandate of the Ministry of health but they supervise other institutions such as the private hospitals approved as vaccination designated centres and this should therefore include having credible and verified sources of pre-travel health services

that can be used by health care providers when offering services to international travellers.

The informants highlighted that the avenues used to reach travelers with pre-travel health advice are inadequate and little attention is paid to departing international travelers. If there are no avenues through which those expected to offer the services reach the traveller, then the low uptake of health advice (12.7%) as well as drugs for self-medication (6.6%) was expected. Other studies Bangkok in Thailand reported that 21.6% of travelers sought pre-travel health advice yet internet was not mentioned as an avenue in this study (Heywood *et al*, 2012)

World Health Organization develops overall guidelines for the provision of yellow fever vaccination but policies on how travelers access these vaccinations are left to individual countries (WHO, 2013). There ought to be a policy on travel health in Kenya both in favour of arriving as well as departing international travelers. There are no written guidelines on provision of pre-travel services to departing travelers. The Key informants stated that curative medicine has been overemphasized at the expense of preventive medicine. Port health officials use IHR to develop standard operating procedures. This is in line with WHO (2017) recommendations to the Kenyan government to incorporate IHR in existing local laws after an evaluation of IHR core capacities conducted jointly in March 2017. One key informant note;

“Curative medicine is given too much priority at the expense of preventive medicine. Port health officials use IHR to develop standard operating procedures. There are no guidelines besides the WHO ones”

Language barriers, failure of travelers to perceive themselves as susceptible to infections, high cost of seeking pre-travel health care were the major challenges affecting utilization of pre-travel health services among Egyptian travelers (El Sherbiny & Wafik, 2011). Similarly the challenges mentioned by key informants included language barrier, shifting of mandates and inadequate resources including human resource. In addition inadequate training and research around the area of travel medicine, harassment by unruly travelers and periodic shortage of vaccines were part of the challenges highlighted.

Having designated travel clinics either private or government owned offers a one stop place to get all health services prior to travel. In addition, sensitizing travel agents on need for pre-travel health services so they can make referrals, hiring more personnel, media campaigns to create awareness and, maintaining an updated website with comprehensive information can provide more avenues to reach international travelers with pre-travel health services. Use of media (local radio) was also a recommendation in the study among Egyptian travelers (El Sherbiny & Wafik, 2011). These can be workable solutions since unless travelers departing are aware of the services available to them, then the uptake will still remain low, one informant stated:

“I think TV adverts to create awareness on the existence of health services for travelers before departure can really help”.

In line with the key informants suggestions, educational courses including continuous medical education tailor made to suit civil aviation medicine as well as biannual meetings for all health persons working at points of entry also ensure that travellers get quality and up to date pre-travel health services according to WHO(2013).

5.2 Conclusions

This study concludes the following;

- I. Majority of departing Kenyan international travelers had knowledge and go for travel vaccinations. However, pre-travel health advice and drugs for self-medication as pre-travel health services less popular hence underutilized despite the important role they play in ensuring preparedness for the trip as well as passing knowledge to travelers on how to react in case one gets ill while abroad. Generally the study showed travelers had a positive attitude towards pre-travel health services. Although, technology is being incorporated in every sector, internet as a source of pre-travel health advice is still underutilized. As a country, Kenya needs to focus more on preventive medicine by since it's cheaper than treating cases of disease.

- II. Adjusted for other factors, history of previous travel, knowledge of health services offered to international travelers as well as perception on importance of vaccination prior to travel were found to be predictors of seeking pre-travel health services. This would therefore mean there is an opportunity to increase uptake of pre-travel health services through ensuring that every international traveller knows the services offered to international travelers as well as the role played by vaccination in ensuring they stay healthy while abroad.
- III. Although there are designated vaccination centers, international travelers have no access to comprehensive travel health service packages as there are no structures to guide provision of pre-travel health advice as well as drugs for self-medication. Focusing more on international arrivals leaves those going out of the country not knowing how to ensure they stay healthy while abroad and can subsequently result exportation of infection to destination countries or importation as the travelers return from their trip. Travel medicine is a fast changing specialty with new knowledge emerging as globalization increases and with key informants highlighting gaps in training for those who offer pre-travel health services then holistic travel health services are not available to international travelers going abroad.

5.3 Recommendations

Based on the results of this work, the following are recommended:

- I. That port health office explores more avenues of reaching out to travelers with pre-travel health advice on how to stay healthy while abroad. The ministry of health should develop a mobile phone application that will pass timely information to travelers. Awareness should be created through media for large coverage. In the long term, there needs to be a law governing provision of pre-travel health services.
- II. That stakeholders including Ministry of health and Kenya Airports Authority need to fund more research around travel health especially on factors affecting utilization of pre-travel health services to identify gaps in utilization of pre-travel health services and find out the causes of variations observed

across various groups as well as establish the role of technology in ensuring international travelers departing from the country access and utilize pre-travel health services

- III. Travel clinics need to be set up so that travelers access comprehensive pre-travel health services in a common place to increase uptake. That it's important for the Ministry of Health to develop policies, guidelines and structured that will ensure pre-travel health services are received by travelers prior to departure. The government should come up with short courses to ensure all health workers offering services to international travelers are well trained and have access to updated guidelines from World Health Organization.

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APPENDICES

Appendix I: Participant's Information Sheet

Title: Utilization of Pre-Travel Health Services among Kenyan Travelers Departing Jomo Kenyatta International Airport, Nairobi Kenya

Dear participant

My name is and am kindly inviting you to take part in this research study which I am conducting on utilization of Pre-Travel Health Services among Kenyan travelers departing Jomo Kenyatta International Airport. I am requesting you to read this consent form whose purpose is to give you the information you will need to help you decide whether or not to participate in the study. Please read the form carefully. You may ask questions about the purpose of the research, the possible risks and benefits, your rights as a volunteer, and anything else about the research that is not clear. This consent form may contain some words that are unfamiliar to you. Please ask me to explain anything you may not understand.

Being in the study is voluntary

Your participation in this study is entirely voluntary you can decide if you want to participate in the study or not. Once you understand the study, and you agree to take part, you will be asked to make your mark on this form in the presence of a witness. . This process is called 'informed consent'. You may decide to withdraw from the study at any time or not to answer questions. If you leave the study, please tell the interviewer why you are leaving so that this information can be used to improve our work and provide more support if possible.

Procedures

If you agree to participate in this study by signing at the end of this form, you will participate in the following activities. You will be asked questions about your personal life related to this study such as level of education, etc.

Possible Risks/Discomfort

There are no invasive procedures that will be carried out on you.

Data security and Confidentiality

All the information gathered by the research team will be in confidence for the sole purpose of this research only. Any records relating to your identity will remain confidential. Your name will not be divulged in any of the forms, and you will receive a copy of this consent form. No one will have access to the interviews except the investigators. Strict data management procedures are intended to ensure confidentiality of the study subjects.

Benefits and costs to you

There are no direct benefits to you for participating in the study. However, the results of the study will inform the health authorities about the uptake of pre-travel health services in Kenya.

Contact person

If you ever have questions or concerns about this study, you should contact: Grace Kihika Principal Investigator; Mobile No: 0714652313 or Dr. Joseph Mutai, mobile No. 0725082352

Your rights as a Participant

This research has been reviewed and approved by the Kenyatta National Hospital/university of Nairobi Ethics and Research review committee, if you have any questions about your rights as a research participant you may contact the following;

The Secretary KNH /University of Nairobi Ethics Review Committee,

P.O Box 20723 – 00202 Tel: (254) 020 726300

Email address: uonknh_erc@uonbi.ac.ke

Appendix II: Information Sheet in Swahili

Mada: Matumizi Ya Huduma Za Kiafya Kabla Ya Usafiri Wa Miongoni Mwa Wasafiri Wa Kenya Kutoka Uwanja Wa Ndege Wa Kimataifa Wa Jomo Kenyatta, Nairobi Kenya.

Kwa Mshiriki mpendwa,

Jina langu ni.....nakuomba ushiriki katika utafiti ninaofanya juu ya mada hii, “Matumizi Ya Huduma za Kiafya Kabla ya Usafiri Wa Miongoni Mwa Wasafiri Wa Kenya Kutoka Uwanja Wa Ndege Wa Kimataifa Wa Jomo Kenyatta”. Ningependa kukuomba uisome ridhaa hii ya makubaliano ambayo lengo lake kuu ni kukupa habari ambayo itakuwezesha kuamua iwapo utashiriki katika utafiti huu au la. Zingatia kwa umakimanifu yaliyomo unaposoma ridhaa hii. Unaweza kuuliza maswali yoyote kuhusu lengo kuu la utafiti huu, matatizo unayoweza kukumbana nayo na faida unazoweza kupata, haki zako kama mshiriki na maswali mengineo ambayo si bayana katika utafiti huu. Ridhaa hii ya makubaliano huenda ikawa na maneno mengine ambayo huyafahamu. Naomba uniulize jambo lolote ambalo utahitaji ufafanuzi zaidi.

Kushiriki Kwa Utafiti Huu Ni Kwa Hiari

Ushirika wako katika utafiti huu nikwahari unaweza kuwa mshiriki au kutoshiriki. Ukielewa zoezi hili kisha uridhie kushiriki katik autafiti huu, utatia sahihi yako pakiwemo mshahidi. Zoezi hili linaitwa “taarifa ya ridhaa”. Unaweza kuamua kujiondoa katika kushiriki utafiti huu wakati wowote au kutojibu maswali. Iwapo utajiondoa katika zoezi hili, mjulishe mtafiti sababu yakujiondoa ili ujumbe huu uweze kutumika kuboresha kazi hii ya utafiti na kutoa usaidizi zaidi kwa zoezi hili.

Taratibu

Iwapo utakubali kushiriki katika utafiti huu kwa kutia sahihi kwenye hitimisho ya ridhaa(Karatasi) hii, utahitajika kushiriki katika shughuli zifuatazo. Utaulizwa maswali yakibinafsi kuhusu maisha yako na jinsi yanavyohusiana na utafiti huu kama vile, kiwango chako cha elimu, na kadhalika.

Matatizo ya utafiti

Hamna matatizo utakayokumbana nayo kama mshiriki

Usalama na usiri wa Data

Jumbe zote zitakazokusanywa na watafiti zitahifadhiwa kwa lengo kuu la utafiti pekee. Rekodi zozote kukuhusu zitasalia kwa watafiti. Jina lako halitasambazwa kwa mashirika mengine, na utapata nakala ya ridhaa hii. Hamna atakayefikia hoja zako ila wachunguzi. Harakati za kudhibiti za usimamizi wa data nikuhakikisha usiri wawahusika wa utafiti huu.

Faida na gharama za utafiti

Hamna manufaa ya moja kwa moja kwa ushiriki wako katika utafiti huu. Hata hivyo, matokeo ya utafiti huu yatawasaidia pakubwa wasimamizi wa afya kuboresha huduma za kiafya wanazozipata wasafiri kabla ya safari zao kwenda nchi za kigeni.

Mawasiliano

Iwapo utakuwa na maswali au tashwishwi yoyote kuhusu utafiti huu, unawezakuwasiliana na: Mchunguzi mkuu Grace Kihika kupitia nambari ya simu: 0714652313 au Dkt. Joseph Mutai kupitia nambari, 0725082352.

Haki za mshiriki

Utafiti huu umeidhinishwa na kupitishwa na Hospitali kuu ya Kenyatta ikishirikiana na kamati ya utafiti na maadili, Chuo kikuu cha Nairobi. Iwapo unaswali lolote kuhusu haki zako kama mshiriki wa utafiti unaweza wasiliana; na

Katibu KNH /University of Nairobi Ethics Review Committee,

Sanduku la posta 20723 – 00202 Simu: (254) 020 726300

Baruapepe : uonknh_erc@uonbi.ac.ke

Appendix III: Consent Form

Utilization of Pre-Travel Health Services among Kenyan Travelers Departing Jomo Kenyatta International Airport, Nairobi Kenya

I.....agree to participate in a study on Utilization of pre-travel health advice among travelers at JKIA. The purpose and nature of the study has been explained to me in writing. I am participating voluntarily and I give permission for my interview. I understand that I can withdraw from the study, without repercussions, at any time, before it starts or while in progress. I understand that I can withdraw permission to use the data within two weeks of the interview, in which case the material will be deleted. I understand that anonymity will be ensured in the write-up by disguising my identity. I understand that disguised extracts from my interview may be quoted in the thesis and any subsequent publications if I give permission below:

(Please tick one box :)

I agree to quotation/publication of extracts from my interview

I do not agree to quotation/publication of extracts from my interview

Signed.....

Date.....

If you ever have questions or concerns about this study, you should contact: Grace Kihika: Principal Investigator; Mobile No: 0714652313 or Dr. Joseph Mutai, mobile No. 0725082352

Appendix IV: Consent Form in Kiswahili

Matumizi ya Huduma za Afya Kabla ya Usafiri, Miongoni mwa Wasafiri wa Kenya
Kutoka Uwanja Wa Ndege Wa Kimataifa wa Jomo Kenyatta

Mimininakubali kushiriki katika utafiti juu ya matumizi ya huduma za afya kabla ya usafiri, miongoni mwa wasafiri wa kenya kutoka uwanja wa ndege wa kimataifa wa Jomo Kenyatta. Kusudi na asili ya utafiti imeelezwa kwangu kwa maandiko. Mimi nitashiriki kwa hiari yangu na mimi nimetoa ruhusa kwa ajili ya mahojiano yangu. Naelewa kwamba naweza kujitoka katika utafiti, wakati wowote, kabla ya kuanza au wakati unaendelea. Naelewa kwamba naweza nyima mtafiti ruhusa ya kutumia data ndani ya wiki mbili ya mahojiano, ambapo mtafiti atafuta maoni yangu. Naelewa kwamba jina langu halitaadikwa wa fomu itakayo mbemba maoni yangu. Naelewa kwamba majibu kutokana na mahojiano yangu na mtafiti inaweza kunukuliwa katika chapisho

lolote mtafiti ataona inafaa.

Sahihi Tarehe.....

Iwapo utakuwa na maswali au tashwishwi yoyote kuhusu utafiti huu, unaweza kuwasiliana na : Mchunguzi mkuu Grace Kihika kupitia nambari ya simu, 0714652313 au Dkt. Joseph Mutai kwa nambari 0725082352.

Appendix V: Study Questionnaire

Utilization of Pre-Travel Health Services among Kenyan Travelers Departing Jomo Kenyatta International Airport, Nairobi Kenya

Respondent Number..... Date of Interview.....

Start time..... End time.....

Instruction – Tick the most appropriate answer

1. What is your age?.....

2. Sex

- i. Male.
- ii. Female

3. Marital status

- i. Single
- ii. Married
- iii. Separated
- iv. Divorced
- v. Others

(specify).....

4. What is your destination?

- i. Africa
- ii. America
- iii. Middle East
- iv. Asia
- v. Europe
- vi. Australia
- vii. Others

(specify).....

6. What is the highest education level attained?

- i. Never attended school.
- ii. Primary.
- iii. Secondary.
- iv. Certificate/diploma
- v. Degree
- vi. Masters
- vii. PHD

i. Others

(specify).....

7. Have you travelled out of your home country previously?
 - i. Yes
 - ii. No

8. When did start to planning for your trip?
 - i. Less than one month ago
 - ii. More than one month ago

9. How many countries are you visiting?
 - i. One
 - ii. 2 or more

10. What are your reasons for the trip (>1 choice allowed)?
 - i. Visiting friends and relatives
 - ii. Vacation/tourism
 - iii. Business/convention/conferences
 - iv. Study/research
 - v. Missionary
 - vi. Medical care/procedure
 - vii. Volunteer work
 - viii. Others
 (*specify*).....

11. What will be your trip duration?
 - i. Less than 2 weeks
 - ii. Between 2 weeks to 3 months
 - iii. 3 months or more

12. a) Do you know of any health services offered to international travelers?
 - i. Yes
 - ii. No
 b) If yes which health services do you know?
 - i. Vaccination
 - ii. Health advice on how to stay healthy depending on destination
 - iii. Drugs for self-medication
 - iv. Others
 (*specify*).....

- c) How did you get to know about these services?
 - i. Friends and relatives who travelled before
 - ii. Private clinics
 - iii. Internet sources
 - iv. Health insurance
 - v. Travel agent
 - vi. Government health facilities
 - vii. Others
 (*specify*).....

13. a) What pre-travel health services did you obtain before travelling?
- i. Vaccination
 - ii. Health advice on how to stay healthy depending on destination
 - iii. Drugs for self-medication
 - iv. I never got any services
 - v. Others
- (specify).....

b) If you obtained services, where did you get them from?

- i. Internet sources
- ii. Travel agents
- iii. Private clinics
- iv. Health insurance
- v. Government designated vaccination centres
- vi. General practitioners
- vii. Others

(specify).....

c) When did you go for pre-travel health services before travelling?

- i. Less than one week
- ii. 1-2 weeks
- iii. 2-3 weeks
- iv. 3-4 weeks
- v. 4-6 weeks
- vi. More than 6 weeks
- vii. Never visited

d) If you never got any service, what are your reasons for not seeking health services before travelling?

- i. Nobody informed me
- ii. I use my family doctor to get information
- iii. Because I know what to do
- iv. I don't know where to get the advice from
- v. It's far away from me
- vi. Others

(specify).....

14. What is the importance of pre-travel health services?

- i. To avoid health problems
- ii. To take vaccination
- iii. To take prophylaxis
- iv. To avoid challenges at points of entry
- v. Don't know
- vi. Others

(specify).....

15. Do you think vaccination before travel is important?

- i. Yes
- ii. No

16. Have you received travel vaccination (tick all applicable options)

- i. Hepatitis A
- ii. Hepatitis B
- iii. Tetanus
- iv. Typhoid
- v. Influenza
- vi. Measles/mumps/rubella
- vii. Polio
- viii. Cholera
- ix. Yellow fever
- x. Others

(specify).....

17. Do you think it's important to visit a health care provider when already vaccinated?

- i. Yes
- ii. No

18. Do you think receiving information on likely health risks during your trip can help reduce your chances of falling sick when abroad?

- i. Yes
- ii. No

19. Have you ever applied self-medication during this or your previous international travels?

- i. Yes
- ii. No
- iii. I am a first time traveller

20. a) Are you aware of any existing travel recommendations or guidelines on yellow fever vaccine?

- i. Yes
- ii. No

b) From where? (>1 choice allowed)

- i. Kenyan government
- ii. Centre for Disease Control and Prevention
- iii. World Health Organization
- iv. Others

(specify).....

21. Are you afraid of acquiring new infections during international travel?

- i. Yes
 - ii. No
22. a) Are you travelling with children?
- i. Yes
 - ii. No
- b) If travelling with children, are they fully immunised?
- i. Yes
 - ii. No
23. Are you satisfied with the travel health services you receive?
- i. Yes
 - ii. No
24. If no what are the causes of your dissatisfaction?
- i. Only vaccination is given
 - ii. No advice is given
 - iii. It is expensive
 - iv. Others
- (specify).....

Appendix VI: Study Questionnaire in Kiswahili (Dodoso)

Matumizi ya Huduma za Afya Kabla ya Usafiri, Miongoni mwa Wasafiri wa Kenya

Kutoka Uwanja wa Ndege wa Kimataifa wa Jomo Kenyatta

Nambari ya mhojiwa..... Tarehe ya

Mahojiano.....

Saa ya kuanza..... Saa ya

kumaliza.....

Weka alama ya sahihi kwenye jibu linalokufaa zaidi(√)

1. Una umri
gani?.....

2. Jinsia
i. Mwanaume
ii. Mwanamke

3. Hali ya ndoa
i. Sijaolewa
ii. Nimeolewa
iii. Nimepewa talaka
iv. Nimetengwa
v. Jibu jingine
(*elezea*).....

4. Unasafiri Kwenda wapi?
i. Africa
ii. America
iii. Middle East
iv. Asia
v. Europe
vi. Australia
vii. Jibu jingine
(*elezea*).....

5. Umefikia kiwango hani cha elimu?
i. Sijawahi kwenda shule
ii. Shule ya msingi
iii. Secondari
iv. Cheti/diploma
v. Shahada
vi. Shahada ya uzamili
vii. Shahada ya uzamivu

- ii. Jibu jingine
(elezea).....

- 6. Je, umewahi kusafiri nje ya nchi tena awali?
 - i. Ndio
 - ii. La

- 7. Ulianza kujipanga kwa ajili ya safari hii lini?
 - i. Chini ya mwezi moja uliopita
 - ii. Zaidi ya mwezi mmoja uliopita

- 8. Unatembelea nchini ngapi kwenye safari hii?
 - i. Moja
 - ii. Mbili au zaidi

- 9. Ni nini kiini cha safari hii? (umeruhusiwa chaguo zaidi ya moja)
 - i. Kuwatembelea ndugu na marafiki
 - ii. Likizo/utalii
 - iii. Biashara/mkataba/kongamano
 - iv. Utafiti/masomo
 - v. Umishonari
 - vi. Huduma za matibabu
 - vii. Kazi ya kujitolea
 - viii. Jibu

jingine(elezea).....

- 10. Safari yako itachukua muda gani kabla hujarejea?
 - i. Chini ya wiki mbili
 - ii. Kati ya wiki 2 na miezi 3
 - iii. Zaidi ya miezi 3

- 11. a) Unajua huduma za kiafya ambazo wasafiri hupokea kabla ya kwenda nje ya nchi?

- i. Ndio
- ii. La

b Kama jibu lako ni ndiyo, ni huduma gani unayoifahamu (*zaidi ya uchaguo limeruhusiwa*)??

- i. Chanjo
- ii. Ushauri wa jinsi ya kuishi na afya ukizingatia mahali unapotembelea
- iii. Drugs for self-medication
- iv. Jibu jingine

(elezea).....

- c). Ulijua kuhusu hizi huduma upitia nani?

- i. jamaa na marafiki waliosafiri kabla ya mimi

- ii. kliniki ya kibinafsi
- iii. Kutoka wa mtadao
- iv. Bima ya Afya
- v. Wakala wa usafiri
- vi. vituo vya afya Serikali
- vii Jibu jingine

(elezea).....

12. a) Je, kabla ya kusafiri, ulipata huduma gani za afya zinazohusiana na safari yako?

- i. Chanjo
- ii. Ushauri wa jinsi ya kuishi na afya ukizingatia mahali unapotembelea
- iii. Drugs for self-medication
- iv. Sikupata huduma yoyote
- v. Jibu jingine

(elezea).....

b) Ulizipata huduma hizi kupitia kwa nani ?

- i. Mtadao
- ii. Wakala wa usafiri
- iii. kliniki za kibinafsi
- iv. Bima ya Afya
- v. vituo za serikali teule kwa chanjo
- vi. Kutoka kwa daktari wa kibinafsi
- vii. Jibu jingine

(elezea).....

c) Je, ni lini ulipata huduma za afya kwa matayarisho ya safari yako?

- i Chini ya wiki moja
- ii. wiki 1-2
- iii. wiki 2-3
- iv. wiki 3-4
- v. wiki 4-6
- vi. zaidi ya wiki 6
- vii. sikupata huduma yoyote

viii. kamwe sikutembelea

d). Kama hukupata , ni sababu zipi zilizokupelekea kutoenda ili kupata huduma za kiafya ambazo hutolewa kwa wasafiri wa kimataifa?

- i. Hakuna mtu alinieleza
- ii. Mimi kutumia daktari wa familia yangu kupata taarifa
- iii. Kwa sababu najua nini cha kufanya
- iv. Sijui ni wapi kwa kupata ushauri
- v. Mahali pa upata ushauri ni mbali sana na mimi
- vi. Jibu jingine

(elezea).....

13. Je, umuhimu wa huduma ya afya kabla ya kusafiri ni nini?

- i. Ili kuepuka matatizo ya kiafya
- ii. Kupata chanjo
- iii. Kuzuia matatizo ya afya
- iv. Ili kuepuka changamoto katika maeneo ya kuingia
- v. Sijui
- vi. Jibu jingine(*elezea*)

14. Je, kwa maoni yako, chanjo kabla ya kusafiri ni muhimu?

- i. Ndiyo
- ii. La

15. Je, ulipokea chanjo zipi kabla ya kusafiri(*Weka alama wa chaguzi zote zinazokufaa*)

- i. hepatitis A
- ii. hepatitis B
- iii. pepopunda
- iv. Homa ya matumbo
- v. Influenza
- vi. Surua / matumbwitumbwi / rubela
- viii. *Kipindupindu*
- ix. Homa ya manjano
- x. Nyingine(*elezea*)

16. Je, kwa maoni yao, chanjo kabla ya kusafiri ni muhimu?

- i. Ndiyo
- ii. La

17. Je, kwa maoni yao ni muhimu kutembelea mhudumu wa afya wakati tayari umepata chanjo?

- i. Ndiyo
- ii. La

18. Je, unafikiri kupokea taarifa juu ya hatari ya uwezekano kwa afya wakati wa safari yako inaweza kusaidia kupunguza uwezekano wako wa kupata mgonjwa wakati uko nje ya nchi?

- i. Ndiyo
- ii. La

19. Je, umewahi kujitibu wakati wa safari yako ya kimataifa hapo mbeleni au kwenye safari hii?

- i. Ndiyo
- ii. La
- iii. Mimi ni msafiri wa mara ya kwanza

20. Je, wewe unafahamu kuwepo mapendekezo/ miongozo yoyote kuhusu chanjo ya homa ya manjano kwa wasafiri?

- i. Ndiyo
- ii. Hapana

b. Kutoka wapi? (chaguzi zaidi la moja kuruhusiwa)

- i. Serikali ya Kenya
- ii. Kituo cha Kudhibiti na Kuzuia Magonjwa
- iii. jingine(*elezea*).....

21. Je ,unahofia maambukizi mapya?

- i. Ndiyo
- ii. La

22 a. . Je, unasafiri na watoto?

- i. Ndiyo
- ii. La

b. Kama unasafiri na watoto, wao wamepata chanjo kikamilifu?

- i. Ndiyo
- ii. La

23. Je, unaridhika na huduma za afya ya usafiri unazopokea?

- i Ndiyo
- ii La

24. Kama huridhiki, ni nini sababu ya kutoridhika?

- i. Ni chanjo pekeyake hupeanwa
- ii. Hakuna ushauri hupeanwa
- iii. Ni gharama kubwa
- iv. Sababu
- Nyingine(*elezea*).....

Appendix VII: Key Informant Interview Guide

I am.....a student from Jomo Kenyatta University of Agriculture and Technology. I am undertaking a study on utilization of pre-travel health services, in partial fulfilment of the requirement for the award of a degree of Masters of Science in International Health. Part of the data collection methods involve key informant interviews which I am here by requesting you to take part in. Be assured that any responses you give will be confidential. Are you ready so we begin the interview?

1. Tell me about your involvement in provision of pre-travel health services to travelers?
 - How long have you worked with port health services?
 - What are the major pre-travel health services you offer?
 - Are there any specific services offered to specific groups?(e.g. Students, pregnant women etc.)
 - What are some of the avenues you use to reach out to travelers with health service needs before they travel?
 - Is there a structure through which a traveller can get information from various institutions?
 - If yes, what institutions are involved?
2. From your experience in offering pre-travel health services, how do you promote travelers to visit health clinics prior to travel?
3. Do you think the avenues used to reach out to travelers with health information prior to travel are adequate?
4. What guidelines does the ministry of health use in provision of pre-travel health services?
5. Are there any challenges encountered² when offering services to the travelers?
6. What ideas do you have to increase uptake of pre-travel health services?

Thank you so much for your time and insights. Once the project is complete, I will be happy to share a copy of the final report with you.

Appendix VIII: Ethical Approval Letter



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Ref: KNH-ERC/A/197

27th June, 2017

Grace Wacuka Kihika
Reg. No. TM309-3951/2015
College of Health Sciences
J.K.U.A.T

Dear Grace

Revised research proposal – Utilization of pre-travel Health Services among Kenyan Travellers Departing Jomo Kenyatta International Airport (P126/03/2017)

This is to inform you that the KNH- UoN Ethics & Research Committee (KNH- UoN ERC) has reviewed and **approved** your above revised proposal. The approval period is from 27th June, 2017 – 26th June, 2018.

This approval is subject to compliance with the following requirements:

- Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
- All changes (amendments, deviations, violations etc) are submitted for review and approval by KNH-UoN ERC before implementation.
- Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH- UoN ERC within 72 hours.
- Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
- Submission of an *executive summary* report within 90 days upon completion of the study. This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/ or plagiarism.

For more details consult the KNH- UoN ERC website <http://www.erc.uonbi.ac.ke>

Yours sincerely,



PROF A.N. GUANTAI
CHAIR, KNH-UoN ERC

c.c. The Principal, College of Health Sciences, UoN
 The Director, CS, KNH
 The Assistant Director, Health Information, KNH
 Supervisors: Dr. Joseph Mutai, Dr. Eddy Odari

Appendix IX: Publication

Article Acceptance Certificate

This certificate confirms that the following paper has been accepted for publication in International Journal of Travel Medicine and Global Health, Volume 6, Issue 3

Title: UTILIZATION OF PRE-TRAVEL HEALTH SERVICES AMONG KENYAN INTERNATIONAL TRAVELLERS IN JOMO KENYATTA AIRPORT CONDUCTED FROM 2nd AUGUST TO 30th SEPTEMBER 2017

ID: IJTMGH-1806-1091 (R5)

Authors: Grace Wacuka Kihika, Eddy Okoth Odari, Joseph K Mutai, Augustine Gatimu Njuguna

Submit Date: 11 June 2018

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Publish Date: 25 September 2018

Prof. Morteza Izadi

Editor-in-Chief of International Journal of Travel Medicine and Global Health