A Study on Travel Health Information System of the Republic of Korea : Comparison with the Case of the United States and the United Kingdom

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Abbreviations and Acronyms

CDC	Centers for Disease Control and Prevention
EHEC	Enterohemorrhagic Escherichia coli
EVD	Ebola virus disease
GHSA	Global Health Security Agenda
IHR	International Health Regulations
KCDC	Korea Centers for Disease Control & Prevention
OECD	Organization for Economic Cooperation and Development
ROK	Republic of Korea
UK	United Kingdom of Great Britain and Northern Ireland
US	United States of America
UNWTO	World Tourism Organization
WHO	World Health Organization

Abstract

A Study on Travel Health Information System of the Republic of Korea :
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This study aims to examine the current status of Korea's travel health information system, identify problems, and propose programs and policies to improve the current system. In order to gain new and deep insights, the study explored travel health information system of the US and the UK through website and literature review. The results of this study suggest that capacity for appropriate preparation and response should be strengthened to prevent and manage the import of overseas infectious diseases into Korea.

Korea's system has relatively low level of information delivery and information quality compared to the US and the UK system due to three main impediments. First is low effectiveness of information delivery. In Korea's current system, travel health information is provided on Overseas Infectious Diseases NOW website operated by the Korea Centers for Disease Control and Prevention, while overseas travel safety and travel warning information are provided on Overseas Travel Safety website operated by the Ministry of Foreign Affairs. There is no clearly visible link between the two websites, which shows that the

information is provided in a dualized form. In addition, various events and promotions are being carried out to promote Overseas Infectious Diseases NOW, but only 32.0% of Koreans have experience of searching on infectious diseases.

Second, the information provided by the current system is not specialized for Korean overseas travelers. In case of the US and the UK, travel health information specialized for their own nationals are provided, based on a detailed analysis of the travel characteristics of their nationals, such as place and route of infection, using the high level of surveillance system and expertise they have. On the other hand, Korea lacks the surveillance capacity or panel of experts to acquire such information.

Finally, national philosophy that may serve as a criterion for recommendations for Korean travelers is not yet established. In the US and the UK, recommendations are made for vaccine-preventable diseases based on national philosophies formed upon national perspectives and various analysis including cost-effectiveness analysis, on specific diseases. Korea does not have such national philosophy developed at present.

To remedy these limitations, it is recommended that Korea first conduct multi-sectoral evaluation, through strengthening its surveillance system and expertise, to provide information specific to Korean travelers. Secondly, it is advised that Korea constitute a national philosophy that can lay the basis of recommendations for disease-specific preventive measures. An effective travel health information system should be formulated for the health of overseas travelers and the safety of the people.

Keywords : Travel medicine, Travel health, Overseas infectious disease, Imported infectious disease, Global health security, Overseas safety information

I. Introduction

1. Background and Necessity of Study

With the deepening of global connectivity, greater accessibility and the increasing volume and speed of population movement, the world is more exposed to global health threats posed by the spread of infectious diseases in humans, animals and plants (Wilson, 2003). Tourism has continuously grown for 9 consecutive years since 2010, with 1.4 billion international tourist arrivals in 2018. There has been a noticeable change in the mode of transport from 2000 to 2018, with an increase in air travel proportion from 46% to 58%, while land transport decreased from 49% to 39% (World Tourism Organization, 2019). More cities are connected by air transport at lowered cost, with around 22,000 unique city pairs connected by air transport in 2018, which is more than twofold the number in 2000 (International Air Transport Association, 2019). Travelers are exposed to harboring a novel infection at a new environment and may carry the potential to make other populations more susceptible to infections along the way or at the final destination (Wilson, 2003). The increase of air travel facilitates and speeds up this process, so that an infection can travel from one location to another in merely 1-2 days (Findlater and Bogoch, 2018).

Under such setting, the risk of emerging and re-emerging infectious diseases developing into endemic, epidemic or pandemic outbreak is heightened, threatening the global health security. To keep the world safe and secure from infectious diseases threats, it is important to strengthen the national, regional, and global capacity to prevent, detect, and respond to infectious diseases threats (Global Health Security Agenda 2019). This study will focus on one of the means which could help the prevention aspect, which is providing necessary information to travelers to enable them to take sufficient measures before, during, or after the travel. Not only will this reduce negative consequences of individuals, but also public-health consequences if infectious diseases are introduced to new areas by ill travelers (Gautret et al., 2012).

2. Purpose of Study

With the fast-growing international travel, the impact of tourism development on public health should be acknowledged by travelers, travel medicine practitioners, health educators, global health organizations and national health authorities. Yet, several studies have illustrated that the percentage of international travelers who obtain pre-travel health advice is less than 50% (Leggat, 2004), and those who do commonly seek health advice from travel agency or refer to travel brochures, which often contain deficient travel health information (Cossar et al., 1990). It is significant to provide relevant advice from a qualified source so that travelers can be prepared with appropriate knowledge, attitudes and practices (KAP) in travel health (Wilder-Smith et al., 2004).

The source of travel health information varies, from travel industry to health professionals in different levels of health care delivery system, but more travelers are turning to the Internet to search for information on traveler's health and safety (Leggat, 2004). Comprehensive travel health and outbreak information can be found on websites operated by international bodies such as the World Health Organization (WHO), and national bodies such as US Centers for Disease Control and Prevention (CDC), UK National Travel Health Network and Centre (NaTHNaC), and the Public Health Agency of Canada (PHAC) (Keystone, 2019).

The role of national health authorities in providing travel medicine services, from up-to-date information to utilization of preventive measures, as well as educating on travel-associated health risks and public health burden, is becoming more important than ever (Al-Abri, Abdel-Hady and Al-Abaidani, 2016).

Along with the increasing number of overseas travelers, more infectious diseases are imported to the Republic of Korea (Kim et al., 2018). In this study, the current travel health information system of ROK will be reviewed in comparison with the system of US and UK, to diagnose any factors which may hinder the effective delivery of travel health information of the ROK system and find points of improvement which could be further applied to the system.

Thus, detailed objectives of this study are as follows :

1) To review the current travel health information system of ROK.

2) To review the travel health information system of other countries, US and UK, to gain new and deep insights.

3) Compare the system of the three countries and find factors that hinder the achievement of the purpose of travel health information system of ROK.

4) Make a recommendation on ways to overcome any obstacles for the improvement of the system of ROK.

3. Method of Study

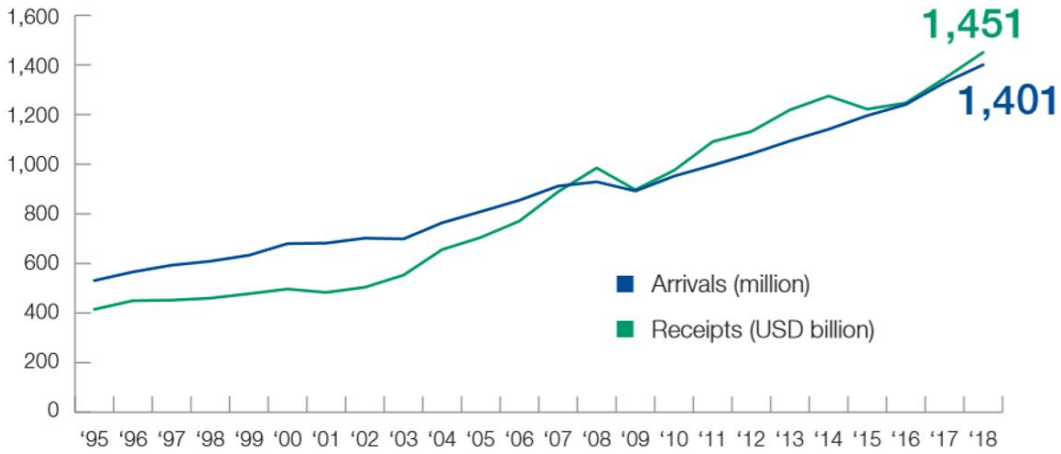
There are different mediums providing travel health information, but this study specifically reviewed travel health information website operated by the government to evaluate its content, features and functionality. The World Health Organization (www.who.int) and the International Society of Travel Medicine (www.istm.org) remain major resources providing various guidelines for healthy travel. Among selected travel medicine websites with high-quality information, US CDC Travelers' Health (https://wwwnc.cdc.gov/travel) and UK National Travel Health Network and Centre (NaTHNaC)'s TravelHealthPro (https://travelhealthpro.org.uk) were compared in order to diagnose and find improvement points applicable to ROK KCDC's Overseas Infectious Diseases NOW (http://xn--now-po7lf48dlsm0ya109f.kr).

II. Travel Health and Global Health Security Threats

1. Growth of Global Mobility

Global mobility has now become an unstoppable trend and types of travel is becoming more various, related with not only tourism but also work, volunteerism, medical care, migration, and so on. According to “International Tourism Highlights, 2019 Edition” by World Tourism Organization (2019), international tourist arrivals reached 1,329 million in 2017, displaying 7% growth from 1,240 million in 2016.

Figure 1. International tourist arrivals (million) and tourism receipts (USD billion)



Source : World Tourism Organization (2019)

2. History of Travel Health

With the growth of tourism, the United Nations named 2017 as the "International Year of Sustainable Tourism for Development", but challenges remain in terms of safety and security. Sharing a better understanding of the concept of One Health, and cooperation among human and animal health to curb the spread emerging and reemerging diseases is more important than ever.

Travel medicine was first acknowledged in 1988 in Zurich at the first international conference on travel medicine, followed by the start of the International Society of Travel Medicine (ISTM) in 1991.

Table 1. Timeline of change in sources of travel health information

Year	Source of Travel Health Information
1960s	Booklet form
1967	US CDC Health Information for International Travel ("The Yellow Book") was published.
1969	WHO adopted IHR
1990s	Increase in volume of international travel
2000s	Offline Computer Databases (diskette, CD-ROM) Online Information Sources : Internet Sites
2005	WHO revised IHR (to ensure maximum security against the international spread of diseases)
2010s	Mobile Application form

Source : Traveler's Health 2019, Travel Medicine (2019), World Health Organization (2019)

To provide up-to-date guidance is a characteristic of travel medicine, with new and re-emerging infectious diseases outbreaks and the advance of science. There have been efforts to provide travel health information to raise travelers' and clinicians' awareness since 1960s, with an evolvement in the source of information from booklet form to offline computer databases, online information sources to mobile applications.

The public awareness on travel health and the potential spread of infectious diseases across borders showed a rise in 2013-2016 Ebola outbreak in West Africa. Yet, no recent data can be found which display a peak in visits to travel health clinics to seek pre-travel health advice. Moreover, there are concerns on vaccine shortages for vaccine-preventable diseases such as yellow fever or hepatitis A, making it less likely for the incidence of preventable travel illnesses to decrease (Keystone, 2019).

3. Global Health Security Threats posed by Travel-Related Diseases

Different types of travel-related illnesses can be categorized into vaccine-preventable infections and non-vaccine preventable infections, such as Zika, chikungunya, and MERS viruses.

Table 2. Types of travel-related illnesses and vaccination

Vaccinations required for entry	Yellow fever, Meningococcal bacteria
Vaccination recommended when traveling to developing countries	Hepatitis A, Typhoid, Meningococcal bacteria, Chicken pox, Measles-Mumps-Rubela (MMR), Rabies, Yellow fever, Influenza
Additional vaccinations when it is not general sight-seeing travel	Pest, Tick-borne Encephalitis, Cholera
Vaccinations or tests necessary to check immunity upon international travel	Hep A, B, Ferrum Thistle, Influenza, Tetanus-Diphtheria-Pertussis(Td/Tdap), Chicken pox, Measles-Mumps-Rubela (MMR), Human Papilloma Virus

Source : Korean Society of Infectious Diseases, 2019

The most frequent cause of traveler's death from infectious diseases is malaria. There is an annual report of around 10,000 cases of malaria imported to areas free of transmission by travelers and immigrants, but the actual number may be more than six-fold the reported number. Even in the US, the number of imported malaria cases displays a rising pattern since 1973, and in 2014, 1,724 cases of imported malaria were reported to CDC, with a mortality rate of 1.7% and morbidity rate of 17%. *World Malaria Reports* published that the global malaria burden decreased steeply, and it became less vulnerable for travelers to be infected by malaria. Yet, imported cases of malaria with travelers and immigrants as courier are remain high in certain countries, especial tropical areas in Africa and Papua New Guinea (Keystone, 2019).

Table 3. Travel-related diseases which pose a risk to global health security

Type of disease	Outbreak country	Characteristics
Ebola virus disease	Africa - Guinea - Democratic Republic of the Congo (DRC)	WHO aims to prevent Ebola outbreaks by maintaining surveillance for Ebola virus disease and supporting at-risk countries to develop preparedness plans.
Middle East respiratory syndrome coronavirus (MERS-CoV)	Middle East (27 countries have reported MERS cases) - Saudi Arabia (2012) - United Arab Emirates - Republic of Korea	- The virus does not seem to pass easily from person to person unless there is close contact, such as occurs when providing unprotected care to a patient. - WHO does not recommend the application of any travel or trade restrictions or entry screening related to MERS-CoV.
Typhoid	Developing areas of Africa, the Americas, South-East Asia and the Western Pacific regions	Typhoid fever is common in places with poor sanitation and a lack of safe drinking water.
Yellow fever	47 countries in Africa (34), Central and South America (13) (tropical areas)	- Yellow fever is prevented by an extremely effective vaccine, which is safe and affordable. - The Eliminate Yellow Fever Epidemics (EYE) Strategy was developed to respond to the increased threat of yellow fever urban outbreaks with international spread.
Zika virus	Africa, the Americas, Asia and the Pacific - Island of Yap (Federated States of Micronesia) (2007) - French Polynesia (2013) - Brazil (2015)	- Zika virus can be transmitted from mother to fetus during pregnancy, resulting in microcephaly (smaller than normal head size) and other congenital malformations in the infant, collectively referred to as congenital Zika syndrome. - Zika virus can be transmitted through sexual intercourse.

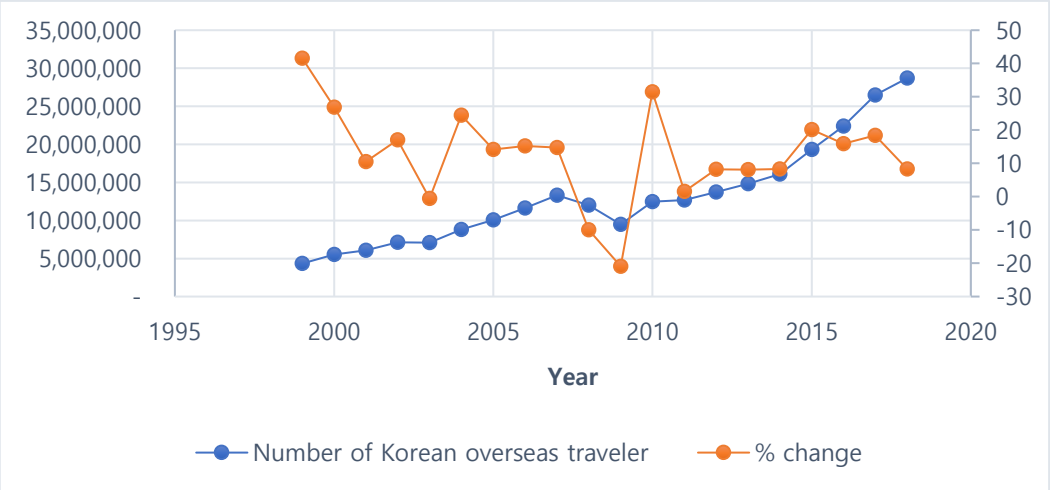
Source : World Health Organization (2019)

4. Travel-Related Disease Risks on the Republic of Korea

Since overseas travel has been liberalized in 1989, the number of Korean

overseas travelers continuously increased, with two-digit growth almost every year. According to Korea National Tourism Survey in 2018 by Korea Culture Tourism Institute, 24,000 persons (Korean nationals aged 15 and over) were interviewed. Results on overseas travel showed that Travel Experience rate[1] of 2018 was 22.4% (Non-experience 77.6%), with the Average Number of Days of Overseas Travel per Trip[2] being 4.62 days.

Figure 2. Number of Korean overseas travelers by year



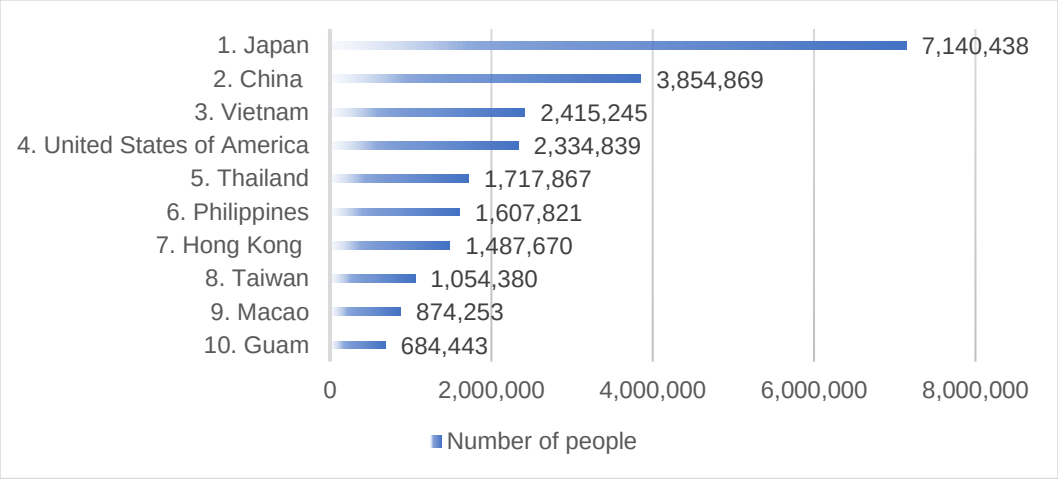
Source : Korea Tourism Organization (2019)

[1] Ratio of travel experience was calculated from questions of overseas travel in 2018 during December survey session

[2] Calculated results as the average travel days per trip only for traveler

Among top 10 destinations visited by the Korean people in 2017, only Japan and USA (including Guam) are member countries of OECD with high-performing health systems, where relatively safe travel is possible with low risk of travel-related infectious diseases.

Figure 3. Top 10 destinations of Korean overseas travelers (2017)

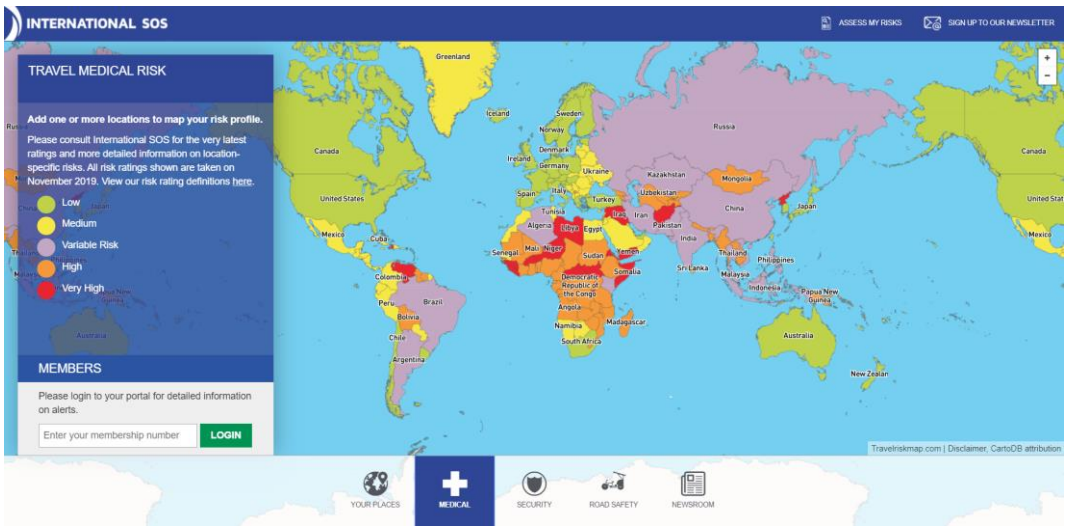


Source : Korea Tourism Organization (2019)

Based on the interactive ‘Travel Risk Map’ from International SOS, 19 countries have the highest health risks (risk ratings taken on November 2019), including Venezuela in South America, South Sudan, Niger and Sierra Leone in

Africa, Syria and Iraq in the Middle East, and Afghanistan and North Korea in Asia (Figure 4). Among top 10 destinations of Korean people, four countries (China, Vietnam, Thailand, Philippines) pose ‘Variable Risk’, while the rest show ‘Low’ travel medical risk (Table 4).

Figure 4. Travel Medical Risk page



Source : International SOS 2019

Table 4. Travel Medical Risk of top 10 destinations of Koreans in 2017

Country	Travel Medical Risk
Japan	Low
China	Variable Risk
Vietnam	Variable Risk
USA	Low
Thailand	Variable Risk
Philippines	Variable Risk
Hong Kong	Low
Taiwan	Low
Macao	Low
Guam	Low

Source : International SOS 2019

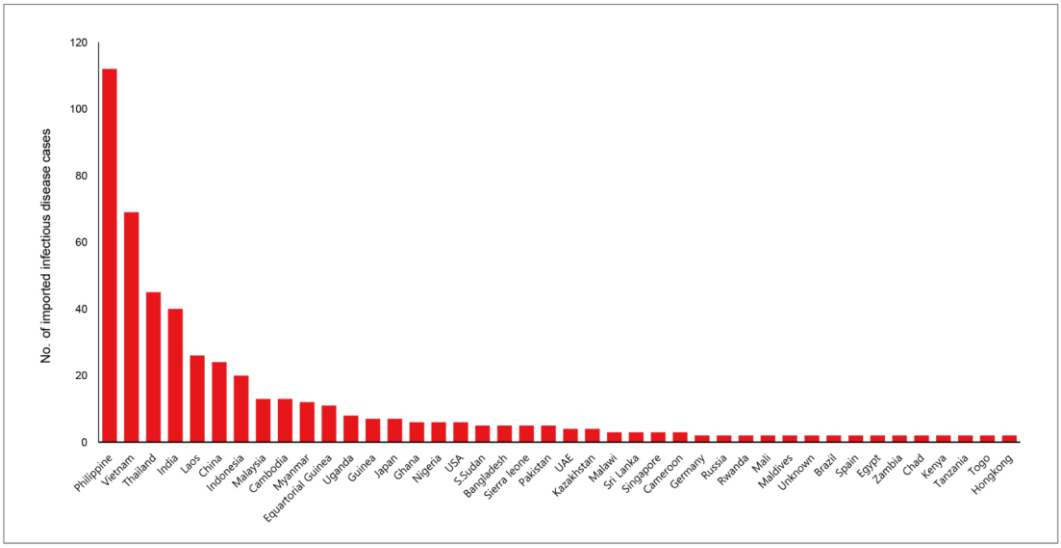
From “Estimation of infectious disease incidence rate by comparing the number of imported infectious disease cases with the number of incoming travelers via direct flights to the Republic of Korea in 2017”, a preliminary analysis by Kim et al. (2018) which estimated the incidence rate of infectious diseases by comparing the number of imported infectious disease cases with the number of incoming travelers via direct flights, the total number of patients with overseas infectious diseases was 529 in 2017, and there was no distinction between Korean and foreign patients. By region, 415 were reported in Asia, accounting for the largest share, followed by Africa (80), America (15), Europe (10), Middle East (5), Oceania (3), and unknown (1)[3].

[3] One case with suspected area unidentified was excluded from the analysis.

Southeast Asian countries, including the Philippines, Vietnam and Thailand, showed relatively high incidence rates, while developed countries, such as Japan, China, the USA and Taiwan, showed relatively low incidence rates. There were also countries which showed a higher incidence rate than other countries, which were India, Myanmar, and Laos (Kim et al., 2018).

Major inflow countries include the Philippines (112), Vietnam (69), Thailand (45), India (40), Laos (26), China (24), Indonesia (20), Malaysia (13), Cambodia (13), Myanmar (12) and Equatorial Guinea (11), mainly in Asian countries (Figure 5).

Figure 5. Number of imported infectious disease cases by country in 2017



Source : “Estimation of infectious disease incidence rate by comparing the number of imported infectious disease cases with the number of incoming travelers via direct flights to the Republic of Korea in 2017” (Kim et al., 2018)

Mosquito-borne diseases, such as dengue fever and malaria, accounted for half of the total number of cases, and other waterborne foodborne diseases accounted for the majority (Table 5).

Table 5. Imported infectious disease cases in the ROK by disease, 2017 (n=528)

Disease	No. of case	%
Dengue fever	171	32.4
Malaria	79	15
Shigellosis	69	13.1
Typhoid fever	50	9.5
Viral hepatitis A	37	7
Paratyphoid fever	19	3.6
Varicella	17	3.2
EHEC	16	3
Lyme Borreliosis	13	2.5
Viral hepatitis C	11	2.1
Zika virus infection	11	2.1
Mumps virus	6	1.1
Chikungunya fever	5	0.9
Cholera	5	0.9
Syphilis	4	0.8
Measles	3	0.6
Pertussis	3	0.6
Brucellosis	2	0.4
Melioidosis	2	0.4
Scarlet fever	2	0.4
Tsutsugamushi disease	2	0.4
Q fever	1	0.2

Source : “Estimation of infectious disease incidence rate by comparing the number of imported infectious disease cases with the number of incoming travelers via direct flights to the Republic of Korea in 2017” (Kim et al., 2018)

III. Comparison of Travel Health Information Websites of US, UK, ROK

1. Travel Health Information Website of the US

Travelers' Health website operated by the Centers for the Disease Control and Prevention (CDC) contains most probable topics related to traveler's health, including the latest outbreaks. CDC Travelers' Health Branch is to "Protect the health of US residents traveling internationally or living abroad".

The website provides CDC's Yellow Book (Health Information for International Travel), published every two years as a resource for health professionals providing care to international travelers.

On 'Travel Notices' page, each country or disease is labeled in three levels (Watch Level 1, Alert Level 2, Warning Level 3), making it easier for travelers to identify the risk before travel. Also, 'Travel Advice' is specified into 55 different topics to meet various needs of travelers such as food and water safety, bug bites, road safety, special groups of travelers such as children, pregnant women, travelers with special health conditions, senior citizens, as well as specific reasons for travel like business travel, adventure travel and studying abroad. There is also a link from the website to the guidance on airline and cruise ships on the CDC Quarantine website.

One of the most distinctive features of this website is that it provides destination-specific and disease-specific information in two categories, one for travelers and the other for clinicians. Print materials are available in English and Spanish. Also, two mobile apps are in service, which are ‘Can I Eat This?’, to help prevent travelers’ diarrhea, and ‘TravWell’, to help plan for safe and healthy international travel.

Newsletter and Travel Notice Alerts is provided to subscribers, and CDC-INFO, a national contact center, is available to answer questions from the public and healthcare providers. Variety of social media channels such as Facebook, Twitter and Figure1 are operated.

Overall, there is abundant information on this website, which may be useful for clinicians, but on the other hand, from a traveler’s perspective, it may be difficult to find and digest the information they need quickly, unless referred to a specific section of the site (Leggat, 2004).

Table 6. Characteristics of CDC Travelers' Health

Country	United States	
Organization	CDC	
Department	Content source by National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) and Division of Global Migration and Quarantine (DGMO)	
Website Name	CDC Travelers' Health	
Year started	Not specified	
Aim	Providing health advice to internationals travelers, including advice about medications and vaccines	
Language	English Spanish (partly)	
Number of destinations covered	283 destinations 1) country 2) specific region within a country	
Number of diseases covered	41	
Share Information	Contact Us 1) Social Media i) Twitter, Facebook ii) Figure1 (clinicians only)	2) Email Updates (subscribe) 3) CDC-INFO (questions via phone or email, in English or Spanish) 4) For Clinicians
Update	Regular update	
Content (Detailed)	1. Destinations 1) Search Country i) For Travelers Information provided : a) Travel Health Notices b) Vaccines and Medicines c) Stay Healthy and Safe d) Health Travel Packing List e) After Your Trip ii) For Clinicians a) Travel Health Notices b) Vaccines and Medicines c) Non-Vaccine-Preventable Diseases d) Patient Counseling d) Health Travel Packing List e) Advising Returning Travelers 2) Complete List of Destinations 2. Find a Clinic 1) Health Departments 2) Vaccine Finder 3) Travel Medicine Clinics 4) Yellow Fever Vaccination Clinics 3. Travel Notices - Search By Country Name or Disease - 3 Types of Notices	1) Warning Level 3, Avoid Nonessential Travel (Red) 2) Alert Level 2, Practice Enhanced Precautions (Yellow) 3) Watch Level 1, Practice Usual Precautions (Green) 4. Travel Advice and Resources 1) Advice for Travelers 2) Clinician Resources 3) Industry Resources i) Air Travel Industry ii) Cruise Ship Industry 4) Research Partners i) Global TravEpiNet (GTEN) ii) GeoSentinel 5. Disease Dictionary (41 diseases) - Ebola Recommendations for Organizations - Zika Travel Information 6. Yellow Book 7. Frequently Asked Questions 1) Travel Vaccines and Medications 2) Yellow Fever Vaccine 3) Zika 4) Embassies

Source : Travelers' Health 2019

1.1. Background of Infectious Diseases Outbreak in the US

Infectious disease outbreaks can have negative public health, economic and political impact, which is why the US and other countries are trying to strengthen

global health security capacities within the country as well as globally. There were a few cases of Ebola virus disease (EVD) in the US, which posed a political threat and lowered the confidence in the country's capacity to prevent dissemination (Nuzzo and Inglesby, 2018). The first travel-associated case was reported in the US on September 30, 2014, which became the single lethal case in the US. Secondary transmission took place in which two health care workers were infected from a single returned traveler, but recovered completely (Madariaga, 2015). During the 2014 EVD epidemic, the US imposed body temperature screening of travelers returning from affected countries (Findlater and Bogoch, 2018).

In 2014, the Global Health Security Agenda (GHSA) was launched to strengthen both the global and nations' capacity to prevent, detect, and respond to infectious threats. Since then, the US government is providing funding to support the GHSA, as well as providing technical assistance and direct support to countries with vulnerable public health capacities (Nuzzo and Inglesby, 2018).

Recently Zika virus caused outbreaks in Southeast Asia, Pacific Ocean Islands and the Americas. Eleven cases of travel-related Zika virus disease were identified in the US, which occurred in 2013 to 2014 among travelers retuning to the US from outbreak areas. These travelers posed a potential risk of mosquito-borne transmission of Zika virus in nonendemic areas (Hennessey et al., 2016).

2. Travel Health Information Website of the UK

TravelHealthPro is the website encompassing the travel health resources of the National Travel Health Network and Centre (NaTHNaC). NaTHNaC was established by the Department of Health in 2002 with the aim of “Protecting the Health of British Travellers”. The objectives of NaTHNaC is first, to raise the quality of travel health advice given by GP practices, travel clinics, pharmacies and other healthcare providers, and second, to provide up-to-date and reliable information for the traveler, travel industry and national government. NaTHNaC is commissioned by Public Health England and the University College London Hospitals NHS Foundation Trust (UCLH), and work in partnership with several institutions such as the Liverpool School of Tropical Medicine (LSMT), the London School of Hygiene and Tropical Medicine (LSHTM) and the Hospital for Tropical Diseases (HTD) (TravelHealthPro 2019).

TravelHealthPro was launched in August 2015 as an entirely redesigned website. It features resources for both travelers and healthcare professionals. Among several main goals of NaTHNaC, the ones listed below show the distinctive characteristic of emphasis on the national guidance and specialization on the British travelers :

- “To develop national guidance on travel health for health professionals advising the public”

- "To collaborate with organisations, particularly in the travel and insurance industries, and in the NHS and government, which share our aim of Protecting the Health of British Travellers"
- "To advise on specific situations and circumstances that could affect the health of British travellers"

On the country specific page, one can find a map window linked to Google Maps, a weather widget indicating the current temperature at the destination, a direct link to the Foreign and Commonwealth Office providing safety and security information for that specific country, which will be time-saving of each user. Vaccine Recommendations is categorized into 'All/Most/Some Travellers' to help individual's decision-making based on his/her own travel risk assessment (Chiodini, 2015).

For countries with a yellow fever recommendation, the maps provided by the US CDC are used, as they are more detailed and specific tourist destinations information are included, which is an upgrade from the previously used WHO maps (Chiodini, 2015). For countries with antimalarial recommendation, the maps are based on the "Guidelines for malaria prevention in travellers from the UK" published by PHE.

The 'World Overview' section illustrates a world map with colored pins

pointing at countries where there have been disease outbreaks (orange pin) and latest news items (blue pin). Also, a series of icons, ‘Human’, ‘Animal’, ‘ Air-borne’, ‘Miscellaneous’, ‘Toxic’, ‘Food and water-borne’, ‘Haemorrhagic fever’, ‘Close association’, ‘Vector-borne’, ‘Verified’, ‘Imported’, can be selected to see related country on the world map (Chiodini, 2015).

Another unique feature is ‘Tag Cloud’ which is usually positioned in the bottom right on many of the main menu pages, displaying a series of prominent words color-coded by importance. This feature allows users to quickly perceive and easy to click on to be directly linked to information on that topic (Chiodini, 2015).

The site is compatible with various social media. Almost all pages allowing sharing of post via Facebook, Twitter and e-mail account, and the site can be followed using various social media such as Facebook, Twitter and LinkedIn (Chiodini, 2015).

Table 7. Characteristics of NaTHNaC TravelHealthPro

Country	United Kingdom	
Organization	National Travel Health Network and Centre (NaTHNaC)	
Department	Department of Health	
Website Name	TravelHealthPro	
Year started	2002 (TravelHealthPro was launched in 2015 as a redesigned website.)	
Aim	Protecting the Health of British Travelers	
Language	English	
Number of destinations covered	287 destinations 1) country 2) specific region within a country	
Number of diseases covered	29	
Share Information	1) Social Media (Facebook, Twitter, LinkedIn) 2) Email Subscribe	
Update	Regular update	
Content (Detailed)	1. About 1) About Us 2) Press 3) Contact Us 2. Content 1) Country Information i) Countries A-Z ii) Featured Countries : Brazil, China, India, Kenya, Mexico, Pakistan Information provided : i) General information ii) Vaccine recommendations iii) Malaria iv) Other risks v) Important news vi) Outbreaks 2) Latest News i) Search News filter (by Period, Country, Disease, Topics)	3) Outbreak Surveillance i) Ongoing outbreaks ii) About Outbreak Surveillance iii) Search Outbreaks filter (by Period, Country, Disease) 4) Diseases in Brief i) Diseases A-Z ii) Featured Diseases 5) Factsheets From A-Z 6) World Overview 3. Disease 1) Yellow fever 2) Dengue 3) Cholera 4) Malaria 5) Zika virus 4. Quicklinks 1) Clinic Resources 2) Educational Events 3) The Green Book 4) Malaria Guidelines 5) ICVP (Certificates) 6) Useful Sites

Source : TravelHealthPro 2019

2.1. Background of Infectious Diseases Outbreak in the UK

In September 2019, Public Health England (PHE), an executive agency of the Department of Health and Social Care providing evidence-based professional, scientific and delivery expertise and support to the government, industry and the

public, published “PHE Infectious Diseases Strategy 2020-2025”, in which urgent current and future public health threats were addressed. According to PHE, twelve diseases and infections were detected for the first time in the last decade, which were mostly obtained abroad, emphasizing the rising risk posed by amplified human mobility (GOV.UK 2019). While most of these diseases have a few number of cases, Zika virus involved 315 cases in the UK, which is notable (*The Telegraph*).

Table 8. Novel diseases that have first emerged in 2009-2019 in the UK

Disease	Date of first case	Number of confirmed cases	Acquired in UK or abroad
Pandemic Swine Flu	2009	Now circulating as a regular seasonal flu virus	UK
Anthrax associated with heroin use	2009	53	UK
Tularemia	2010	3	Abroad
Saint Louis Encephalitis	2011	1	Abroad
Crimean-Congo haemorrhagic fever CCHF	2012	2	Abroad
MERS CoV	2012	5	3 imported, 2 cases in close family
Rift Valley Fever	2013	1	Abroad
Candida auris	2013	250	UK
Choclo hantavirus	2014	1	Abroad
Ebola	2014	3	Abroad
Zika virus	2014	315	314 travel associated, 1 probably sexually transmitted
Monkeypox	2018	3	2 imported, 1 transmission in UK

Source : Public Health England (2019)

3. Travel Health Information Website of the ROK

In 1999, Infectious Diseases Internet Information Network website (DisWeb) was opened by the Korea National Institute of Health, on which health centers and schools can report epidemic outbreaks and to provide seasonal epidemic information, overseas epidemic outbreaks and traveler information for people and infectious disease database analysis result for professionals.

In 2019, KCDC opened a new website to provide overseas travelers information for healthy and safe travel called 'Overseas Infectious Diseases NOW'. This website has a user-friendly UI with an advantage that anyone can access easily and quickly find the information they are looking for. Before this website was opened, information on overseas infectious diseases could be found on KCDC website, through several steps of search. In order to eliminate such inconvenience, KCDC brought this information separately, by opening a new website.

On the first page of the website, country search is provided, but other means can be used, such as finding from a world map or selecting from a country list. In case there is a latest disease outbreak, a pop-up page is automatically opened for warning. There is also a section for search by disease, infectious disease outbreak news and weekly trend, vaccination center and travel health tips. The website also has a UI for mobile for the convenience of user.

Table 9. Characteristics of KCDC Overseas Infectious Diseases NOW

Country	Republic of Korea
Organization	KCDC
Department	Division of Risk Assessment & International Cooperation, Center for Emergency Operations Division of Infectious Disease Control, Center for Infectious Disease Control Division of Quarantine Support, Center for Infectious Disease Control
Website Name	Overseas Infectious Diseases NOW
Year started	2019
Aim	Health and safe travel of overseas travelers
Language	Korean
Number of destinations covered	256 countries
Number of diseases covered	51
Share Information	SNS (KakaoTalk, Facebook, Twitter, LINE)
Update	Regular update
Content (Detailed)	1. Infectious Disease Prevention Information by Country (256 countries) 1) Search Country 2) Find on World Map 3) Select from Country List Information provided : i) Basic Information on Country ii) Main Infectious Disease Epidemic Information (with last updated date) iii) Infectious Diseases to Watch Out For (& Ways to Prevent) iv) Vaccine-Preventable Diseases (Inoculation Recommendation & Time) v) Non-Vaccine-Preventable Diseases vi) Cautions when traveling vii) Post-Travel Code of Conduct viii) Overseas Infectious Disease Prevention Tips 2. Overseas Infectious Disease Information (51 types of diseases) 1) Overseas Infectious Diseases to Watch Out For - definition, propagation path, incubation period, symptom, treatment, infection period, lethality, vaccination, prevention/notice 2) Infectious Disease Outbreak News 3) Weekly Infectious Disease Outbreak Trend 3. Vaccination Center 1) Internationally certified disease subject to vaccination : Yellow Fever 2) Internationally certified vaccination center (Map of ROK) 4. Story Room 1) Travel Health Tips 2) Event 5. What is Overseas Infectious Diseases NOW? 1) Homepage Introduction 2) Quarantine Service for Prevention of Overseas Infectious Diseases (6 Steps)

Source : Overseas Infectious Diseases NOW 2019

3.1. Background of Infectious Diseases Outbreak in the ROK

Infectious disease control system with quarantine and disease report

procedure was formed in 1947 by the United States Army Military Government in Korea. The ROK joined WHO in 1949. Also, Korea National Health Institute (KNIH) was established in 1960s, which took up the role as research and training institute for infectious disease in 1998, and was reorganized in 1999 with epidemic prevention and control function.

As global health security frame became crucial and international health regulation was fully revised in 2005 after 2001 bioterror (US anthrax attacks) and 2002-2003 Severe Acute Respiratory Syndrome (SARS) outbreak, Korea Center for Disease Control and Prevention (KCDC) was organized in 2004 as a national disease control institution, unifying prevention, protection, response, quarantine and research functions. Additionally, daily disease surveillance system was started, with infectious diseases expert network (Korean Pro-MED) and the launch of a new department in charge of infectious disease information management in 2002 (Choi and Lee, 2016).

More recently, Middle East respiratory syndrome coronavirus (MERS-CoV), originated in Saudi Arabia in 2012 and since then, over 2,000 cases occurred in 27 countries. ROK went through the largest hospital-associated MERS epidemic outside of Saudi Arabia, which substantially affected people's health and daily life. Since the first case occurred in ROK on May 20, 2015, by a single infected business

traveler returning from the country of origin, the epidemic continued for 2 months, followed by 186 confirmed cases at 17 hospitals, 38 deaths and 16,752 suspected cases (Kim et al., 2017).

4. Comparison of Travel Health Information Websites (US, UK, ROK)

According to Keystone (2019), travel health information systems with highest quality provide two crucial features. One of them is “country-by-country information on health risks and vaccine recommendations within a given country, and disease-by-disease fact sheets for major diseases”, and the other is “an itinerary-maker feature which, after input of a complete traveler itinerary, prints out yellow-fever entry requirements and summary recommendations for the entire itinerary in the order of travel”.

Although there are differences between the three websites reviewed, some common features could be found. First, all three websites reviewed display both destination-by-destination information on health risks and vaccine recommendations, and disease-by-disease fact sheets for major diseases. Second, all three websites do not yet provide the itinerary-maker feature, which makes it a point of improvement for all three websites. Third, latest news feature was included in all three sites, with regular update. Keeping up to date is critical, as guidance on

healthy travel continues to change, diseases break out and science develops (Keystone, 2019).

Table 10. General comparison of travel health information websites (US, UK, ROK)

Country	US	UK	ROK
Organization	CDC	National Travel Health Network and Centre (NaTHNaC)	KCDC
Website Name	CDC Travelers' Health	TravelHealthPro	Overseas Infectious Diseases NOW
Year started	Not specified	2002	2019
Aim	Providing health advice to internationals travelers, including advice about medications and vaccines	Protecting the Health of British Travellers	Health and safe travel of overseas travelers
Language	English Spanish (partly)	English	Korean
Number of destinations covered	283 destinations 1) country 2) specific region within a country	287 destinations 1) country 2) specific region within a country	256 countries
Number of diseases covered	41	29	51
Update	Regular update	Regular update	Regular update
Content (Brief)	1. Destinations 2. Find a Clinic 3. Travel Notices 4. Travel Advice and Resources 5. Disease Dictionary 6. Yellow Book 7. Frequently Asked Questions	1. About 2. Content 3. Disease 4. Quicklinks	1. Infectious Disease Prevention Information by Country 2. Overseas Infectious Disease Information 3. Vaccination Center 4. Story Room 5. What is Overseas Infectious Diseases NOW?

Source : Travelers' Health 2019, TravelHealthPro 2019, Overseas Infectious Diseases 2019

Table 11. Comparison of contents of travel health information websites (US, UK, ROK)

Country	US Travelers' Health	UK TravelHealthPro	ROK Overseas Infectious Diseases NOW
Contents for travelers	O	O	O
Contents for healthcare professionals	O	O	X
Country-by-country Information	O	O	O
Disease-by-disease information	O	O	O
Detailed country-by-country disease maps for malaria or yellow fever	O	O	X
Latest news	O	O	O
Use of social media	O	O	O
Travel health risk labeled in different levels	O	X	X
Tag cloud feature	X	O	X
Publication	O (CDC Yellow Book)	O (The Green Book)	X
Mobile application	O	X	X
Surveillance capacity	High (Global TravEpiNet, GeoSentinel)	High	Low
Panel of experts for travel health service	O	O (Technical Advisory Group)	X
Specialized recommendations for nationals	O	O	X
National philosophy in making recommendations on vaccines or preventive measures	O	O	X

Source : Travelers' Health 2019, TravelHealthPro 2019, Overseas Infectious Diseases NOW 2019

Some notable differences between countries are :

- Aim : The US aims at international and the US travelers, the UK targets at British travelers, while the ROK does not point to a particular group.

- Language : The UK and the ROK provides a single language, while the US partly operates dual language service, providing both English and Spanish.

- Number of destinations covered : The ROK covers less number of destinations than both the US and the UK, as the ROK uses the ‘country’ category, while the US and the UK uses the ‘destination’ category which includes both country as well as some specific regions within a country.

- Number of diseases covered : The ROK covers more number of diseases than the US and the UK, but is displayed in a brief form unlike the other two websites, which contain information in more detail and higher quality.

- Level of contents : The US and the UK provide information for both travelers and healthcare professionals, while the ROK provides information for travelers only.

- With high surveillance capacity, panel of experts and national philosophy in making recommendations on vaccines and preventive measures, the US and the UK provide specialized recommendations for their own nationals, while the ROK did not yet reach this stage.

IV. Factors that Hinder the Delivery of Information and its Quality

1. Low Effectiveness of Information Delivery

Overseas Infectious Diseases NOW website's delivery of information has low effectiveness accounting to two main factors, dualization of information delivery system and lack of publicity.

1.1. Dualization of Information Delivery System

The Korean government carries out various activities to support travelers' overseas travel safety activities, such as Overseas Travel Safety Information website under the Ministry of Foreign Affairs (http://www.0404.go.kr), opened in 2004.

This website is also linked with a mobile application, a newly launched service since July 2019, which provides Accompany Service, Basic Information by Country and Travel Alert Status. Though this application, travelers can receive basic information of the visiting country and real-time safety information (safety notices and disaster information related to visiting country) through push notification. Also, in emergency or if necessary, the subscriber's current location is sent to family or acquaintances in the ROK.

In the case of the US, Travelers' Health also provides a direct link to other government resources such as the US Department Travel Site, which provides safety and security information by country, US Customs and Border Protection, US Embassies, Transportation Security Administration (TSA) and CIA World Factbook. The US also operates the Smart Traveler Enrollment Program (STEP), which allows the US Department of State to find US nationals traveling and living abroad in case of an emergency.

In the case of the UK's TravelHealthPro, the Country Information page of a certain country is linked to Foreign travel advice website, operated by the Foreign and Commonwealth Office (FCO), to provide information and advice to help British nationals make their own informed decisions about foreign travel (GOV.UK 2019). Various information such as Safety and security, Terrorism, Local laws and customs, Entry requirements, Health, Natural disasters, Money and Travel advice help and support, are provided based on the assessment made by the FCO.

Like the US and the UK, the ROK should integrate Overseas Travel Safety Information with both overseas travel alerting system and travel health information (Kim and Kim, 2017).

1.2. Lack of Publicity

KCDC is continuously trying various means to promote the Overseas Infectious Diseases NOW website, but is still not much exposed to the majority of the public and lacks publicity. The website's URL is spelt in a combination of Korean and English words, making it easier for Korean users to access. However, it may also make it more difficult for users to remember specifically the combination of words in two languages.

To enhance the publicity of the website, KCDC made a website promotion video clip and held regular events, including website open promotion event or quiz on overseas infectious diseases. Moreover, KCDC collaborated with different partners, such as being introduced on a TV show, holding a talk concert, and collaborating with travel agencies, which posted information on the website along with other mandatory information to check before travel.

Moreover, some KCDC staffs and a group of public communications volunteers visited a travel show in June 2019, held by a major travel agency of Korea, to provide people with infectious diseases information of travel destination and promoting the website.

To fulfill the purpose of travel health information website, it should maintain promptness, efficiency and preventiveness. Necessary information should

be provided in a prompt manner, as some vaccinations require several injections over a longer period than others. For example, in case of the US *CDC Yellow Book 2020*, published in July 2019, information on travel to international mass gathering events to be held from 2019-2022 is already provided, including religious events, sporting events like the Olympics and the FIFA World Cup, art and music festivals.

Also, as the ROK website is focused on travelers, not healthcare professionals, it should contain relevant information from a traveler's perspective, for efficient information delivery. Lastly, for effective prevention of import of infectious disease, it is crucial to enhance the publicity of the website, so that more travelers are aware of travel health information and can make necessary preparations accordingly.

2. Lack of Specialized Recommendations for Korean Travelers

The travel health information website of the US and the UK provide travel health information and make recommendations specialized to their nationals, based on an evidence-based analysis on their nationals' travel information. On the other hand, Korea did not yet reach this stage, due to lack of surveillance capacity and panel of experts.

2.1. Lack of Surveillance Capacity

The revised IHR (2005) focused on the enhancement of global reporting of outbreaks. As a result, more investment was put in surveillance in many of the developed countries. On the other hand, lower-income countries with higher infectious disease risks and burden have continued difficulties in running surveillance programs (Findlater and Bogoch, 2018).

Compared to the US and the UK, Korea lacks surveillance capacity, including the surveillance network and the number of staffs. The US has research and surveillance partners, Global TravEpiNet (GTEN) and GeoSentinel. GTEN is a network of travel clinics in the US, and GeoSentinel is a worldwide communication and data collection network of the ISTM for the surveillance of travel-related morbidity, both of which are supported by the CDC. In case of the UK, the Travel and Migration Health Section of Public Health England carries out the surveillance.

Also, the US CDC and UK NaTHNaC have the capacity for infectious diseases management as well as experts working in the area, and the authority of these organizations are acknowledged based on scientific expertise. On the other hand, KCDC has 34 epidemiologists, with only 2 of them in a permanent position, which is a low number compared to the US CDC, which annually cultivates 70-80

epidemiologists through a 2-year fellowship program called ‘Epidemic Intelligence Service (EIS)’. After completion of the EIS program, most epidemiologists are employed at the CDC or the US state or city government (Kim et al., 2015).

In Subparagraph 2 and 3 under Paragraph 1, Article 12 (Details of Epidemiological Investigations) of the Enforcement Decree of the Infectious Disease Control and Prevention Act of the ROK, “the date and place where a patient, etc. was infected with an infectious disease” (Subparagraph 2) and “the cause and route of infection for an infectious disease” (Subparagraph 3) should be identified through epidemiological investigations. However, with the current surveillance capacity of Korea, especially in case of overseas diseases, it is difficult to accurately identify all the matters necessary for an epidemiological investigation. For example, due to complication of flights, transit flights should be investigated separately from direct flights. Also, there may be cases in which imported infectious diseases are incorrectly acknowledged as domestic ones, due to medical institutions overlooking overseas travel history of patient. Moreover, in case of foreigners, it is highly likely that less is reported to medical institutions than the actual number of cases (Kim et al., 2018).

As the number of Korean overseas travelers and number of people entering the ROK is expected to rise continuously, the ROK should produce basic data for

effectively responding to imported infectious diseases through analysis using various data sources.

2.2. Lack of Panel of Experts

A system should be established to accurately estimate the potential risk of imported infectious diseases from other countries to the ROK (Kim et al., 2018). In the UK, NaTHNaC is operated by 15 staffs in total, including the Director and the Deputy Director, 4 in Business and administration, 1 in Information and 8 in the Clinical team. An important feature of NaTHNaC is that it has 14 members representing the network partners and Department of Health in the Technical Advisory Group, which meets quarterly to provide strategic guidance to NaTHNaC.

According to Article 9 of the Enforcement Decree of the Infectious Disease Control and Prevention Act of the ROK, “An Infectious Disease Control Committee shall be established under the Ministry of Health and Welfare to deliberate on major policies on the prevention and control of infectious diseases.” Some of the matters that the Committee deliberate on include the “Formulation of master plans”, “Investigation and research on infectious diseases”, and “Dissemination of knowledge concerning the prevention, control, etc. of infectious diseases”. However, the Committee deals with infectious diseases in general, and does not

specifically discuss overseas infectious diseases, unlike the UK NaTHNaC's Technical Advisory Group, which focuses on travel health advice and services.

3. Absence of National Philosophy for Korean Travelers

The US and the UK set up travel health information website with the initial purpose to protect the health of travelers of their nationals. Both countries utilize their surveillance networks and panel of experts to provide evidence-based travel health advice and services specialized for their nationals. Both countries have a robust national philosophy which is the root of the travel health information system and the contents provided. In case of the ROK, there is still lack of surveillance capacity and panel of experts, and thus, the country did not yet reach the stage of forming a distinct national philosophy in terms of Koreans traveler's health and imported infectious diseases.

Many international, national and professional organizations publish guidelines and recommendations for travelers, which may differ due to several reasons, such as availability of products, perception of risk and lack of evidence. Due to evidence deficiency, it may be difficult to reach a consensus on some guidelines among travel medicine experts (IAMAT 2016).

Especially, the perception of risk may vary according to people from which background are taking part in analyzing, how they assess the same risk data as acceptable and reach the conclusion based on the cost-effectiveness analysis of risk minimization. For example, recommendations to prevent malaria during travel to Africa does not differ much between the US and the UK, but varies widely for travel to Asia. In case of Tanzania, both the US and the UK view high risk of malaria in areas below 1,800m and recommend the use of antimalarial medicines. On the other hand, in case of India, the US views all areas throughout the country as having high risk (except for areas over 2,000m), while the UK views most areas as having low risk and recommends awareness of risk and mosquito bite avoidance only, except for a few high-risk states or districts for which antimalarials are recommended.

In case of cholera, the US does not include cholera in the list of Vaccines and Medicines, while in the UK and the ROK, cholera vaccination is recommended for those with increased risk, such as aid workers or those visiting areas of cholera outbreaks.

V. Improvement of Travel Health Information System of the ROK

1. Necessity of Multi-dimensional Evaluation

Travel health recommendation differs for each individual depending on his/her health status, destination, trip itinerary, type of travel, and length of stay (IAMAT 2016). In order to provide a specialized recommendation for Korean travelers, the Korean government should enhance the national capacity to perform surveillance on infectious diseases imported from overseas and operate a technical advisory group consisting of experts with experience in the specified area. It is important for the Korean government to acknowledge that investing in surveillance capacity can be more effective and cost-effective in preventing the transmission of imported disease (Findlater and Bogoch, 2018).

With the national capacity enhanced, evidence-based analysis on the travel information and characteristics of Korean travelers should be made. Eventually, based on such multi-dimensional evaluation, travel advice distinct to Korean travelers will be produced, which can be effectively used to promote necessary information to travelers and help prevent the import of overseas infectious diseases to Korea.

2. Necessity of National Philosophy for Korean Travelers

A national guidance on travel health for Korean travelers should be developed by the Korean government and KCDC. Currently, a specific national philosophy of the ROK cannot be found on the Overseas Infectious Diseases NOW website. First, the travel health information should be specified for Korean travelers to advise on activities and conditions that could particularly affect the health of Korean travelers.

Second, the aim of the website is “Health and safe travel of overseas travelers”, and yet, the safety information is provided on a separate website operated by the Ministry of Foreign Affairs. The Korean government should consider the fundamental purpose of the two websites, which is to protect the people, and come up with the most effective way to achieve this purpose. Unifying the two websites or providing direct links to each website seem to be the first step to go through. For example, each country or disease can be labeled by three levels like the US CDC Travelers’ Health (Watch Level 1, Alert Level 2, Warning Level 3), utilizing the current Travel Alert page, and operated in partnership with MOFA.

VI. Findings and Discussions

1. Description of Findings

With the launch of the new Overseas Infectious Diseases NOW website of the ROK, it was compared with the website of the US and the UK for assessment and to find applicable points of improvement. The US and the UK, with a longer history of providing travel health information service, provides high-quality information specialized for their nationals, while the ROK did not reach that stage, due to difference in the level of surveillance capacity, operation of panel of experts specifically for travel health services, and having a national philosophy on protecting the health of travelers of the country's own nationals.

In order to prevent, detect, and respond to infectious diseases imported from overseas effectively and improve the current website, the KCDC and the Korean government should evaluate the travel pattern and information of Korean travelers from a multi-dimensional perspective with a strengthened surveillance capacity and operation of panel of experts. Also, a national philosophy on protecting the health of Korean travelers should be formed, and traveler safety and health information website unified to provide comprehensive information and ultimately raise publicity of the website for effective information delivery.

2. Discussions

To raise publicity of the ROK website, it is important to collaborate with other organizations, especially in the travel industries, such as travel agencies, airlines, accommodations booking websites, travel guides, as well as insurance industries, and share the aim of protecting the health of Korean travelers and even the increasing number of foreigners who are long-term residents in the ROK. Moreover, public health institutions should closely collaborate with healthcare professionals and utilize clinician-based surveillance based on fast and routine disease reporting (Gautret et al., 2012).

In the long-term, the best way would be to provide an itinerary-maker feature on the ROK website, which provides an entire travel itinerary with necessary health risk information and recommendations on vaccines or preventive measures specified for each individual (Keystone, 2019).

KCDC may also consider implementing CDC's 'Think Travel' campaign, aiming to help healthcare providers protect the health of and diagnose infectious diseases in international travelers, with a modification to aim for the enhancement of Korean travelers' awareness on overseas infectious diseases. 'Thinking Travel Can Prevent Disease' can be promoted to educate travelers to have pre-travel consultation and get necessary preventive guidance, vaccines, and medications for

their destination. ‘Thinking Travel Can Save Lives’ can be used to emphasize the importance of accurately self-reporting any symptoms after travel or having post-travel consultation in case any health risks incur (Keystone, 2019). Lastly, ‘Thinking Travel Can Protect Communities’ can be promulgated to warn travelers and travel-related industries on the escalated global health security threat and the impact of infectious outbreak on a society, country and global level.

3. Limitations

Some limitations of this study are first, only certain websites were analyzed even though there is an abundant number of other governmental websites, which may contain points of improvement more suitable for the ROK.

Second, other medium that people find easy-to-access was not reviewed in this study, such as mobile applications or video streaming platforms.

Lastly, foreigners who are long-term residents in the ROK, who return to their home country to visit friends and relatives from time to time should also be considered, as they may face health risks and yet overlook the need to consult for post-travel screening if asymptomatic. As such cases pose a potential threat of epidemic in the ROK, it is necessary to provide travel advices to them as a preventive measure.

VII. Conclusion

In an era in which international travel is increasing, the role of travel medicine in providing precise guidance is continuously escalating. The boost of global mobility increased the risk of emerging or re-emerging diseases to move across the globe, shortly in a day, and thus, health advices may change in a short period of time. Nowadays, there is an abundance of travel health information online with easy access, from various sources. Yet, it has become more difficult for people to put together separate pieces of information into travel health knowledge adequate for each individual in terms of level and depth.

The US and the UK have an effectively operating travel health information system, based on practical information delivery and high-quality information from multi-dimensional evaluation and a solid national philosophy. As the ROK did not yet reach the corresponding level, now is the moment to consider implementation of some points of improvement of the Korean travel health information system indicated in this study. Korea can start capacity building for quality surveillance, effective health communication to the public, and global coordination, which are the major elements to prevent, detect, and respond to epidemics. When the right information is provided to the right subject in an effective manner, the society, the ROK, and the world will become safer from global health threats.

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Abstract in Korean

국 문 요 약

한국의 해외여행자정보 제공체계의 문제와 개선방안
- 미국 및 영국과의 비교제도론적 고찰을 중심으로

이 연구는 한국의 해외여행자정보 제공체계의 현황을 살펴보고 문제를 파악하여, 현 체계를 개선하기 위한 프로그램 및 정책 제안을 목표로 한다. 새롭고 깊은 통찰력을 얻기 위해 이 연구는 미국 및 영국의 해외여행자정보 제공체계를 웹사이트 및 문헌 고찰을 통해 알아보았다. 이 연구의 결과는 해외감염병의 국내 유입을 예방 및 관리하기 위해 적절한 준비 및 대응을 위한 역량이 강화되어야 한다고 제안한다.

미국 및 영국의 해외여행자정보 제공체계에 비해 한국의 체계가 상대적으로 정보전달성과 정보의 질이 낮은 이유를 다음의 세 가지에서 찾았다. 첫째, 낮은 정보전달의 효과성이다. 한국의 현 체계에서 해외감염병 정보는 질병관리본부 해외감염병NOW 웹사이트에서, 해외여행 안전정보 및 여행경보 정보는 외교부 해외안전여행 사이트에서 제공하고 있으며, 두 사이트 간에 눈에 띄는 직접적으로 연결된 링크는 없는 것을 통해 정보가 이원화되어 있음을 알 수 있다. 또한 해외감염병NOW의 홍보를 위해 여러가지 이벤트와 프로모션이 진행되고 있지만, 해외감염병 탐색 경험이 있는 국민은 32.0%에 그친다.

둘째, 현 체계에서 제공하는 정보는 한국인 해외여행자를 위해 특화되어 있지 않다. 미국과 영국의 경우, 높은 수준의 감시 체계와 전문성을 바탕으로 자국민 해외여행자의 해외감염병 감염 장소, 경로 등의 특성에 대한 면밀한 자료분석을 통해 자국민을 위해 특화된 정보를 제공하는 데 반해, 한국은 그러한 정보를 구축할 만한 감시 역량이 부족하고 전문가 위원회가 부재하다.

마지막으로, 한국인 해외여행자를 위한 권고의 기준이 될 만한 국가 철학이 부재하다. 미국과 영국의 경우, 특정 질병에 대한 국가의 시각, 비용-효과 분석 등을 바탕으로 형성된 국가 철학에 기반하여 예방백신이 있는 감염병에 대한 권고를 하고 있지만, 현 단계에서 한국은 이러한 국가 철학이 형성되어 있지 않다.

이러한 제한점을 개선하기 위해 한국은 첫째, 한국인 여행자에 특화된 정보를 제공할 수 있도록 감시 체계와 전문성 강화를 통해 다면적 평가를 하고, 둘째, 질병 별 예방 조치에 대하여 권고하는 기준이 되는 국가 철학을 성립하여 해외여행객의 건강과 국민의 안전을 위한 효과적인 해외여행자정보 제공체계를 만들어 나가야 한다.

핵심어 : 여행의학, 여행자건강, 여행관련질병, 해외유입감염병, 글로벌보건안보, 해외여행안전정보