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TRAVEL MEDICINE MANAGEMENT FOR THE ANTICIPATION OF INFECTIOUS DISEASES IN SOUTHEAST ASIA: A SYSTEMATIC REVIEW

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ABSTRACT

Background: Travelling abroad have various health risks such as sudden and significant changes in altitude, humidity, temperature and exposure to a variety of infectious diseases. Travel medicine concept is needed to provide information to professional health services not only on risk of infectious diseases but also to ensure the personal safety of travellers and to minimize environmental risk during travel. The Objective of this study is to investigate the practices of travel medicine management for the anticipation of infectious disease spread by travellers.

Methods: This study used systematic literature review based on PRISMA (Preferred Reporting Items for Systematic Reviews & Meta-Analyses) protocol to identify all the published articles using relevant keywords. We searched in Scopus (Elsevier), Science direct (Web of Science), Cochrane library and Pubmed. Period of study was between 2005 and 2018. In total, there were eight studies that discussed travel medicine management regarding the anticipation of infectious diseases in Southeast Asia, which includes the spread and narrative synthesis.

Results: From 126 authors finally include 8 papers in this review. Almost all of the management of travel medicine can reduce the risks of travel-related diseases. The travel medicine management explained how to effectively prevent the spread of infectious diseases, for example dengue, malaria, rabies, zika virus, diarrhea and respiratory syndrome. Those diseases can easily spread when the travellers body immunity decreases or when they are exhausted during the trip. Thus, it is necessary for the travellers to anticipate the spread of diseases by knowing the information of particular diseases in a country or a region that will be visited and having prophylaxis or vaccination before travelling.

Conclusions: The travel medicine management can significantly impact on the anticipation of infectious diseases spread by travellers since the practices require the latest facts and information about the epidemiology of infectious health risks worldwide. The recommendation for future research is to review more travel medicine management studies in order to get deeper understanding. For Policy maker, it is suggested to design policy to improve and updating knowledge.

Keywords: infectious disease, travel medicine, Southeast Asia, management

INTRODUCTION

Travel medicine practices usually deals with the prevention, management and also treatment of travellers' health during traveling. According to Brunnete, G. 2018 travel medicine is a medical discipline that deals with prevention of infectious diseases during international travel as well as the personal safety of travellers and the avoidance of environmental risks during travel [1]. Travelers are an epidemiologically important population because of their mobility, their potential for exposure to disease outside their home counties and possibility that they may carry nonendemic diseases between countries [2]. The destination of travellers increased in Asia (arrivals up 5 % 2015 to 2016) [1].

Thus, it means that the travel medicine practices must prevent the risk of infectious diseases during travel time. There are some infectious diseases that should be anticipated in certain countries, such as diarrhea, malaria, dengue fever, rabies, respiratory syndrome, chikungunya, zika virus etc [2].

In addition to preventing health problems during the trip, travellers are encouraged to do counselling or get pre-travel advices from public health services that have the latest or up-to-date knowledge about diseases or viruses that are affecting certain countries. In addition, they also need to obtain information about the environmental conditions and people lifestyles in destination countries, such as the poor sanitation in developing countries, a lot of garbage scattered on the roadside, unhealthy food or snacks that are offered to tourists and the cleanliness of toilets, etc [3].

Knowledge of environmental conditions and lifestyle of the community in destination countries is a very important information for prospective travellers since the spread of viruses and diseases often caused by contamination and direct or indirect diseases transmission, contaminated air, water, and food consumption can transmit bacteria and virus to people. It was claimed by the Division of Public Health that the factors of transmitting diseases are through direct or indirect contact with new people or the community in the destination country. The examples of direct contact are touching, kissing, sexual contact, contact with oral secretions or contact with body lesions; meanwhile the indirect contact infections diseases spread when an infected person sneezes or coughs and send infectious droplets into the air [11]. Thus, it is necessary for the travellers to anticipate these causative factors by having any advices in pre-travel consultation and get vaccinated. In addition, public health services working in the field of travel medicine should be an expert in suggesting the right medicines to prevent or cope with the health problems of travellers [4].

Travellers should anticipate the infectious diseases spread during traveling to also anticipate post-travel serious illness and reduce the risk of death. Thus, the travellers need to do a pre-travel consultation or counselling to get some information regarding to health before doing a travel and get certain vaccination depending on the anticipation of diseases in the destination country. These kinds of services belong to the travel medicine practices. Thus, the objective of this study is to review and investigate the effect of travel medicine practices in reducing the risk of health during traveling and its contribution to anticipate the infectious diseases spread. In this study, the researcher did not include the contribution of travel medicine practices to the non-infectious diseases, since the infectious diseases have higher impact on travellers' health risk during the trip [5].

METHODS

Search strategy and selection criteria

This study was conducted according to the guidelines and the statement Preferred Reporting Item Systematic Reviews and Meta-Analysis (PRISMA). Meanwhile, for the systematic search, the researcher mainly used three data bases (Scopus, Elsevier, Science direct, Cochrane library and PubMed) to identify all both

empirical and review studies that were relevant to the focus of this research. Those articles published from 2005 to 2018. The researchers considered only articles that published in English to be included in this systematic review. There were eight research related to travel medicine management for the anticipation of infectious diseases in Southeast Asia. Previous reviews were also included in this research, yet they were only for additional information[4].

The researcher screened the title and abstract of collected studies, then removed some irrelevant studies and the studies that did not contain of complete information and not in a full text. The search terms used when doing a search in the four data bases (Scopus, Elsevier, Science direct, Cochrane Library and PubMed) included these following key words: (1) Infectious Disease, (2) Traveller, (3) Southeast Asia, (4) Management.

Data collection process

The data of studies from each article included in this research were extracted from year, topic of discussions or the focus of the study and key findings that were relevant to management of travel medicine to anticipate infectious diseases in Southeast Asia.

Data synthesis and analysis

As the result of the studies that included heterogeneity patient populations and various types of infectious diseases, a formal meta-analysis was not possible to be conducted. Therefore, the study results were summarized to define the key outcomes of interest (e.g. the travel medicine management for the anticipation of infectious diseases in Southeast Asia).

Study Extraction

The researcher extracted data based on some standard criteria. The articles must be related to the role of travel medicine management for anticipation infectious diseases in the Southeast Asia. The following key data were extracted (1) Types of infectious diseases that usually attack travellers during traveling in Southeast Asia, (2) types of management regarding to travel medicine services, (4) the key outcomes of travel medicine practices to reduce the health risk during traveling.

From 126 authors finally include 8 papers in this review. Almost all of the management of travel medicine can reduce the risks of travel-related diseases. The travel medicine management explained how to effectively prevent the spread of infectious diseases, for example dengue, malaria, rabies, zika virus, diarrhea and respiratory syndrome. Those diseases can easily spread when the travellers body immunity decreases or when they are exhausted during the trip.

Study Selection

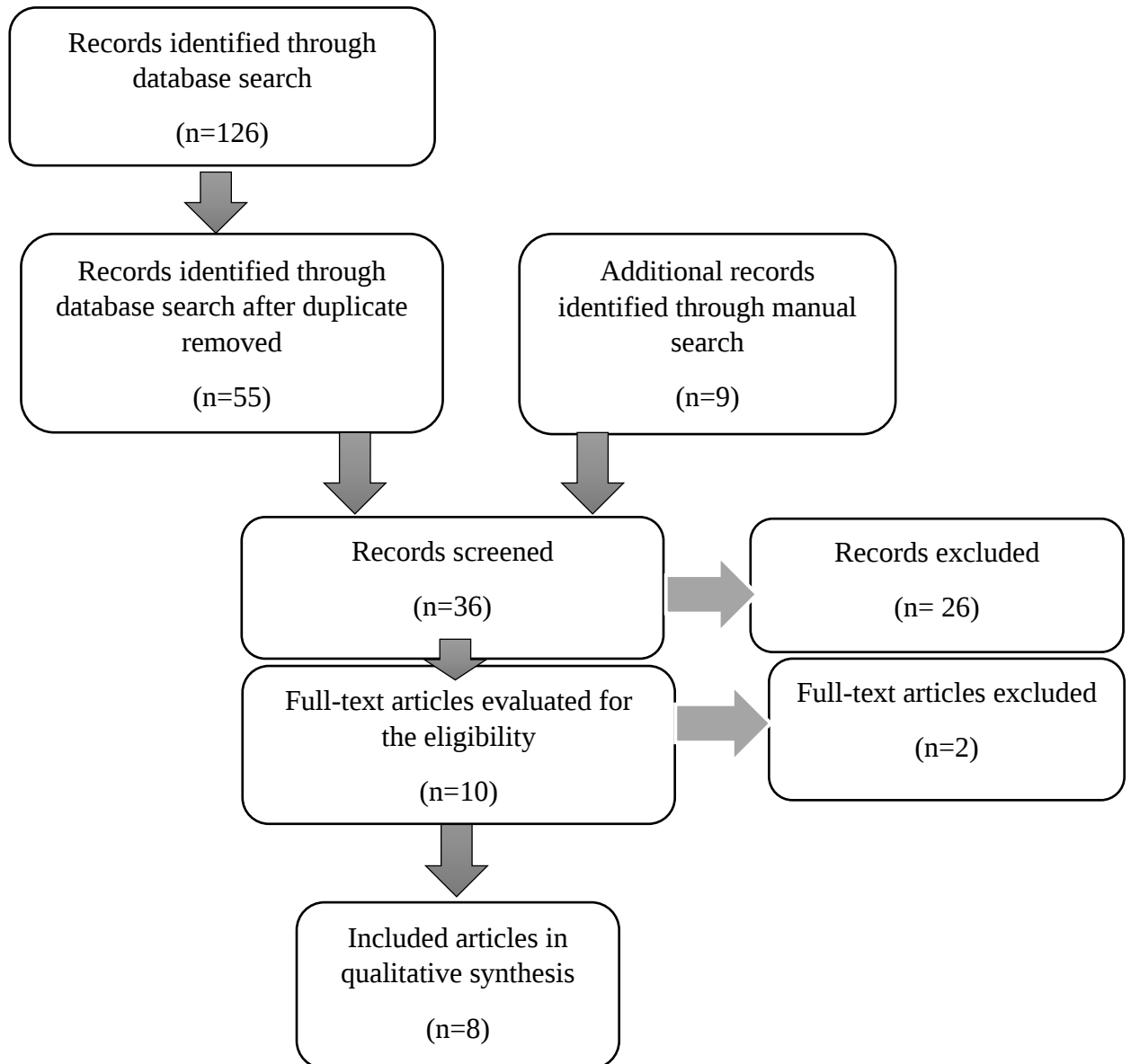


Figure 1. Flow diagram of search strategy

RESULTS

Table 1. Travel Medicine Management For Anticipation Infectious Disease

Period of Study	Journal	Infectious Diseases Types	Key Findings Travel medicine management	References
2012-2013	Asian Pacific Journal of Tropical Medicine	Dengue Chikungunya	A recommendation from this work was to replace current procedures for serological detection dengue by a standard operating procedure for Denv – CHIKV multiplex single step PCR.	Lien, et.al.2015
2005-2013	BMC Infectious diseases	Dengue	Strategically, one would normally aim to deploy a vaccine at an age before the highest risk of infection of disease. Our epidemiological study showed that a dengue vaccine were deployed during the first year of life, in the setting with older age of first infection such as Singapore.	Yung, et.al.2016
July to September 2016	Lancet infection disease 2017	Zika Virus Infection	The Singapore zika virus outbreak occurred despite good basic line vector control and showed the case with which the virus can be introduced and spread. Although small numbers of cases continue to be detected; disease, surveillance, enhanced vector control and community awareness and engagement effort contributed to substantially reduce incidence within 4 weeks. Prompt nation action involving multiple sectors.	Ho, et.al.2017

Period of Study	Journal	Infectious Diseases Types	Key Findings Travel medicine management	References
2006-2014	Neglected tropical disease	Dengue	The cases were confirmed by detection of anti dengueIgM antibody in serum from a single specimen.	Fukusumi, et.al.2016
2014-2017	Neglected tropical disease	Rabies	Travellers should seek pre travel advice before travelling abroad to ensure they receive proper education on avoiding contact with animals and what to do after an animal exposure, notably regarding indication for RIG (Rabies Immunoglobulin)	Gautret,et.al.2018
2014-2015	PLOS One	Malaria	Use long lasting insecticidal treated nets (LLINs) Most of the mosquito nets were not LLINs even though there was a strong preference for LLINs and most mosquito nets had been purchased from the shops or market in both sites.	Wangroongsarb, et.al.2016
2014- 2015	Travel Medicine and Infectious Disease	Diarrhea and Malaria	Diarrhea • Vaccination prophylactic antibiotics and behavioural recommendation can at most moderately reduce the incidence of traveller's diarrhea. Therefore, the focus for travellers lies on the management of diarrhea. Most travellers carried loperamide as an antidiarrheal Malaria • Anti malaria medication. The	Rolling, et.al.2017

Period of Study	Journal	Infectious Diseases Types	Key Findings Travel medicine management	References
2015-2016	WPSAR	Respiratory Syndrome	strategy of stand by emergency treatment consists of carrying either atovaquone/proquanil or artemether/lumefantrine as an antimalarial. For hospital management, the Republic of Korea authorities closed down several affected hospitals, which were deemed to be epicentres of the outbreak to prevent further transmission of the disease. A national safe hospital program was implemented to control MERS-CoV transmission within hospitals by providing care for patient with respiratory disease in secured area separated from outpatient or emergency department. Infection prevention and control measures were also strengthened in all health care facilities. The Republic of Korea used the real time reserve transcription PCR protocol recommended by WHO.	Zhang,et.all. 2016

DISCUSSION

Eight studies were included with the discussion of travel medicine management and the role of travel medicine on the management of infectious disease in Southeast Asia. Almost all of management deals with the effective anticipation of spread of infectious diseases, for example, dengue, malaria, rabies, zika virus, diarrhea and respiratory syndrome.

For Dengue and Chikungunya a recommendation for management travel medicine are detection serological detection dengue by standard operating procedure for Denv CHIKV multiplex single step PCR .1Our epidemiological study show that if a dengue vaccine were deployed during the first year of life, in the setting with older age of first infection such as Singapore .2 According Neglected Tropical Disease management for Dengue are confirmed by detection of anti dengueIgM antibody in serum from a single specimen [4].

For Zika virus infection, although small numbers of cases continue to be detected; disease, surveillance, enhanced vector control and community awareness and engagement effort contributed to substantially reduce incidence within 4 weeks.3 According to CDC Yellow Book Health information for international travel, people with suspected zika virus should be performed on urine specimens collected < 14 days after onset of symptom or serum specimen collected < 7 days after onset of symptoms. A positive rRT-PRR result confirm zika virus infection and no antibody testing is indicated [5].

Travel medicine management for Malaria uses long lasting insecticidal treated nets (LLINs). Most of the mosquito nets were not LLINs. Even though, there was a strong preference for LLINs and most mosquito nets had been purchased from the shops or market in both sites.6 For anti malaria medication, the strategy of stand by emergency treatment consists of carrying either atovaquone/proquanil or artemether/lumefrantrine as an anti malaria. Travellers who have symptoms of malaria should seek medical evaluation as soon as possible. Smear microscopy remains the gold standard for malaria diagnosis. The Malaria treatment can be prescribed as a reliable supply atovaquone or proquanil and artemether or lumefrantrine [10].

To manage Rabies for travellers, they should seek pre-travel advice before travelling abroad to ensure they receive proper education on avoiding contact with animals and know what to do after an animal exposure, notably regarding indication for RIG(Rabies Immunoglobulin).5 The best practices of medical approach has not been found for treating patients with rabies. Most patients are managed with symptomatic and palliative supportive care [9].

According travel medicine and infectious disease, for management of diarrhea, Vaccination prophylactic antibiotics and behavioural recommendation can at most moderately reduce the incidence of traveller's diarrhea. Therefore, the focus for travellers lies on the management of diarrhea. Most travellers carried loperamide as an antidiarrheal [8].

For managing respiratory syndrome, the Republic of Korea authorities closed down several affected hospitals, which were deemed to be epicentres of the outbreak to prevent further transmission of the disease. A national safe hospital program was implemented to control MERS-CoV transmission within hospitals by providing care for patients with respiratory disease in secured area separated from outpatient or emergency department. Infection prevention and control measures were also strengthened in all health care facilities. The Republic of Korea used the real time reserve transcription PCR protocol recommended by WHO.9 Most respiratory infections were due to mild viruses and did not require specific treatments or antibiotics. Self treatment with antibiotics during travel can be considered for higher risk travellers who develop symptom of lower respiratory tract infection. A respiratory spectrum fluoroquinolone such as levofloxacin or a macrolide such as azithromycin may be prescribed to the travellers for this purpose before traveling [10]. The limitation of this review is the scope, which focused merely on travel medicine management and infectious diseases. There are many differences in the studies regarding travel medicine. They did not only discuss about the management of travel medicine, but most of the studies also discussed about the knowledge and attitudes toward travel medicine. Moreover, the practices of travel medicine do

not only manage infectious diseases, but it provides the prevention for non-infectious diseases as well. However, in this review study, the researcher just focused on the infectious diseases

CONCLUSION

This review findings can be a reference for the travellers that are intended to travel to another country, especially to the rural areas or developing countries. They should get a pre travel consultation and vaccine to anticipate the infectious diseases spread in the destination country. The recommendation for future research is to review more studies about travel medicine management. For policy maker it is suggested to design policy to improve and updating knowledge on the latest policies, public concern including both national and international trends that relevant to their organization by attending recommended trainings seminars or workshops.

CONFLICT OF INTEREST

No Conflict of Interest

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