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FRAMING OF DISEASE RISK MESSAGES IN AIRPORT BANNERS

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Abstract: *Communication of disease risk aims to persuade the public to take health preventive measures. The receptivity of the public depends on their knowledge of the disease. However, health risk messages can be framed to heighten awareness of the disease threat. This study examined the framing and persuasiveness of disease risk messages in airport banners produced by the Ministry of Health Malaysia. The banners for Zika, Hand, Foot and Mouth Disease, Ebola Virus Disease, malaria, and Middle East Respiratory Syndrome-Coronavirus Disease were analysed to find out: (1) the messages on severity, susceptibility and cues to action found in airport banners, and (2) appeals to logos, pathos and ethos were used to persuade the public to take health preventive measures. The results showed that the banners are very informative on risk groups, disease symptoms, and recommended actions. However, the logos focus of the messages may not construct the diseases as a public health threat because a restricted group of airline passengers are identified as susceptible to the diseases and symptoms presented are mild. The study showed that pathos or emotional appeal is lacking in the airport banners and this should be considered to increase the persuasiveness of the disease risk communication.*

Keywords: *Disease, Health risk communication, Persuasion, Banner*

Introduction

In the area of message design, some researchers have written about how the framing of health risk messages affects public receptivity or uptake of the risk information (Covello et al., 2001; Kreuter et al., 2007; Marteau & Lerman, 2001; Weinstein, 2003). So far, what is known is that people find it more difficult to understand risk information presented in a numerical format than in narrative form (Kreuter et al., 2007). Further, on the basis of the negative dominance model, Covello et al. (2001) argued that health risk messages should avoid negative words as these undermine trust. In addition, word choice in the assignment of agency has been found to affect perceptions of threat. Researchers such as Chou et al. (2011) have found that the use of passive voice and the generic "you" indicate absence of control with respect to coping with the cancer. Assignment of agency to the disease tends to heighten

perception of disease threat whereas assignment of agency to humans tends to increase propensity for action (Bell et al., 2014; McGlynn, 2014).

Despite the many articles recommending some oft-repeated principles for the effective framing of health risk messages, many are concept papers (e.g., Covello et al., 2001; Kreuter et al., 2007; Marteau & Lerman, 2001; Weinstein, 2003) and few are based on empirical studies (Bell et al., 2014; McGlynn, 2014). A search of the literature shows that few empirical studies have been conducted to analyse the framing and content of cancer risk messages. More empirical studies on framing of cancer risk messages are needed to confirm or refute recommendations in conceptual papers on effective health risk communication, and advance theory in the field. Finding out culturally appropriate and effective wording of health risk messages is crucial so that people who are at risk would take action to minimise their risk. It is important for them to alleviate the debilitating effects of cancer and the immense cost of the treatment by being aware of their risk and this would lead to informed self-efficacy action. This is particularly important in Malaysia where NPC is among the top five cancers in the country. Nasopharyngeal cancer (NPC) is top 5 most common cancers in Malaysia (National Cancer Registry, 2007). Malaysian Chinese women rank the highest in the world for NPC, while their male counterpart is the second highest.

The present study brings in another angle to the study of framing of health risk messages, which is the persuasive appeal. The health risk messages can be framed to appeal to logic, emotion or credibility of information source – referred to as Aristotle's rhetorical appeals of logos, pathos and ethos respectively (Christensen & Hasle, 2007; Roberts, 1954). Aristotle's principles of persuasion have been employed in studies on political speeches and campaigns (Androniciuc, 2016); Mori, 2006; Mshvenieradze, 2013), commercials (Ab Rashid et al., 2016; Emanuel et al., 2015; Nair & Ndubisi, 2015; Robberson & Rogers, 1988; Winn, 2000) as well as in complaint letters (Al-Momani, 2014; Karatepe, 2016) and argumentative essays (Uysal, 2012). These findings concur on the effectiveness of pathos for persuasion. However, health risk messages have not been analysed using Aristotle's rhetorical appeals. It is important to examine health risk messages from the perspective of persuasion so that the health communication is more effective in getting the public to take recommended actions to reduce risk to diseases. In the context of health risk messages, the persuasive appeal needs to be situated in a framework of risk perception attitude (Rimal & Real, 2003) to understand how the rhetorical appeals work.

Theoretical framework of study

To study how disease threat is presented to airline passengers, the study employed a model on threat perception, which is a construct in the established Hochbaum's (1958) Health Belief Model (Champion, 1984, 1997). "The threat perception is based on two beliefs: the perceived susceptibility of the individual to the disease and the perceived severity of the consequences of the disease for the individual" (Orji et al., 2012). If individuals perceive that they are at high risk of getting a disease, and the consequences of disease on health are severe, then they are more likely to engage in behaviours that would reduce the risk. To induce the audience of health risk messages to take action, cues to action are included. Orji et al. (2012) defines cues to action as reminder and suggestion strategies to prompt the audience to perform the target behaviour, which is labelled as Action in Figure 1. Figure 1 shows the combination of perceived susceptibility and perceived severity leading to perceived threat posed by a disease which in turn influences intention to perform recommended actions.

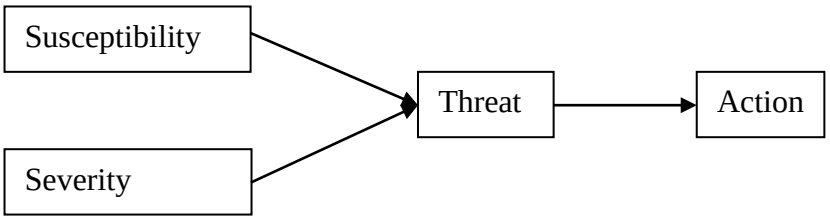

Figure 1: Framework showing the combination of perceived susceptibility and perceived severity leading to perceived threat

Purpose of study

This study examined the framing of disease risk messages in airport banners to analyse the presentation of disease threat and persuasive appeal of the messages.

Method of study

The disease risk messages analysed in this study were on airport banners. These banners, made of cloth-like material, were mounted on stands and placed in strategic positions in the airport where returning airline passengers would see them. These banners were photographed in the first half of 2017 in several airports (Bintulu, Sibu, Kuching, Kuala Lumpur). Altogether nine banners on disease risk were analysed in this study comprising Zika, Hand, Foot and Mouth Disease, malaria, Ebola Virus Disease, and Middle East Respiratory Syndrome-Coronavirus.

The data analysis focused on two aspects. First, the disease disk messages were analysed to find out how susceptibility, severity of disease and recommended actions are communicated. An evaluation of the level of disease threat was also included based on:

(1) susceptibility: restricted group at risk (lower) versus general public at risk (higher)
(2) severity: mild symptoms versus severe symptoms
(3) threat: low versus high
(4) recommended action

Second, the banners were analysed to identify the rhetorical appeals used as persuasive strategies, namely, appeals to logos, pathos and ethos. The two-pronged analysis would reveal how the disease risk messages were constructed to induce fear in the public to take recommended actions.

Results and Discussion

Qualitative analysis results are described for two of the diseases and quantitative analysis results are presented for all the diseases dealt with in the airport banners.

1. Susceptibility, severity and cues to action in disease risk messages

This section presents an analysis of health risk messages based on elements of threat perception, that is, susceptibility and severity leading to perceived threat from the disease, and cues to action. Appendix 1 shows an airport banner on Ebola Virus Disease (EVD). EVD was formerly known as Ebola haemorrhagic fever whereby people who are infected by the Ebola virus initially develop flu symptoms but eventually bleed from the internal organs, nose and mouth. EVD has so far posed a health threat to Malaysia two times, once in 2014 and another time in 2017 (April and May), based on news reports. In the 2014 EVD outbreak, after about

half a year newspapers announced that no Ebola cases had been reported in Malaysia (The Borneo Post, 7 August 2014). That year two persons (one a Zimbabwean student and another a timber camp worker who returned from Africa) were quarantined in hospitals in Sarawak when they developed fever but later it was found that they did not have EVD (The Borneo Post, 16 September 2014).

Appendix 1 shows that the banner on EVD had elements of susceptibility, severity and cues to action. The susceptibility messages appear in two parts; firstly, people returning from countries affected by EVD (West African countries); and secondly, people in direct contact with body fluids or items contaminated by body fluids of people infected by EVD. People who are not in either category are not at risk. An example of the first category of people who are at risk can be seen in the case of the two persons who were quarantined. The Zimbabwean student had been in contact with several Nigerian students who had just returned from Nigeria. The second category of people at risk are medical personnel. With clearly defined risk groups, the general public may not feel that they are at risk to EVD infection. However, the severity of EVD cannot be ignored because the final bleeding from various parts of the body usually leads to death. Therefore, for EVD risk groups, the threat from EVD is severe and they would take action to go for medical screening to check whether they are infected with EVD when they develop flu symptoms. The recommended actions included in the banner are monitoring of health and seeking treatment should EVD symptoms present.

Appendix 2 shows a banner on Hand, Foot and Mouth Disease (HFMD) which has less severe consequences, compared to EVD. The first outbreak of HFMD in Malaysia was in 1997 (Nik Nadia et al., 2016) and the epidemic has been recurring in cycles of two to three years. HFMD is a common childhood disease with symptoms such as fever, oral ulcers and rashes on the hands and feet. However, these seemingly harmless symptoms may progress to seizures, flaccid limb weakness or cardiopulmonary symptoms and the central nervous system of the HFMD patient is finally infected (Chan et al., 2000). The Ministry of Health Malaysia considers HFMD as "an important public health disease due to its tendency to cause large outbreaks and deaths among children" (Ministry of Health Malaysia, 2007, p. 1).

The HFMD banner has clear messages on severity by listing symptoms that children infected with HFMD might have: fever, rashes on the palms, feet and diaper areas, and ulcers in the throat. The banner also has clear recommendations on actions to take if children present with these symptoms. The recommended actions are: (1) bring your child to the nearby hospital or clinic; (2) do not send your child to childcare centres, kindergarten, baby sitter's house or school; and (3) do not bring your child to public places. Inherent in Actions 2 and 3 is a message on susceptibility. Parents are advised to take their children to see a doctor and to keep them away from other people so as not to spread HFMD. This action reduces risk of other people to HFMD, and indirectly it tells the audience that they should stay away from childcare centres, kindergarten, baby sitter's house, school and public places when there is a HFMD outbreak. It is common for disease risk banners to include clear messages on susceptibility but it is indirect in this banner, possibly because the people are already familiar with risk factors since HFMD has been around in Malaysia since 1997, which is two decades ago.

These two disease risk banners are described in detail and the characteristics of threat perception highlighted are also found in the other seven posters. The strategic position from which the disease risk banners were obtained, that is the airport, explains why the

susceptibility messages target people returning from foreign countries. For the Zika banners, the risk groups are people who have visited countries affected by Zika virus and the recommended action specific to this disease is to avoid having unprotected sex for two weeks after returning from the affected countries and to protect oneself from mosquito bites. For the banner on malaria, the risk groups are people returning from Papua New Guinea, Indonesia, Solomon Island and Africa (equatorial region). In other words, the people who are susceptible to getting infected with malaria are those in the timber logging industry as many big corporations in the industry have ventured to the Pacific Islands and even Africa. For Middle East respiratory syndrome-coronavirus (MERS-Cov), the affected countries are the Holy Land or Middle-East countries and another banner directly identified the risk groups as pilgrims or visitors from these countries. As mentioned earlier, specific risk groups make the general public feel that they are not at risk of getting the disease if they have not been to specific countries named but they do not know that if they come into contact with these risk groups, they are also susceptible to contracting the disease.

In terms of severity, most of the symptoms listed do not appear severe and they usually include flu-like symptoms. For example, the symptoms of MERS-Cov are listed as fever, cough and difficulty in breathing. Among the diseases, the most severe appears to be EVD because blood and bleeding are mentioned. For example, the banners mentioned "body fluids of a person or corpse with EVD such as blood, vomit, stool and urine". In actual fact, some of the diseases may lead to death, including HFMD if the affected people are not treated but the banners only mentioned "fever, rashes on the palms, feet and diaper areas, and ulcers in the throat". However, so as not to stoke fear or to create panic among the public, the disease risk banners refrain from mentioning end-stage symptoms which may include death. The consequence of this is that the public may treat the disease as not posing a threat and, therefore, they may ignore the symptoms which are flu-like, particularly if they have not visited specified countries. Sometimes the public might not be aware that they can come into contact with people who returned from the specified countries where there is an outbreak of a particular disease, and think that they are not at risk, and therefore do not seek medical attention even if the symptoms present.

The recommended action by the authorities (notably Ministry of Health Malaysia and its district and divisional offices) is usually for the public to seek treatment or to get a medical examination. Only HFMD banners tell the public to stay away from others and public places (e.g., childcare centres, kindergarten, baby sitter's house, school) to contain the disease.

Table 1 summarises the analysis of the airport banners in terms of susceptibility, severity and recommended action. For susceptibility, some banners (No. 4, 5, and 9) are listed as targeting the general public because a specific risk group is not mentioned. As for severity, unless otherwise mentioned, the symptoms are flu-like and are not likely to be viewed as severe – with the exception of Banner 6 which mentions bleeding for EVD and Banner 8 which mentions difficulty in breathing for MERS-CoV. As for recommended action, the cue to greater threat is the word "immediate" (e.g., Go to Health Quarantine Unit immediately) which appeared in Banners 2, 3, 6, 8 and 9. However, to evaluate level of threat, the three parameters were considered together to reach the results. Table 1 showed that the EVD banner presented the greatest disease threat.

Table 1: Summary of analysis of the airport banners in terms of susceptibility, severity and recommended action

	Susceptibility messages	**Severity messages**	**Recommended action**	**Level of threat**
Banner 1: Zika (English and Malay)	Malaysians visiting countries affected by Zika virus	4 symptoms	Seek treatment and inform doctor of travel history. Avoid unprotected sex.	Low
Banner 2: Zika (English)	List of 26 countries affected by Zika virus	5 symptoms	Go To Health Quarantine Unit immediately	Low
Banner 3: Malaria (Malay)	People who work or return from Papua New Guinea, Indonesia, Solomon Island and equatorial region of the African continent	Fever	Get immediate treatment if symptoms present. Have blood test done (shown in the picture).	Low
Banner 4: HFMD (Malay and Chinese)	General public	3 symptoms	Go to hospital or clinic. Avoid childcare centres. Avoid public places. Wash hands (picture).	Low
Banner 5: HFMD (Malay)	General public	4 symptoms	Wash hands. Avoid contact with patient.	Low
Banner 6: EVD (Malay)	People who return from EVD affected countries i.e. West Africa. 3 other ways of direct contact with ebola virus.	9 symptoms (including bleeding)	Monitor health. Get immediate treatment.	High
Banner 7: MERS-CoV (Malay)	People returning from Middle-East countries	4 symptoms	2 preventive measures. 3 actions if symptoms worsen.	Low
Banner 8: MERS-CoV (Malay and English)	People returning from Middle-East countries who show symptoms within 14 days of return	3 symptoms (including difficulty in breathing)	Immediately go to clinic	Low
Banner 9: MERS-CoV (Malay)	General public	Symptoms are embedded in preventive measures	6 preventive measures, including getting immediate treatment	Low

2. Rhetorical appeals for persuasion in disease risk messages

The analysis of the nine disease risk banners showed that the main rhetorical appeal is logos, or an appeal to logic. All the banners contain information on people susceptible to getting the disease, symptoms of the disease and recommended actions. These are facts and presented in a factual manner through text and pictures.

There was only one banner produced by Pusat Kesihatan Bintulu on HFMD which used pathos, or an appeal to emotions in order to persuade (Appendix 2). This banner says, "*Sayangi anak anda, cegah Penyakit Tangan, Kaki dan Mulut.* Translated to English, it is "Love your child, prevent Hand, Foot and Mouth Disease". This poster tells parents that if they love their children, they should take the recommended actions (i.e., to bring their child to the hospital, and to keep them away from childcare centres and public places). The other banners rely on the sensibilities of the parents to take immediate action. Pathos works well as

a persuasive strategy because it connects the disease risk to the personal concerns of the audience, which is the well-being of their beloved child.

Although pathos was not used in formulating the content of the disease risk messages, some evidence of words appealing to emotions were found in the banners. There were two strategies to catch the audience's attention so that they would take notice of the banner:

(1) Words for danger and urgency: "Caution", "*Awas*", "Please go to Health Quarantine Unit IMMEDIATELY"
(2) Use of capitalisation to grab attention: "*PERHATAN*" [Attention], "ZIKA AWAS" [Zika, caution], "CEGAH JANGKITAN EVD" [Prevent EVD infection]

Gaining attention is the first step in Monroe's (1935) motivated sequence, which is a step-by-step process to persuade audiences (as cited in Griffin, 2015, p. 290). The two strategies to catch the audience's attention are for the headline of the banner and in the recommended action part of the banner, which is the first and last part of the banner. These strategies are not used in the susceptibility and severity parts of the disease risk banners, which often occupy the space in the middle.

Finally ethos appeared in the form of a credible source of information for the disease risk banners. Only one of the nine banners did not have the source of information. Eight of the banners were produced by the Ministry of Health Malaysia or its branch offices, that is, *Jabatan Kesihatan Negeri Sarawak* (State Department of Health, Sarawak), *Pusat Kesihatan Bahagian Bintulu* (Bintulu Division Health Centre), *Pusat Kesihatan Bahagian Kuching* (Kuching Division Health Centre), and the *Bahagian Pendidikan Kesihatan* (Health Education Division) of the Ministry of Health Malaysia. The Ministry of Health is an authority in health and therefore the information on the banners are trustworthy. However, other than the placement of the logo and name of the ministry, there were few attempts to exploit the credibility of the source, with the exception of two HFMD banners, one of which is shown in Appendix 2. This banner has the headline "*Pesanan daripada Pusat Kesihatan Bahagian Bintulu*" (Directive from the Health Centre, Bintulu Division) right on top. The other banner, incidentally also on HFMD, had the headline "*Ingatan daripada Pusat Kesihatan Bahagian Kuching*" (Reminder from Kuching Division Health Centre) which serves the same purpose to show that it is an important message coming from a health authority in the state.

Table 2 shows the content of the three rhetorical appeals in the disease risk messages presented on the airport banners. The analysis revealed that all the banners were strong on the logos appeal and they used numbers and percentages as well as facts on the disease symptoms. The ethos appeal can be seen in the mention of Ministry of Health and its branches, with the exception of one banner (No. 8 on MERS-CoV). The only actual use of pathos appeal is in Banner 4 on HFMD ("Love your child, Prevent Hand, Food and Mouth Disease"). The other banners, we have considered usage of words such as caution and prevent as constituting some evidence of appealing to the audience's sense of danger but they do not tap into the "needs, values and desires of the audience" (Higgins & Walker, 2012, p. 198). Other emotions appealed to are greed, guilt, humour, love, pity and security (Gabrielsen & Christiansen, 2010), anger, empathy, fear, insult and confusion (Mshvenieradze, 2013).

Table 2: Content of the three rhetorical appeals in the disease risk messages presented on the airport banners

	Logos	**Pathos**	**Ethos**	**Main appeal**
Banner 1: Zika (English and Malay)	Information on risk groups, symptoms and recommended actions	Caution (in both English and Malay in capital letters)	Ministry of Health	Logos
Banner 2: Zika (English)	Information on risk groups, symptoms and recommended actions	Caution Prevent Zika Virus Infection Immediately (These words are in capital letters)	Jabatan Kesihatan Negeri Sarawak	Logos
Banner 3: Malaria (Malay)	Information on risk groups, symptoms and recommended actions	Immediate (The whole sentence is in capital letters)	Jabatan Kesihatan Negeri Sarawak	Logos
Banner 4: HFMD (Malay and Chinese)	Information on risk groups, symptoms and recommended actions	Attention! Hand, Foot and Mouth Disease (in capital letters) Love your child, Prevent Hand, Food and Mouth Disease	Pejabat Kesihatan Bahagian Bintulu	Logos with one appeal to pathos
Banner 5: HFMD (Malay)	Information on risk groups, symptoms and recommended actions	Caution! (in Malay and capital letters)	Pejabat Kesihatan Bahagian Kuching	Logos
Banner 6: EVD (Malay)	Information on risk groups, symptoms and recommended actions	Caution! Prevent EVD (in Malay and capital letters)	Ministry of Health	Logos
Banner 7: MERS-CoV (Malay)	Information on risk groups, symptoms and recommended actions	Caution! (in capital letters)	Bahagian Pendidikan Kesihatan, Ministry of Health	Logos
Banner 8: MERS-CoV (Malay and English)	Information on risk groups, symptoms and recommended actions	MERS-CoV (in full and in capital letters)	-	Logos
Banner 9: MERS-CoV (Malay)	Information on risk groups, symptoms and recommended actions	Prevent MERS-CoV Infection (in Malay and in capital letters)	Ministry of Health	Logos

Conclusion

The study on framing of disease risk messages in airport banners revealed that the banners are very informative but may not succeed in cueing disease preventive measures. The banners are packed with facts on susceptibility or risk groups, severity or symptoms of the disease, and recommended actions. In the limited space available on the banners, the audience is bombarded with many facts of disease prevention, or at least minimisation of consequences from the disease for those who are already infected. However, the logos focus of the disease risk banners may not construct the diseases as a public health threat due to two reasons. Firstly, the airport banners specify a restricted group of airline passengers who may be susceptible to the infectious diseases – those returning from foreign countries. This leaves a majority of the airline passengers feeling safe but they do not realise that they may come into contact with people who have been to those countries. Therefore, they view the airport disease risk banners as not relevant to them and, hence, not requiring their attention. Secondly, the

airport banners refrain from mentioning last stage symptoms of the diseases. The banners highlight warning signs of the infectious diseases which are flu-like symptoms, with the exception of EBV which results in bleeding. Therefore, the diseases are seen as not severe and does not raise alarm. It may not be in the interest of the Ministry of Health to create public panic over the diseases by exaggerating the risks and severity of the diseases but our analysis revealed that an emotional appeal may work better than relying on facts to prompt the public to take recommended actions. There is only one statement that appeals to the emotion among the nine disease risk banners. To increase the persuasive appeal of disease risk banners and health risk communication in general, it is may worthwhile to incorporate an element of pathos or emotional appeal.

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Appendix 1: Ebola Virus Disease banner

Susceptibility/ Risk:
People returning from countries affected by EVD (West African countries).

Severity/Symptoms:
fever, lethargy, joint pain, headache, muscle pain, vomiting, diarrhea, rash, bleeding

Susceptibility/Risk:
Direct contact with:

- body fluids of a person or corpse with EVD such as blood, vomit, stool and urine.
- objects contaminated with ebola virus such as needles and medical equipment
- body fluids of infected animals such as blood, secretion and meat.

Cues to action:
Monitor your level of health.
Get immediate treatment if you experience any of the symptoms.

Authority: Ministry of Health Malaysia

Appendix 2: Hand, Foot Mouth Disease

Severity/Symptoms:
If your child has signs such as fever, rashes on the palms, feet and diaper areas, and ulcers in the throat, your child might be infected with Hand, Foot and Mouth Disease.

Cues to action:
If your child has signs of Hand, Foot and Mouth Disease,

- bring your child to the nearby hospital or clinic.
- Do not send your child to childcare centres, kindergarten, baby sitter's house or school.
- Do not bring your child to public places.

Susceptibility/Risk (indirectly in Actions 2 and 3).

Authority: Health Office, Bintulu Division.