A Preliminary Study of Government Communication and Preventive Health Behavior related to Haze Pollution among the Thai Population

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Abstract

Severe haze pollution in Thailand has a great impact on Thai people's health. It affects the entire country. Meanwhile, the government's policy is very important to communicate and protect the health of the citizens, but the studies on government communication and preventive behavior related to haze pollution in Thailand is not prevalent. This study aims to examine how government communication as a public policy tool is perceived and how it impacts preventive behaviors related to haze pollution among the Thai population.

Empirical data comes from a survey method using an online survey with Thai people. The preliminary of the study data was collected from 40 participants. The results show Cronbach's alpha value for all 5-point Likert scale variables were higher than .80 indicating a high reliability level. The preliminary findings show that the level of perception of government policy related to haze pollution is average (M=2.56; SD=0.79), while its preventive behavior among Thai people is adequate (M=3.90; SD=0.47). The level of health literacy related to PM 2.5 provided by the government is moderate (M=3.13; SD=0.67). Also, the result of the preliminary study shows only health literacy can predict government communication. The preliminary study indicates that public policy related to haze pollution by the Thai government needs to be improved especially in communication and proving education to the public. Recommendations for improvement provided by the data are discussed in the paper.

Keywords

government communication, preventive behavior, public policy, health literacy, media exposure

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1 Introduction

Severe haze pollution has been a concerning issue for Southeast Asia (SEA). Thailand is one of SEA country that faces problems with PM 2.5 over a decade. PM 2.5 is tiny particles in the air with less than 2.5 microns (Department of Health, 2000). It includes dust, soot, dirt, smoke, and liquid droplets (IQAir Staff Writers, 2022). A report by Pollution Control Department in Thailand (Rujirawat et.al, 2024) shows PM 2.5 in Thailand has increased continuously especially in Bangkok (22.7-66.1 µg/m³) and the northern region of Thailand during January to February 2024 (35.5-87.1 µg/m³) and that PM 2.5 can impact health's people. Also, ANH Research Center reports that at least 3 provinces in the southern region have an increase of PM2.5 level and can affect public health (Manager Online, 2023).

PM 2.5 is a challenging haze pollution problem to the public health and Thai economic recovery. The amount of PM 2.5 is over the standard level and affects tourism making decisions (Thansettakij, 2566). In 2563, Thailand lost opportunities for the tourism industry by around 3,200–6,000 million Thai Bahts within 2 months because of PM 2.5 (Thansettakij, 2566). Haze pollution affects economic benefits related to tourism and further development (Hao, Niu, & Wang, 2021). The Thai government needs to solve it urgently.

Supporting citizens' good health and preventive behavior is an important responsibility by government for economic growth (Berkley, S. et al., 1993). Poverty reduction and economic performance is strong result from healthy citizens (Huang, et al, 2022). Thus, public health policy is necessary in terms of enhancing preventing disease behavior, health and wellness in the level of individuals, society, organizations, and communities by regulating, creating, maintaining, and supporting good environments for good health (Nilsen et al., 2020; Spears, 2017).

A growing literature suggests that government communication is a tool to reach policy goals at all stages of the policy process (Howlett, 2009). Effective government communication by providing health information to the public can also shape citizens' perceptions about health behavior and drives their behavior change (Panjaitan et al., 2023). Moreover, health literacy with education and communication related to environmental risks must be improved for individuals' level to strengthen the communities and reduce the effects of environmental problems (Ramírez, et al., 2019).

Although there are many studies focused on haze pollution policy in Thailand such as measuring guidelines and policies of the government sector to control and reduce the impact of the PM2.5 (Chanabawornsakul et al., 2022), the studies on government communication as a tool of public health policy are not prevalent. Also, most studies focus on only one side of the problem such as investigating the effects of haze pollution on citizens' health in only specific areas (Rattasumpun et al., 2022; Tassana-iem et al., 2022). However, haze pollution in Thailand affects the entire country. Meanwhile, the government's policy is very important to communicate to citizens in order

to protect their health. This study aims to examine how government communication as a public policy tool is perceived, and how it impacts preventive behaviors related to haze pollution among the Thai population.

2 literature review

Government Communication and Public health policy

Government communication is a policy tool to reach policy goals (Howlett, 2009). Its activities involve planning and conveying information to the public to affect their behavior and attitudes. Effective government communication enhances the perception of competence of government's public policy and leads to public trust (OECD/KDI, 2018). When a government implements messages correctly and appropriately, its citizens are more protected from hazards to their health. An example is air pollution alerts which lead to people reducing behavior that may put them in harm. In contrast, Failed communication can cause public confusion and health threats (Kim & Kreps, 2020).

Preventive behaviors of health hazards from dust exposure

Preventive health behavior is defined by an action performed by a person to prevent a hazard that may harm themself. (Samana & Ketsakorn, 2019). People will change behavior in terms to prevention their health when the quality of environment is worse (Zhang & Mu, 2018). Tassana-iem et al. (2022) found that older people who are exposed to higher levels of dust are likely to have a high level of preventive behaviors to protect themselves from health risks from dust exposure. Also, knowledge and information from public information leads to increased preventative behaviors. (Tassana-iem et al, 2022).

Health literacy

Health literacy is defined as ability of individuals to understand information related to health and behave regarding the knowledge (National institute of health, 2021). Education (e.g., about air pollution) is an important factor for individuals to behave. Education should be addressed as public concerns by government policy. Health literacy can be improved through effective communication and education for better health (Nutbeam, 2017). The level of health literacy has a relationship with changing personal behaviors and social actions and for preventive health behavior (Nutbeam, 2017; Rattasumpun et al., 2022). Also, citizens can influence governments to be responsible in addressing the health of its citizens when they are provided health literacy (UNDP, n.d.). Though, for a deep comprehension of health literacy, it must be developed through different layers of society including public policy. (UNDP, n.d.).

3 Methodology and variables

A quantitative method was utilized to examine how government communication as a public policy tool is perceived and how it impacts preventive behaviors related to haze pollution among the Thai population. An online survey was conducted to gather data. The sample of preliminary study consisted of 40 Thai adults.

The questionnaire was translated into the Thai language. Back-translation was used for checking the quality of the research tool. Back-translation is the re-translation of a translated questionnaire back into the original language and the subsequent comparison of the original version and the back translation (Behr, 2017).

The variables are preventive health behavior, health literacy, and government communication. The variables are measured with items on a 5-point Likert-type scale. Participants were asked how strongly they agreed or disagreed with each item ranging from 1 (strongly disagree) to 5 (strongly agree). Government communication variable is measured with an adapted scale by OECD/KDI (2018). It contains six indicators: symmetrical-ethical communication, two-way communication, informative communication, transparent communication, procedural fairness through communication, and risk and crisis communication. Preventive health behavior is measured with an adapted scale by the department of health (2020) and Tassana-iem et al., (2022). Also, health literacy is measured with an adapted scale by Abel et al., (2014). The survey contained 47 questions. After the data collection is completed, SPSS statistical software was utilized for data analysis.

5 Preliminary Results

The preliminary results show Cronbach's alpha value for all 5-point Likert scale variables were higher than .80 indicating a high reliability level. It means all variables are acceptable to predict the perceived government communication related to haze pollution policy and its preventive behavior among Thai people.

Reliability Test

Table 1 summarizes results of Cronbach's alpha tests for index variables. As shown in the table, all index variables, Cronbach's alpha value was higher than .80 indicating a high reliability level. Cronbach's alpha value for the other two variables was at .70 which is an acceptable level (Fraenkel & Wallen, 1996).

Table 1

Cronbach's Alpha Reliability Coefficient for Likert-Type Scales

	Number of items	Cronbach's α

Variable		
symmetrical-ethical communication	5	.889
two-way communication	4	.926
informative communication	6	.942
transparent communication	5	.923
procedural fairness through communication	3	.922
risk and crisis communication	4	.953
preventive health behavior	12	.842
health literacy	8	.899
Total	**47**	

Socio-demographic characteristics and media exposure

A total of 40 Thai adults responded to the online survey. More women (67.5%, n = 40) than men (27.5%, n =40) participated in the survey. Most of them work full time (90%). The average age of the respondents was 36 years old. The oldest participant was age 49, while the youngest one was 20. The participants are female (67.5%) and male (27.5%). Mostly, they work for services (25%) and the education industry (35%). About 37.5% of participants are allergies (dust/air). About 42.5% live in Bangkok—the capital city.

In terms of media exposure, mass media is the most popular for the participants (77.5%), followed by Facebook (35.0%), websites (30%), personal media (17.5%), press conference (12.5%), print media (7.5%), and others (X/Twitter= 2.5%), while only 2.5% responded that they do not see any channels.

Descriptive Statistics of the Variables in the Analyses

Table 2 shows means and standard deviations for variables (government communication and preventive health behavior and health literacy)

Government communication

The respondents reported that the level of perception of government policy related to haze pollution is average (M = 2.56; SD = 0.79). For the indicators of government communication, the findings showed procedural fairness communication has the highest mean (M= 2.66; SD=0.90), followed by informative communication (M=2.65; SD=0.82), Risk/crisis communication (M=2.60; SD=0.91), Two-way communication (M=2.58; SD=0.51), Transparent communication (M=2.56; SD

=0.80), and Symmetrical-ethical communication (*M*=2.48; *SD*=0.81).

Preventive behavior

The level of preventive health behavior among Thai people is adequate (*M* = 3.90; *SD* = 0.47). the respondents reported that they "take a shower and wash cloth after wearing" is the highest at 4.15 (*SD*=0.58), followed by "avoid exercising in the area that has a lot of dust" (*M*=4.13; *SD*=0.52). Also, some respondents reported "they follow situations and news related to air quality via application Air4Thai and other channels" has the lowest mean (*M*=3.35; *SD*=1.08), followed by "closely taking care of children who have a medical condition" (*M*=3.63; *SD*=1.03).

Health literacy

The level of health literacy among Thai people is adequate (*M*=3.13; *SD*=0.68). The respondents reported they "they can distinguish between high or poor quality of information sources related to health on the Internet" with the mean of 3.48 (*SD* =0.85), followed by the mean for "How successful do you feel when choosing advise and offers that suit your needs the most" was 3.30 (*SD*=0.82). Also, the findings showed "the respondents know how to find information related to health when they have any questions or complaints" has the lowest mean (*M*= 2.85; *SD*=0.95).

Table 2

Means and Standard Deviations for variables

Statement	*N*	*M*	*SD*
1. Government communication	40	2.56	.79
2. Preventive behavior	40	3.90	.47
3. Health literacy	40	3.13	.68

The relationship between variables (government communication, preventive health behavior, and health literacy)

The findings of a Pearson's correlation test showed that there is no significant relation between government communication and preventive health behavior. However, in this preliminary study, linear regression analysis showed that health literacy can predict government communication (see table 3).

Table 3

Regression Analysis of Associations between government communication and health literacy

variable	variable	*B*	*SE B*	*β*	*t*	R^2	ΔR^2	*F*
government	health literacy					.29	.03	15.766**
communication		.62	.16	.54	3.98*			

*Note. **p < .01.*

6 Conclusions and recommendations for improvement

The results of the preliminary study indicate that public policy related to haze pollution by the Thai government needs to be improved especially in communication (both by media channels and by providing direct information). Effective communication can increase health literacy that leads to effective preventive health behavior related to haze pollution. However, this finding is only preliminary. More interesting findings will be presented with an increase in sample size.

Recommendations for improvement after the preliminary study are provided in various ways. First, stratified sampling should be used followed by simple random sampling. Regarding an increase of PM 2.5 level for the entire country, regions can be stratified by known variables. Thus, a stratified random sampling more accurately identifies important population characteristics for a population sample.

Second, the level of measurement of media exposure variables should be changed. In this preliminary study, media exposure is measured on a nominal scale by using multiple-choice questions. The participants are allowed to select one choice or more from the list. The results would represent only the value of descriptive statistics (frequences and percentage). Thus, interval level scale should be required to measure the difference between values especially multivariate data analysis. Also, multivariate data analysis (e.g. regression analysis) enables understanding of data complex and explain better phenomenon. For example, examining the relationship between media exposure and government communication, preventive behavior, and health literacy.

Moreover, according to the part of media exposure variable, the results show some participants reported that they have not seen any information via any channel from government agencies in the part regarding open-ended question (the other items). Thus, it should add an item for that.

Third, the Cronbach's alpha value is above .80 on all scales that reflect high internal consistency reliability. The items of the set are consistent with each other and are measuring the same construct. Thus, all variables of research are valid and reliable. Moreover, according to 47 items of questionnaire, there are no missing values in the data set. It reflects the number of questions in the questionnaire is appropriate and sufficient to thoroughly keep the attention of the

participants.

Overall, this study offers scholarly and practical implications regarding government communication and public policy related to haze pollution and citizens' health in Thailand. The findings are also useful for further research and developing intervention plans to improve government and public communication in order to reduce the consequence of pollution on the population.

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