

The Influence of the Perceptions of Environmental Factors on Self-Reported Health Status Among Thais

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As a transitional country recently entering the Association of Southeast Asian Nation's (ASEAN) community, Thailand aims to improve its healthcare and health of its people. One means of better understanding the health status of a population is to examine how the overall health environment influences health status. For this study, we examine the impact of perceptions of the Thai health environment on the health status of Thai adults. Four hundred and two participants from three regions of Thailand were surveyed concerning sociodemographic variables, perceptions of health status, and perceptions of the internal and external health environment. The results revealed that those reporting their health status to be satisfactory believed that their living and working environment and availability of medical information and technology was good. In Thailand, the perception of having a good living and working environment as well as good medical information and innovative medical technology may have an important bearing on health status.

KEY WORDS: health status, Thailand, perceptions, health facility environment

Introduction

The government of Thailand has made significant attempts to make Thailand a medical hub of Southeast Asia by focusing on three development aspects: (1) the creation of an excellence center in medical services, (2) improved health promotion strategies, and (3) the development of innovative health products (Dedmon, 2009). To achieve such changes, the government of Thailand has developed a Science, Technology, and Innovation National Plan to be implemented over the next 10 years with a focus on improving science, technology, and innovation. The main objectives of this plan are to improve the health system and the health status of the Thai population. Improving the health status of the Thai population will contribute to improvements in the economic development of the country, as poor health has been shown to significantly reduce the productivity and economic capacity of a community and a nation (Tompa, 2011; WHO, 1999). There has been much research conducted surrounding the relationship between perceptions of health and mortality rates. These

research studies span several decades and nearly all of the results draw the same conclusions. In 1991, a Yale University study indicated that, based on several longitudinal studies, mortality rates can be predicted by individual health status. Questionnaires with questions as rudimentary as "How would you rate your health?" disclosed pertinent information that directly correlated with the individuals' health status and mortality rate; specifically negative perceptions of health status were directly correlated with increased mortality (Idler & Kasl, 1991; IOM, 1998; Keck & Scutchfield, 1997). The self-perception of health status may also reflect family medical history, socioeconomic status, access to care, and undiagnosed disease symptoms. Health perceptions are dynamic, and could often influence health behavior (Idler & Benyamini, 1997; Shi & Singh, 1998).

One means of better understanding the health status of a population is to examine how the overall health environment influences health status. For example, one aspect of the health environment, social support among immigrant populations, has been shown to be a significant influence on self-reported health status, such that those receiving good social support have less stress and better health outcomes (Salinero-Fort et al., 2011). Other studies have examined environmental factors external to their living and working environments. For example, Brunette, Smith, and Punnett (2011) examined the perceptions of working and living conditions among Peruvian workers and found that, for women, higher physical strain in combination with extra-organizational factors resulted in greater perceived mental distress. Further, those who perceive their quality of life to be good and perceive their overall environment to be good, report better health outcomes (Skevington, 2010).

This study examines the associations between the perception of the health environment, and self-reported health status. This goal is based on the premise that it is useful to examine both internal and external environmental factors, which may affect the quality of life and access and availability to healthcare. Such analyses are commonly used to conduct environmental analyses of healthcare organizations and systems (Swayne, Duncan, & Ginter, 2009). The ways in which perceptions of internal and external environmental factors are used to examine self-reported health status are described in the Methods section.

Purpose

For this study, we examine the self-reported health status among Thai adults and how (1) perceptions and attitudes of Thai trade and investment, particularly concerning entering the Association of Southeast Asian Nation's (ASEAN) community, (2) perceptions and attitudes of Thai society and cultural values, (3) perceptions regarding Thai medical information and technology, (4) perceptions of the Thai living and working environment, and (5) perceptions and attitudes concerning the strengths and weaknesses of the hospital system, relate to individuals' health status. For this study we have divided the factors affecting

health status into two categories: perceptions of the internal hospital environment and perceptions of the external hospital environment. The internal environment includes the strengths and weaknesses inside the hospital system. The external environment includes the attitudes and perceptions of Thai trade and investment, Thai society and cultural values, medical information and technology, and the Thai living and working environment. We focus on the following three research questions:

1. What is the correlation between the perception of the internal Thai hospital environment with the health status of the respondent?
2. What is the correlation between the perception of the external Thai hospital environment with the health status of the respondent?
3. Which of the internal and external environmental factors best predict the health status of the respondent?

Methods

This study is one of a series of studies that have investigated the health systems and health status of people in the Greater Mekong Region. Initial studies employed a mixed methods approach to develop surveys for follow-on studies that are being conducted in parallel in individual countries within the Greater Mekong Region. This study focuses on health issues specific to Thailand. Attitudes and perceptions are explored here as they are key indicators for understanding the overall acceptance and use of the healthcare system (Thoresen & Fielding, 2010).

Sample

The study recruited participants from three major regions of Thailand including Pathumthani and Ang Thong provinces in the central region of Thailand, and Ubon Ratchathani province in the Northeast sector of the country (see Figure 1). The data were collected in April and May of 2011.

Four hundred two healthy subjects who utilized their local hospital system responded to the questionnaires. There were two exclusion criteria for subjects (1) they must not have been admitted to the hospital, and (2) they must not have self-reported an illness or chronic condition. An a posteriori power analysis was run to determine if the sample size was sufficient for further testing. Cohen's formula was employed using the number of independent variables, and it revealed an effect size of less than 0.20 at the $\alpha = 0.05$ level (Cohen, 1988; Kraemer & Thieman, 1987). This is considered a moderate effect. Participants were selected using multistage random sampling.

Participants were given sociodemographic questionnaires as well as questionnaires concerning their health status, and their perceptions and attitudes of trade and investment, Thai beliefs and cultural values, medical information and technology, the workplace and living environment, and the strengths and weaknesses of the hospital system.

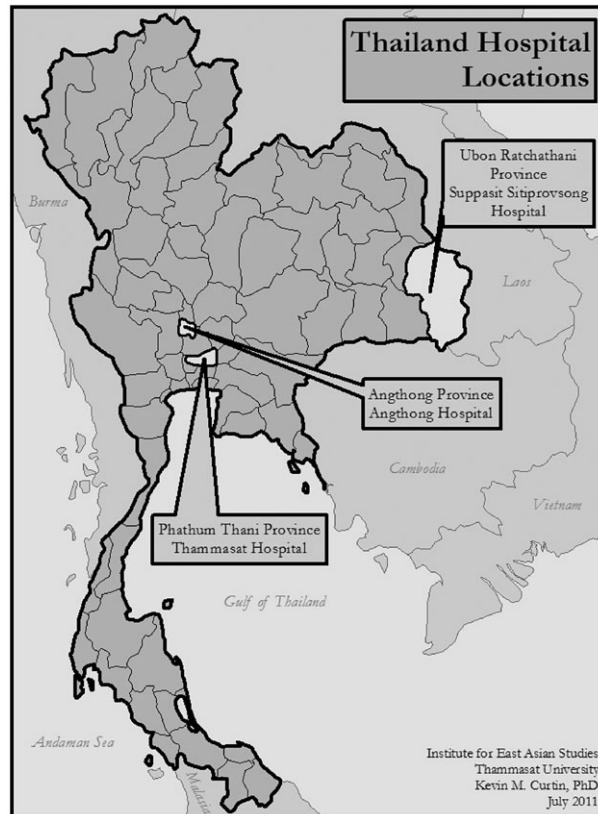


Figure 1. Study Area Overview Map of Thailand.

The dependent variables were related to participants' self-reported health status while the independent variables were developed to examine perceptions of the internal and external environmental factors, which affect health status and the healthcare system. The responses to the questions regarding health status were scored on a five-point Likert scale, ranging from excellent (5) to poor (1). The responses to the questions regarding environmental factors were scored using a five-point Likert scale ranging from (1) strongly disagree to (5) strongly agree for positive statements; reversed for negative statements.

Dependent Variables

The dependent variable questions from the health-status assessment were developed by the researchers concerning participants' health condition, human function, and overall well-being (Cowawintaweenat, Poothang, Ruchiwit, & Pawloski, 2011). Examples of health status questions included (translated from Thai) "You have all the food and rest you need," and "Compared with last year, please generally assess your health."

Independent Variables

External Environmental Factors. The independent variable questions are based on the theoretical framework of Swayne et al. (2009) concerning conducting an environmental analysis of healthcare organizations. The external environment is often composed of a number of organizations which may not necessarily have a direct impact on the hospital, the healthcare industry, or on health status (Swayne et al., 2009). The external factors were determined by means of focus groups in the larger study. In Thailand, these factors include Thai governmental policies on trade and investment, the general culture and belief system of Thailand, access and availability to medical information and technology, and the quality of the workplace and living environments.

1. *Trade and investment.* For these questions, participants were asked about their perception of Thai trade and investment policies, and most specifically about their attitudes regarding Thailand entering into the new ASEAN Economic Community (AEC) in 2015 and how these policies may affect health status among Thais.
2. *Thai socioeconomic environment and cultural values.* For these questions, participants were asked about their perceptions of the Thai socioeconomic environment and Thai culture and values and if they provide a positive environment for good health among Thais.
3. *Information and medical technology.* Access to medical information and technology is critical for diagnosis and treatment as well as prevention of diseases. Thailand, being a transitional country, is faced with populations which are lacking Internet access, and rural hospitals which are limited in medical technology, while more urban and wealthier populations have access to some of the best medical technology in the world. However, as the economic situation improves in Thailand, more Thais have access to medical information and innovative medical technologies. Thus, for these questions, participants were asked about their perception of medical information and technology in Thailand and its impact on health status.
4. *Workplace and living environment.* As Thailand advances economically, there is a greater need for regulation to ensure a healthy living and work environment. The government has recently implemented several initiatives to curb pollution and to improve the overall environmental health of Thailand (WHO, 2011). For these questions, participants were asked about the impact of their living and working environments on health status.

Internal Environmental Factors. The evaluation of internal environmental factors often includes analyses of functional areas affecting the health system and healthcare organization. For this study, the internal factors included an evaluation of the hospital system. Participants were asked about the strengths and weaknesses of the functional process of the hospital. To simplify, throughout the article we will refer to this variable as the "internal hospital environment."

Validity and Reliability of Instruments

Content validity was determined by five experts, and agreement of the experts was 80 percent (LoBiondo-Wood & Haber, 2002). Item analysis was conducted by means of contrast group analysis and revealed a *t*-value greater than or equal to 2.0. Reliability tests revealed a Cronbach's alpha coefficient of 0.89, 0.92, and 0.94 for the three questionnaires (LoBiondo-Wood & Haber, 2002; Polit & Hungler, 1997).

Human subjects procedures were approved by the Ethics Committee of Thammasat University.

Data Analyses

Both descriptive and multivariate statistical analyses, including correlation and step-wise multiple regression, were conducted using the statistical software SPSS. Regression equations were formulated to explain which independent variables (external factors) are able to best predict the health status of the respondent. Multicollinearity analyses revealed less than 0.70, indicating correlation among the independent variables was not an issue.

Results

Descriptive Analyses for Sociodemographic Data

Descriptive statistics revealed the sample was 58.7 percent male and 41.3 percent female and the mean age was 43.3 years; 34.3 percent had some primary school education and 56 percent were married. The average household income was U.S. \$585.00 per month. 40.7 percent opted for the government universal health coverage (Golden Card). 68.9 percent reported that they had easy access to health services from the hospital and 93.7 percent preferred to use conventional medicine. Cars were used by 46.7 percent of the participants and motorbikes were used by 39.6 percent of the participants to get to the hospital. Participants reported an average of just over 16 min to travel to the hospital 92.8 percent lived less than 50 km from the hospital.

Multivariate Analyses. Table 1 presents the correlation findings and addresses research questions one and two:

1. What is the correlation between the perception of the internal Thai hospital environment with the health status of the respondent?
2. What is the correlation between the perception of the external Thai hospital environment with the health status of the respondent?

The correlation results show that those who reported their health status to be good also believe that their living and working environment are good and the availability of medical information and medical technology at their hospital is

Table 1. Correlation Between External/Internal Determinants and Perception of Health Status ($n = 402$)

External Determinants	Thai Society and Cultural Values	Trade and Investment	Medical Information and Technology	Working Environment	Living and Working Environment	Internal Hospital Environment	Health Status
External determinants							
Society and cultural values	1	—	—	—	—	—	—
Trade and investment	0.271**	1	—	—	—	—	—
Medical info and technology	0.252**	0.382**	1	—	—	—	—
Living and working environment	0.360**	0.160*	0.104*	1	—	—	—
Internal hospital environment	0.490**	0.442**	0.322**	0.424**	1	—	—
Health status	0.069	0.011	0.200**	0.200**	0.031	1	1

** $p < 0.01$; * $p < 0.05$.

Table 2. Stepwise Multiple Regression Analysis in Health Status Prediction From the Variables ($n = 402$)

Predicted Group	R	R ²	R ² Change	F	B	Beta	t
External determinants							
Medical information and technology	0.200	0.040	0.040	16.744***	0.622	0.182	3.746***
Living and working environment	0.270	0.073	0.033	15.643***	0.579	0.181	3.741***
	SE est. = 9.818			a = 50.549			

Health status (Y') = 50.549 + 0.622 (medical information and technology) + 0.549 (living and working environment).

Health status (Z') = 0.182 (medical information and technology) + 0.181 (living and working environment).

*** $p < 0.001$.

also good. No significant correlation was found for the internal hospital environment or the other external environment factors.

Table 2 presents the stepwise regression results regarding research question number three:

3. Which of the internal and external environment factors best predict the health status of the respondent?

The results show that two factors were significantly related to health status. These included attitudes concerning medical information and technology and the living and working environment. Attitudes concerning medical information and technology could predict health status at 4.0 percent (R^2 change = 0.04, $\beta = 0.182$) and attitudes concerning the working and living environment could predict health status at 7.3 percent (R^2 change = 0.03, $\beta = 0.181$). Both determinants could synergistically predict health status at about 7.3 percent ($R^2 = 0.073$) and are statistically significant ($F = 15.643$, *** $p < 0.001$).

Discussion

The results reveal that the best predictors of health status concern attitudes and perceptions about medical information and technology as well as attitudes and perceptions about the living and working environment. These findings suggest that individuals who report their health status to be good believe that the medical information and medical technology as well as their living and working environment are good. Thus in Thailand, the perception of having good medical information and innovative medical technology may have an important bearing on health status. Further, those who believe they live in a clean and healthy living and working environment perceive themselves as being healthier than those who perceive they live in a polluted and unhealthy environment. While the findings concerning the impact of a healthy living and working environment on health are supported in the literature from around the world, the second predictor concerning access to good medical information and technology is a bit surprising, especially because the other independent variables including perceptions of Thai society and cultural values and the

overall quality of the hospital system process did not appear to have an impact on health status. The lack of significance concerning the independent variable describing Thailand's policies on trade and investment may be due to the fact that the concept of entering ASEAN is very broad, and that it is one that may not yet be perceived to have an impact on most individuals directly or immediately.

While the findings point to a greater focus on maintaining good medical information and technology within the hospitals as well as supporting initiatives that improve living and working environments, they also suggest that in Thailand, a country experiencing rapid economic growth and advances in medicine, people may be placing greater importance on the availability of higher quality medical information and technology. Since most of the studies concerning the impact of the use of medical information on health status have been conducted in wealthier nations, it is unclear if there will be a similar impact from using such information on health status in transitional countries such as Thailand (Valimaki, Nenonen, Koivunen, & Suhonen, 2007). Much of the information may need to be supported by health professionals and explained in greater detail so that patients can use such information efficiently. Nonetheless, these data suggest a positive relationship with health status among those who perceive the availability of medical information and technology to be a good thing. Such relationships were found in Koch-Weser et al.'s research concerning the demographic characteristics of health information seekers in the United States in which health information seekers revealed better health outcomes (Koch-Weser, Bradshaw, Gualtieri, & Gallagher, 2010). In addition, previous studies (Ruchiwit, 2012; Schnittker, 2004) showed that those who have greater access to medical information and technology may have greater education and income, which may play a role in this association. In Thailand, particularly in higher socioeconomic areas with high income and high education, it is commonly accepted that wealthier individuals have greater access to medical information and technology and have greater ability to pay for health services than those from poor areas. For this study, the hospitals, being large (and in one case a university hospital), have greater access to good medical technology compared to smaller and more rural hospitals throughout Thailand. Valdmanis, Kumanarayake, and Lertiendumrong (2004) found that hospitals operating at higher technical levels are better able to make use of basic infrastructure resulting in providing better care compared with hospitals having lower levels of healthcare technology. Additional studies are needed to determine how individuals use such information and technology to better understand its impact on health status.

Conclusions and Implications for Policy and Practice

While this study examines perceptions of the internal and external environment, understanding the relationship between those perceptions and health status as well as which perceptions appear to have the greatest impact are important for

policy development. As these findings show, living in a safe and unpolluted environment as well as access to new medical technologies appears to be of great importance to health and well-being. In Thailand, policies may be developed, maintained, and continued which focus on improving the living and working conditions of its people. One such policy includes the recent implementation of the “Go GREEN and CLEAN” campaign sponsored by the Ministry of Public Health. This policy is designed to reduce energy waste and encourage clean and healthy hospital environments. The campaign includes public education and awareness programs to reduce garbage use and increase recycling as well as encouraging minimal uses of pesticides and other chemical substances (Health Care without Harm, 2012).

In addition, the Thai government has been considering increasing funds to hospitals and healthcare providers throughout the country to improve medical technologies and innovation. Further, the Ministry of Public Health has noted that much of the medical technology including medical equipment is clustered in the large urban centers and predominately in private hospitals (Thai Ministry of Public Health, 2008). Such clusters impact access to health technologies for the poor and uninsured in Thailand, where such equipment may not be as readily available. These findings suggest that greater investments in health technology could benefit the health of the entire nation and perhaps assist in improving the health in regions with high poverty and low numbers of insured individuals.

Given the evidence above, the government of Thailand could increase positive health outcomes by vigorously pursuing efforts such as the Science, Technology, and Innovation National Plan. If successful both health care and general economic conditions could concurrently be improved.

Limitations

While this study gives additional information concerning the impact of perceptions of the health environment on health status, and has significant implications for understanding the health situation in Thailand, there are a few limitations. These include the following:

1. Health status included self-reported data.
2. Further analyses need to be conducted to determine if the results represent a causal interpretation. For example, we do not know whether health status is affected by or leads to changes in the internal and external environments.
3. Additional analyses should also examine the impact of socioeconomic factors such as wealth and education on all variables. However, as these data were analyzed from a larger study, the sample size is too small to determine such an effect.
4. The data collected represent only few geographic areas throughout the country, and includes only large hospitals, which have greater access to health information and better medical technology.

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Notes

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