Health seeking behaviors in influenza-like illness among healthcare
providers in Angthong province, Thailand

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A Thesis Submitted in Partial Fulfillment of the Requirements

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พฤติกรรมแสวงหาการดูแลสุขภาพต่อกลุ่มอาการคล้ายไข้หวัดใหญ่ของบุคลากรทางการแพทย์

จังหวัดอ่างทองประเทศไทย

นางสาวเบญจมาภรณ์ ฉายพึ่ง

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาสาธารณสุขศาสตรมหาบัณฑิต

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ปีการศึกษา 2556

Thesis Title        HEALTH SEEKING BEHAVIORS IN INFLUENZA-LIKE ILLNESS AMONG HEALTHCARE PROVIDERS IN ANGTHONG PROVINCE,THAILAND

By              Ms. Benjamaporn Chaipung

Field of study      Health systems development

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การแพทย์ จังหวัดอ่างทอง ประเทศไทย (HEALTH SEEKING BEHAVIORS IN    INFLUENZA-LIKE

ILLNESS AMONG HEALTHCARE PROVIDERS IN ANGTHONG   PROVINCE, THAILAND)

อ. ที่ปรึกษาวิทยานิพนธ์หลัก: นพ. โรเบิร์ต แซดวิค แชปแมน, 111 หน้า

การศึกษานี้จัดขึ้นเพื่อศึกษาถึงปัจจัยที่มีผลต่อและความสัมพันธ์กับพฤติกรรมแสวงหาการดูแลสุขภาพ
ต่อกลุ่มอาการคล้ายไข้หวัดใหญ่ของแพทย์   ทันตแพทย์และพยาบาลที่ทำงานในโรงพยาบาล   7แห่งในอ่างทอง
จำนวน 290 คนผลการศึกษาพบว่า      ประชากรที่ศึกษาส่วนใหญ่มีอายุเฉลี่ย อยู่ระหว่าง 35ถึง 50 ปี 92.8 %เป็น
เพศหญิง โดยที่มี พยาบาล 84.8%  แพทย์ และ ทันตแพทย์กลุ่มละ 7.6 %  65 (22.4%)มีโรคประจำตัวและมีอาการ
คล้ายไข้หวัดใหญ่เมื่อ1-3เดือนก่อน 38.3 %การล้างมือขณะทำงานเป็นวิธีที่ปฏิบัติมากที่สุด 97.6% และมีการใช้ถุง
มือ เสมอ 74.5% บุคลากรได้เข้ารับการตรวจสุขภาพประจำปี 92.4% โทรทัศน์เป็นสื่อที่ถูกใช้มากที่สุดในการ
รับรู้ข้อมูลสุขภาพ  205  (70.7%)  และ  45.2%ของบุคลากรมีความมั่นมากในการดูแลตนเองเมื่อมีอาการคล้าย
ไข้หวัดใหญ่การฉีดวัคซีนป้องกันไข้หวัดใหญ่เมื่อปี2012 คิดเป็น 67.9% บุคลากรส่วนใหญ่ระมัดระวังการแพร่
เชื้อไข้หวัดสู่ผู้ป่วย 228 (78.6%) และ 233 (80.3%) คิดว่าการฉีดวัคซีนป้องกันไข้หวัดใหญ่เป็นความรับผิดชอบ
ของตนเองและมีความรู้เบื้องต้นเกี่ยวกับไข้หวัด 55.2%

**พฤติกรรมแสวงหาการดูแลสุขภาพที่ไม่เหมาะสมคือพฤติกรรมที่ไม่ปฏิบัติใดๆ**เมื่อเกิดกลุ่มอาการคล้าย
ไข้หวัด  มีความสัมพันธ์อย่างมีนัยสำคัญทางสถิติ  กับ  เพศชาย  คำนึงถึงการแพร่ไข้หวัดสู่ผู้ป่วย  การใช้เครื่อง
ป้องกันอันตรายส่วนบุคคล  และระยะเวลาล่าสุดที่เคยเป็นหวัด  เพศชายมีโอกาสในการ ไม่ปฏิบัติใดๆมากกว่าเพศ
หญิง(OR= 10.09,  p-value <0.001,  95%CI 3.122-32.612)และ**พฤติกรรมซื้อยาโดยไม่มีคำแนะนำ**โดยที่ระดับ
คะแนนความรู้สูงเกี่ยวกับเหตุผลของการพักอยู่ที่บ้านเมื่อเกิดกลุ่มอาการคล้ายไข้หวัด      มีโอกาสซื้อยาโดยไม่มี
คำแนะนำน้อยกว่าระดับคะแนนความรู้ต่ำกว่า (OR=0.86, p-value <0.015, 95%CI 0.764-0.971) **พฤติกรรม
แสวงหาการดูแลสุขภาพที่เหมาะสม**  คือพฤติกรรมซื้อยาโดยมีคำแนะนำสัมพันธ์กับความเชื่อ  ระยะเวลาล่าสุดที่
เคยเป็นหวัด   และการใช้เครื่องป้องกันอันตรายส่วนบุคคลซึ่ง   ผู้ที่ใช้เครื่องป้องกันอันตรายส่วนบุคคลมากมี
แนวโน้มที่จะมีพฤติกรรมเหมาะสมมากกว่าผู้ที่ใช้น้อย  (OR= 1.29,p-value <0.016,  95%CI 1.049-1.582)
**พฤติกรรมการไปพบแพทย์**  มีความสัมพันธ์อย่างมีนัยสำคัญทางสถิติกับ  เพศชายการแต่งงาน  ความรู้เกี่ยวกับ
สาเหตุของไข้หวัด สื่อและระดับความเชื่อ โดยผู้ใช้สื่อมีแนวโน้มที่จะไปพบแพทย์มากกว่าไม่ใช้สื่อ (OR= 2.89,p-
value<0.011, 95%CI 1.279-6.521) **พฤติกรรมพักอยู่ที่บ้าน**สัมพันธ์กับอาชีพทันตแพทย์ และความรู้เกี่ยวกับการ
ป้องกันการติดเชื้อหวัด โดยทันตแพทย์จะพักอยู่ที่บ้านมากกว่าแพทย์ (OR= 8.50, p-value < 0.014, 95%CI 1.549-
46.611)

สาขาวิชา พัฒนาระบบสาธารณสุข      ลายมือชื่อนิสิต......................................................


ปีการศึกษา 2556                ลายมือ อ.ที่ปรึกษาวิทยานิพนธ์หลัก.........................................................

# # 5478824553: MAJOR HEALTH SYSTEMS DEVELOPMENT

KEYWORDS˙: HEALTH SEEKING BEHAVIORS / INFLUENZA-LIKE ILLNESS / HEALTHCARE PROVIDER

BENJAMAPORN CHAIPUNG: HEALTH SEEKING BEHAVIORS IN INFLUENZA-LIKE ILLNESS AMONG HEALTHCARE PROVIDERS IN ANGTHONG PROVINCE, THAILAND. ADVISOR: ROBERT SEDGWICK CHAPMAN, M.D., M.P.H. 111 pp.

This cross-sectional study aimed to describe and determine relationship betweeninfluencing factors and health seeking behaviors (HSB) in influenza-like illness (ILI) among 290 of physicians, dentists, and nurses in 7 hospital in Angthong. The most were 35 - 50 years old and 92.8% were female. They were nurses 84.8%, physicians and dentists7.6% for each group. Only 65,22.4% had underlying disease and 38.3% got ILI during 1-3 months ago. Hand washing was the most way they behave (97.6%) and gloves were always used 74.5%. Annual checkup was performed 92.4%. Television was a mass media which used the most (205, 70.7%). 42.5% were confidence to take care themselves when they got ILI 67.9% got influenza vaccination in 2012. They were aware more about influenza transmission to their patients (228, 78.6%) and 233 (80.3%) thought influenza vaccination was a part of their responsibility.  55.2% had basic knowledge about influenza

**Inappropriate behavior;** These influencing factors including male, more awareness of influenza transmission to patient, using PPE, and time since the most recent ILI were influencing factors of **do nothing** HSB. Male was more likely to do this HSB than female (OR= 10.09, p-value<0.001, 95%CI 3.122-32.612). And high score of knowing reason for staying at home was less likely to do **self-medication without suggestion** (OR= 0.86, p-value<0.015, 95%CI 0.764-0.971). **Appropriate behavior;** Influencing factors of **self-medication with suggestion** were using PPE, perception score and time since the most recent ILI. Using PPE was more likely to do this HSB than less use (OR= 1.29, p-value<0.016, 95%CI 1.049-1.582). Influencing factor of **see doctor** were male, married (ref=single), knowing cause of ILI, exposed to mass media, and perception score. Exposed to mass media was more likely to see doctor than unexposed (OR= 2.89, p-value<0.011, 95%CI 1.279-6.521). Influencing factor of **rest at home** were knowing how to prevent seasonal influenza and dentist (ref= doctor). Dentist was more likely to rest at home than doctor (OR= 8.50, p-value <0.014, 95%CI 1.549-46.611).
*Very few of the study factors were significant with health seeking behaviour, suggesting that more researches needed to understand the determinate of the these behaviours.

Field of Study: Health System Development Student's Signature................................

Academic Year 2013                                        Advisor's Signature.............................

# ACKNOWLEDGEMENTS

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HCP     Healthcare provider

PPE     Personal protective equipment

ILI     Influenza-like-illness

OPD     Outpatient department

IPD     Inpatient department

ER      Emergency room

ICU     Intensive care unit

OR      Operating room

HSB     Health seeking behavior

HBM     Health belief model

TPB     Theory of planned behavior

STDs    Sexually transmitted diseases

AIDS    Acquired immune deficiency syndrome

MOPH    Ministry of public health

# CHAPTER I

# INTRODUCTION

## 1.1 Introduction

Universal declaration of human right stated that everyone has the right to a standard of living adequate for the health and well-being of themselves and of their family, including food, clothing, housing, medical care, and necessary social services(UN, 1984: Online) and WHO declare that it is the right to gain the standard of health. These rights are for all human beings including healthcare providers (HCPs) whohelps in identifying or curing or preventingillness or disabilitysuch as doctors, nurses, dentists, pharmacists, medical technologists etc.(Farlex, 2012 : online). HCPs are the backbone of the health care system. They are required to give patients life-sustaining care. HCPs, the service-oriented occupations having a theoretical knowledge base, having a self-governing association,are expected to be the great take care themselves better than general population (Davidson &Schattner,2003). Therefore, HCPs are often role models in which their daily health habits may be imitated by their patients, family or friends. Refer to these statements, heath status of HCPsare expected to be healthy.

But in the real world, there are more evidences that shown risky health behaviors among HCPssuch as low rate of vaccination of influenza or hepatitis virus, working through their illness. It can imply that more knowledge is not mean healthy status as Dr. Nihar mentioned in the article review that promoting a change in individual behavior by providing education and knowledge is not sufficient (MacKian, 2003) and there were some studies shown the lower rates of healthy behaviors compared with the general population as one study indicated that Health care workers were not more tendency to participate in worksite health promotion programs compared to other working populations(Jonsdottir, Borjesson & Ahlborg, 2011).

1.2 **Problem statement**

Health seeking behavior defined as any activity that responded by individuals who belief or perceive themselves to be ill for finding the proper remedy. HCPs whoprovide medical care and services are expected to be a good model in a context of healthy. They should theoretically have better health seeking behaviors than other people. Unfortunately, in the real situation there are many HCPs who get illness without treatment or late treatment or get preventable infection due to non-vaccination, which may lead to absence from their work and increasing cost of care.

Although HCPs perceived that when people get illness they will seek some remedies for themselves. But the study of Australia showed that doctors were reluctant to find out for health care through usual mechanisms and found it is difficult to adopt the role of patient (Davidson & Schattner, 2003). These led to self-prescription, working through illness, self-referral and late presentations with serious problems. The absence of HCPs (clinical group) in the National Health Service in UK had the highest rates of all occupational sectors (The Health and Social Care Information Centre, 2012: online).Hospital doctors take fewer sick leaves than other hospital employees and school teachers. Doctors reported taking fewer sick leaves than the fee earners after adjusting age and gender (McKevitt et al., 1997). In addition, when general practitioners used psychiatric services, they concerned about their confidentiality and the embarrassment was also a barrier to consult other specialists about their illness or their families. They perceived that patients and colleagues link good health of doctors with medical competence. Thus doctors feel forced to portray a healthy exterior while being aware of their vulnerable (Thomson et al., 2001). In Thailand, the sickness absences of nursing staff at Srinagarind hospital were 52.5% (759) of total nursing staff (1445). The causes of sick leave were headache and fever (21%) and common cold (18.8%) and the staff at outpatient department was the greatest rate of sickness absence (Chaiear et al., 2002). As the same result of Vajira-Phuket study indicated that HCPs took sick leave 58.5% per year. The main cause of sick leave was headache or fever (34.5%) (Kumchuchad & Sakunpad, 2006). Therefore, sometime sick leave days cannot reflect real health status.

In recent years, pandemic influenza has been a global public health issue. Also, during the severe acute respiratory syndrome (SARS) epidemic, healthcare workers were the most affected group and attack rates were more than 50% (Wilder-Smith et al., 2005). World Health Organization (WHO) reported that 8,098 cases occurred during the outbreak, and 774 (9.6%) persons died. Healthcare workers accounted for 1,707 (21%) of the cases (Sepkowitz & Eisenberg†, 2005). A novel H1N1 influenza virus of swine origin occurred in 2009. In Thailand, national surveillance data indicated that during 2009–2010, a total of 234,050 influenza cases; 347 deaths were associated with the confirmed cases (Ungchusak et al., 2012). Twenty percent of HCPs in Victoria demonstrated evidence of H1N1 (2009) infection (Marshall et al., 2011).The Thai study revealed that Influenza A infection rate was more than 10% among intensive care unit healthcare workers who were not vaccinated and the cost of investigation was more than 10-fold higher than the estimated costs of healthcare workers vaccination. The mean estimated costs of outbreak investigation were $ 2710 per outbreak and $ 256 for annual vaccination of all 77 ICU healthcare workers of Thai tertiary care hospital (Apisarnthanarak et al., 2008). Furthermore, the economic losses caused by influenza outbreak were US$ 23.4-62.9 million and lost productivity due to illness accounted for the majority costs due to influenza were 56% of all costs (Simmerman et al., 2006). HCPs are high risk group of acquiring infection since they are exposed to infected individuals in the community as well as hospitalized patients. HCPs may become a source of influenza for their patients. As the survey during the 1986–87 in USA among healthcare workers found that, immunization rates were less than 10% and some studies have found lower rates of immunization among healthcare worker than among non-medical as the result of study found that only approximately 30% of healthcare workers received influenza immunizations (Cassandra et al., 2002). Despite influenza vaccine effectiveness, it is still underused by HCPs. Although it can reduce influenza infection, absenteeism among HCPs, and prevent mortality of their patients by vaccination, influenza vaccination coverage among health care workers in Thailand remains low. As shown in a cross-sectional study at Prapokklao Hospital, Janthaburi, the Influenza vaccination of healthcare workers was low rate of 58.15% and healthcare workers who beliefs that influenza must not vaccinate significance got an influenza vaccination less than the others (Chanthatero et al., 2011). It is the same

result in North America, Europe and Australia indicated that it is difficult to persuade frontline health care workers to get seasonal flu vaccinations. The result for non-vaccination of influenza vaccine among Thai health care workers was the belief that without underlying disease or co-morbidity, the vaccine was unnecessary (43.2%) and fear of serious adverse effects (31.8%) (Chotpitayasunondh et al., 2011). There are many evidences show that the health statuses of healthcare workers were not better than general people even though they had more health related knowledge. The study of Srinagarind Hospital showed that the office health care workers visited physicians more often than the nursing staff significantly (553 of 606 vs. 271 of 1,024;p-value = 0.00) (Krusun, Sawanyawisuth&Chaiear,2005).

The study in Thailand reported that there were 44.6 laboratory-confirmed cases (H1N1) per 100000 people from 3 May 2009 to 26 December 2010. The highest peak was in the Central region of Thailand (Meeyai et al., 2012). Angthong is one of the central provinces of Thailand, total area are 968.4Km$^2$, and 269,419 of population as of 2000. It has a lot of rice fields. The neighboring provinces are (from north clockwise) Sing Buri, Lopburi, Ayutthaya and Suphanburi. The province is subdivided into 7 districts (amphoe). The districts are further subdivided into 81 subdistricts (tambon) and 513 villages (muban).There are MueangAngthong, Chaiyo, Pamok, Phothong, Sawaengha, Wisetchaichan, and Samko. There are one provincial hospital (Angthong hospital), six district hospitals, and 2273 staff members. According to the most common studies were conducted to determine relationship between influencing factors and health seeking behaviors toward their diseases among patients. There were few specific studies among healthcare providers. In Angthong, there is no information of vaccination rate among HCPs and there is not much available information of health seeking behavior among HCPs when they get influenza-like illness. The tendency of HCPs' health status may not as good as expectation. This study described the influencing factors in health seeking behavior toward influenza-like illness among healthcare providers in Angthong, and characterized and compared relationships among these factors and health seeking behaviors.

**Research Objectives**

1. To describe influencing factors and health seeking behaviors in influenza-like illness among Angthong HCPs.

2. To determine relationships between potentially influencing factors and health seeking behaviors.

**Research Questions**

1. What are the distributions of potential influencing factors (independent variables), and of health seeking behaviors (dependent variables), in influenza-like illness among Angthong healthcare providers?

2. Are there any relationships between study independent variables and health seeking behaviors?

## Conceptual framework

**Independent variables**                    **Dependent variables**

**Socio-demographic**
- Age
- Gender
- Marital status
- Income
- Having children age less than 18 years in household

**General health behaviors**
- Using Personal Protective Equipment(PPE) (Perceived susceptibility*)
- Perceived severity of ILI(Perceived severity*)
- Annual checkup (Perceived benefits*)
- Influenza vaccination(Perceived barriers*)
- Expose to mass media (Cues to action*)
- Self-efficacy*

**Modifying factors ***
- Work place (e.g., OPD, IPD, ER)
- Hospital
- Knowledge
- Occupation (Doctor, dentist, nurse)
- Embarrassment
- Underlying disease
- Awareness of others
- Time since the most recent ILI

**Health seeking behavior toward influenza-like illness**

**Inappropriate health seeking behavior**

- Working through illness by do nothing
- Self-medication without expert's suggestion

**Appropriate health seeking behavior**
- Self-medication with expert's suggestion
- See doctor
- Rest at home

Figure 1: Conceptual framework

* Items in parenthesis with asterisks are drawn from the health belief model

**Operational definitions**

**1. Health seeking behaviors (HSB)**: defined as personal activity to promote optimal wellness, recovery, and rehabilitation (Farlex, 2012: online).For this study health seeking behaviors refer to any action undertaken by individualswhoperceivedthey have an influenza like illness for the purpose of finding an appropriate remedy or illness response. Health seeking behaviors are

| Health seeking behaviors | Appropriate behaviors | Inappropriate behaviors |
|---|---|---|
| 1. Seeking treatment for illness | * Stay at home and bed rest <br> * See doctor <br> * Self-medication with physician or pharmacist suggestion | * Working through illness by do nothing <br> * Self-medication without physician or pharmacist suggestion |
| 2. Type of treatment rendered | * Government health services <br> * Private health services | * Drug store (without pharmacists) |
| 3. Promptness of seeking treatment | * Start to seek treatment or response within 3 days | * Start to seek treatment or response later than 3 days |

Table 1: Detail of health seeking behaviors

**2. Healthcareproviders (HCP)**: a person who helps in identifying or preventing or treating illness or disability (Farlex, 2012:online).In this study, healthcare providers are people who provide treating or preventing or identifying illness within health related field including doctors, nurses, dentistsand currently work in provincialhospital and district hospital.In addition, they completed at least 4 years graduation in health related field.

**3. Influenza like illness (ILI)** also known as acute respiratory infection (ARI) and flu-like syndrome/symptoms is a clinical illness of possibleinfluenza or other

illness causing a set of common symptoms**.** Symptoms commonly include fever $\geq$ $100^{\circ}$ F($37.7^{\circ}$ C) and cough, and/or other symptoms such as sore throat(CDC, ND: online).In this study, influenza-like illness defined as symptoms including fever (by thermometer or subjective feeling) and cough and/or other symptoms such as sore throat, body ache etc. The participants will be asked for an experience of getting ILI and the most recently ILI will be used as study data.

4. **Socio-demographic** including age, gender, marital status, income, having children age less than 18 years in household which means having children age less than 18 years staying together in the same house.

5. **Perceived or perception:** To become aware of directly through any of the senses, especially sight or hearing (Farlex, 2012: online).

6. **Personal Protective Equipment (PPE)** define as specialized clothing or equipment, worn by an employee for protection against infectious materials in order to improve personal safety during working time in the healthcare environment through appropriate use of PPE.  PPE is included gloves, gowns, masks, goggles etc.

7. **Perceived severity of ILI** is individual's perception of severity of ILI which they got. Someone may perceive themselves have several symptoms than the others. So they feel they are severe such as have fever and cough compare to fever, cough, sore throat, and malaise. The later may perceive they are more severity than the others and affect their health seeking behavior.

8. **Annual checkup** is the investigation by physical examination overview of health and variety of tests on a specific element that concerned about at least once a year.

9. **Influenza vaccination**defines as getting seasonal influenza vaccination as recommendation once a year.

10. **Exposed to mass media** is defined as the health campaign related to influenza that the participants can receive by any sense.

11. **Self-efficac**y is defined as confidence an individual capacity to adopt and maintain health behavior in a specific situation. In this study, self-efficacy is an

individual belief about capacity to do good health seeking behaviors when they get ILI.

**12. Work place** is defined as type of ward where the participants work. It can be categorized into Inpatient department (IPD), Outpatient department (OPD), emergency room (ER), Intensive care unit (ICU), Dental room, Operating room (OR).

**13. Hospital** is defined as the geographic area or location of hospital where the participant regularly work.

**14. Knowledge** is defined as remembering of previously learned material. It may involve the recall of a wide range of material, from specific facts. In this study knowledge is fundamental knowledge of influenza-like illness including transmission, prevention, sign and symptoms, and vaccination.

**15. Occupation** is defined as a person's regular work or profession including doctors, dentists, and nurses.

**16. Embarrassment** is defined as an emotional state of intense discomfort with oneself.

**17. Underlying disease** of the participants. It is a disease that causes other issues. For example people who got influenza like illness and their underlying disease are asthma.

**18. Awareness of others** is described as being conscious of the other needs and beliefs. This kind of person will show their awareness of others. They will aware regarding patients suffering the effects of sickness, and try to help. In this study, this factor may reflect the awareness of transmitting influenza to their patients while HCPs get ILI.

**19. Time since the most recent ILI** is defined as the most recent onset of getting ILI. Health seeking behaviors toward ILI nowadays trend to be different from previous days because of disease can lead to rapid development of severe condition as pneumonia.

# CHAPTER II

# LITERATURE REVIEW

In this chapter will be divided into four parts;

1. Health seeking behavior
2. Health belief model
3. Influenza-like illness
4. Empirical evidence from other studies

**1.) Health seeking behavior:**

Health is changeful and may immediately turn into unhealthy all the time. When people perceived themselves become ill, they have different ways of interpreting what they feel and a number of methods of helping themselves including wait and see what will happen next, do nothing, self-treatment, or seeking for health care facilities in order to recover back to the normal state of health. Health seeking behavior is simply divided into two types. Firstly, they are the endpoints or utilisation of formal system or healthcare seeking behaviour. Secondly, they are the process of illness response or Health seeking behavior (MacKian, 2003). Health seeking behavior is conceptualized as a sequence of corrective action taken to rectify perceived ill-health. The understanding of health seeking behaviorcan reduce delay to treatment, improve treatment adherence, and improve health promotion.Health seeking behavior is varying for the same individuals or communities when coped with different illness. Health seeking behavior is not a definitely isolated event. It is affected by persons, a family, cultural, and experience.

2.) **Health belief model (HBM):**

Health behavior model is a theory which use for changing personal health behavior. Health Belief Model (HBM) is the one of theoretical framework of health behavior model which has been used widely to explain responses to illness by focusing on individualperception. It is the most common use in health education and health promotion. HBM was developed in 1950s by Hochaum Rosenstock and Kegals

(Lizewsk & Maguire, 2010). They explained that HBM is personal perception about health.Person will take an action to prevent themselves from illness if they belief that they have risk and that illness is severe. They will perform any behavior that can reduce risk and severity of illness and they can overcome the obstacles (Sooksripeng, 2007). HBM is used for explaining health related behavior, answering why these behaviors occur, and constructing framework for health promotion. HBM hypothesizes health related action based on three factors as;

1) The sufficient motivation to make health issue predominant.

2) The perception of threat (seriousness and susceptibility).

3) The belief that following health recommendation would benefit in term of reducing the perception of threat and acceptable cost (cost refer to perception of barriers).

HBM is explained by four constructs representing in the first time and then HBM was added cue to action to stimulate behavior and recently in 1988, self-efficacy was added to address the challenges of habitual unhealthy behaviors such as smoking and overeating (University of Twente, ND: online). HBM contain associations of variations which are considered relevant for explaining or predicting heath seeking behaviors. (Hausmann-Muela, Ribera & Nyamongo, 2003). Hence adopted of the HBM are preventative actions, illness behavior, and sick-role behavior. The following constructs of HBM are (Edberg, 2006)

**1. Perceived susceptibility** is an individual's perception of chances or risk of getting a condition.If people believe they are at risk they will be more likely to do something to prevent it from happening. The more perception of risk, the more likelihood of engaging in behavior to reduce risk will occur. There are many people who are healthier behaviors relation to increase perception of risk.Inthisstudy, perceived susceptibility defined as a participant's perception of the risk of influenza-like illness.

**2. Perceived severity or seriousness** is an individual's belief about severity of illness while the perception of severity usually base on medical knowledge. It may be an individual perception of how difficult the illness occurs and the effect on their routine life.When the perception of susceptibility is combined with severity; it is perception threat.In this study, perceived severity defined as a participant's perception of seriousness of influenza-like illness.

**3. Perceived benefits** are an individual's belief in the effectiveness of the action to reduce risk or seriousness. People tend to adopt the healthier behaviors if they believe the new behavior will decrease their chance of developing a disease. Perceived benefit is important in term of adopting secondary prevention behaviors as screening.

**4. Perceived barriers** are an individual's own evaluation of the obstacles in the way of them adopting a new behavior. Perceived barriers proved to be the most powerful of the HBM dimensions across the various study designs and behaviors (Janz & Becker, 1984).

**5. Modifying variables** are individual characteristics that influence personal perceptions such as education level, experience.

**6. Cue to action** is a strategy to activate readiness of people to change their behavior. In this study, expose to mass media is representative of cue to action.

**7. Self-efficacy** is an individual's confidence in the ability to take action and maintain that behavior. Generally, people will not try to do something new if they think they cannot do. There are several factors influenced self-efficacy including persuasion by others, observing other's behavior (modeling), previous experience with performing the behavior, and direct physiological feedback (Strecher et al., 1986).
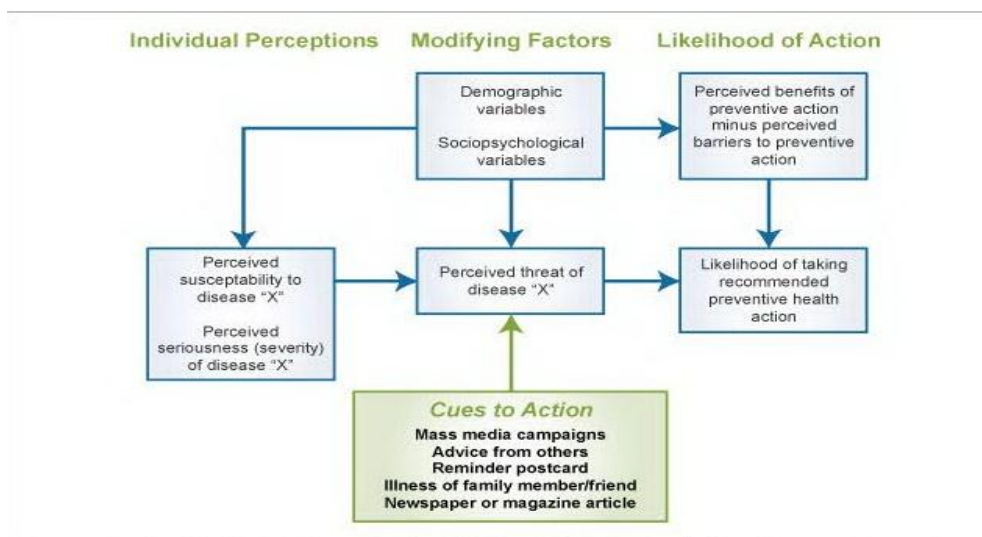


Figure 2 conceptual model of HBM (Source: Becker & Maimon 1975 cited in Glanz, ND: Online)

This study is set up to describe influencing factors of health seeking behavior in ILI. Because health seeking behavior focus on the characteristic of the implied person for explaining, from an applied public health perspective, reason for delay in receiving

treatment, non-compliancewith treatment, or non-utilization of preventive measures. HBM is used for explaining health related behavior, answering why these behaviors occur and how to change behavior. HBM can use for constructing framework for health promotion. Because health problems, behaviors, culture, and context of social are complicated and rapid changeable thus the only one theory cannot use for explaining behavior. In this study, HBM is suitable to use as a basic concept with some modifications for constructing conceptual framework due to provide the most holistic framework of this study. In addition after reviewing literature, there are several models which may use to explain or predict health seeking behavior and the advantage and disadvantage of each model will be described as following;

- **The Theory of Reasoned Action and the Theory of Planned Behavior (TPB)**; the later model is an extension of the earlier theory. These models have been developed to use in HIV/AIDS research. In the TPB, behavior is determined by (Hausmann-Muela, Ribera & Nyamongo, 2003)

  *The belief that a specific behavior will have a concrete consequence and evaluation of this consequence (attitude towards behavior).

  *Subjective norm or the belief in whether other relevant persons will approve one' behavior.

  *The belief about access to resources needed.

  *Socio-demographic variables

The advantages of the TPB are motivation aspect of personal disease control and the influence of social network and peer pressure. Unfortunately, the TPB approach has hardly been used besides STDs/AIDS research.

- **The Kroeger's model;** the variant of Andersen's model and developed in 1983 by Kroeger. This model proposed the framework as following;

  *An individual's characteristic or predisposing factors; age, sex, marital status etc.

  *Characteristic of the disorder and their perception; chronic or acute, severe or trivial etc.

  *Characteristic of the service; accessibility, appeal etc.

The advantage of this model is variety of the factors, making interventions of therapeutic actions feasible. These lead to establish of correlations with good

predictability, but the disadvantage is not specification of how and why the different factors affect therapeutic selection (Hausmann-Muela, Ribera & Nyamongo, 2003).

- **The four As**; is the well-known and widely used different categories which group key factors for health seeking behavior as following;

  *Availability refers to geographic distribution of health facilities.

  *Accessibility

  *Affordability

  *Acceptability related to cultural, social distance and characteristic of health providers.

This model will provide advantage in the research which emphasized distance and economic aspects as key factors for access to treatment.

**3.) Influenza-like illness (ILI):**

Influenza-like illness is a clinical illness of possible influenza or other illness causing a set of common symptoms including fever $\geq 100^{o}$ F (37.7 $^{o}$ C) and cough, and/or other symptoms such as sore throat. Only some of symptoms such as fever and cough will meet the definition as ILI without diagnostic tests confirm a cause other than influenza. People who have fever with other symptom except cough and/or sore throat are not considered as ILI case (CDC, ND: online). Because common causes of ILI include the common cold and influenza, which tends to be less common but more severe than the common cold and ILI is a clinical illness which mean subjective illness and no diagnosis from physicians. From these results the researcher defines ILI as a specific illness instead of others. ILI is the main indicator used for surveillance of respiratory virus including influenza, rhinovirus, parainfluenza, adenovirus, human metapneumovirus, and respiratory syncytial virus. The amount of ILI does not tell the number of people who are influenza infection. But in USA, ILI can tell about the proportion of patients around the country have an illness like the flu. Thus the trend of ILI provides a convenient way to track the progress of yearly influenza season (Local information network for emergencies, 2011: Online).

**4.) Empirical evidence from other studies**

There are several reports of studies indicated influencing factors toward health seeking behavior.For this study, the factors may influenced health seeking behaviors among healthcare providers are as follows,

**Using Personal Protective Equipment (PPE):**

PPE is a standard precaution which is used in every hospital in Thailand. HCPs can select PPE to use for suitable situation. PPE is considered as a factor may influence health seeking behavior. It represents forperception of susceptibility. If someone belief they are at risk of influenza infection, PPE will be potentiallyused at high rate. Perceived susceptibility was a stronger contributor to understanding preventive health behavior than sick role behavior (Janz & Becker, 1984). The cohort study in using of PPE showed that PPE was significantly protective. None of the healthcare workerswho used of masks or N-95 respirators was seropositive for influenza virus, while 9 (21%) of those who no used of PPE were seropositive. Use of N-95 masks was also associated with protecting respiratory illness symptoms (Adalja, 2011: Online). U.S. Centers for Disease Control and Prevention recommended infection control practices, by using of PPE. Although effective PPE use significantly reduce healthcare-associated influenza transmission but ICU health care workers reported low levels of influenza PPE adherence. Suboptimal adherence levels and significant PPE knowledge gaps indicated that ICU health care workers may be at high risk of transmittingnosocomial respiratory viral infection (Daugherty et al., 2009).

**Perceived severity of Influenza like illness:**

ILI is clinical illness of possible influenza or other illness causing a set of common symptoms.Influenza spreads rapidly and imposed a considerable economic burden in term of health care costs. The more perception of ILI seriousness of individual may lead them to more prevention. The perception of seriousness is based on medical information or knowledge. (Jr., ND: online). Thus having adequate knowledge is important to engage healthy behavior. But in contrast many analysts recognize the very weak relationship between health knowledge and health seeking behavior. The unsolved questions arewhy knowledge cannot determine practice. It implies that improving knowledge may not lead to improve health behavior. (Hausmann-Muela et al., 2003).

**Annually checkup:**

The perception of benefit is important in term of secondary prevention or screening. People will do the annual checkup if they belief that it can reduce the further illness. The study of Srinagarind hospital showed that the office health care workers visited

physicians significantly more often than the nursing staffs 91.2% (553of 606) vs. 26.5% (271 of 1,024); p value = 0.00 (Krusun et al., 2005). Another study in Nigeria showed that levels of perception of prostate cancer in rural men were just above average and screening behavior was low. The perception variables positivelyand significantly correlated with screening behavior among the participants (Atulomah et al., 2010).

**Influenza Vaccination:**

It is important that HCPs are recommended getting the influenza vaccination so they will not get sick with influenza or give influenza to their patients. However, influenza vaccination rate among HCPs have fluctuated in recent years. The levels of influenza vaccination among HCPs have risen slowly over the past ten years, less than 50% of HCP got the influenza vaccination until the 2009-10 season(Lindley,Zhang&Euler, 2011: Online). The US study revealed that, although swine flu was believed to be more serious, the vaccination rate was lower as it was perceived by the public to be less safe than that for annual seasonal flu (Warner, 2012). In Thailand, The influenza vaccination rate among medical workers was 89% .The most common reason for non-vaccination was the belief that without underlying disease the vaccine was unnecessary. The fear of serious adverse effects of the vaccine was a common reason for not being vaccinated (Chotpitayasunondh et al., 2011). Conversely with the cross-sectional study at Prapokklao Hospital, Janthaburi indicated that influenza vaccination coverage among Health care workers remains lowrate of 58.15 %. Healthcare workers who beliefs that influenza must not vaccinate significance got an influenza vaccination less than the others (OR=0.51; 95% CI=0.32-0.80) (Chanthatero et al., 2011).The influenza vaccination rate still fluctuated. For some studies in Thailand the level of compliance may not be generalizable to non-outbreak situations or other geographic areas. For this study, the exploration of influenza vaccination will reveal the perception of HCPs to be benefit or barrier of vaccination.

Figure 3 immunization among Thai HCPs (sourceASTV manager: online)

**Expose to mass media:**

Cue to action relate to motivate an individual to engage health behavior. If perception of susceptibility and severity are high, initiation of action will need a few stimuli. For example, individual perception of risk being close to them, together with media coverage, can increase vaccination uptake.The cross sectional study in USA showed that influenza-related reports in all threemedia sources had a positive association with earlier vaccination timing and annual vaccination rate (Yoo et al., 2011).A randomized control trial in Thai school indicated that avian influenza campaign can improve avian influenza prevention (Kanamori et al., 2006: Online).



Figure 4 Avian flu (AI) campaign in school (source: Kanamori et al., 2006: online)

**Self-efficacy:**

The review of self-efficacy showed a consistently positive relationship between self-efficacy and health behavior change and maintenance (Strecher et al., 1986). The individual who has high self-efficacy is more likely to do healthy behavior. Individual experience higher self-efficacy when they are told they are capable by someone they believe. For example, physicians recommend their patients to quit smoking and patients are potentially do as recommendation. There is evidence showed that

prospective recipients of influenza vaccination may feel empowered to take steps to arrange vaccination (Warner, 2012). For this study, HCPs who have high self-efficacy appear to be a consistent predictor of short and long term success in health seeking behavior toward ILI.

**Socio-demographic:**

Health and illness vary according to the immediate material and social circumstance. Socio-demographic is fundamental factors which may influence health seeking behavior including age, gender. The study about health care-seeking behavior of black Americans showed that socio-cultural factors influence health care-seeking behavior (Bailey, 1987). For this study, socio-demographic defined as age, gender, marital status, income, number of children age less than 18 years in household.

- The study in Thailand revealed that age and gender are very important factors. In addition, education and are also influencing factors toward health seeking behavior (Fan, 2003).The study in USA indicated that incontinent women were less likely to seek professional help for the urinary incontinence problem [46.2% vs. 55.7%; adjusted odds-ratio (AOR) = 0.65, P < 0.01], but more likely to receive treatment (54.8% vs. 51.4%; AOR = 1.12, P < 0.01) after consulting a health professional (Yue et al., 2007).

- Income is the one of influencing factor toward health seeking behavior. The tendency of people going to private hospital increasing greatly with the increasing income and the behaviors of people among low income are somehow similar with those among middle income group (Fan, 2003).The study among Chinese women showed that higher income was positively associated with health care seeking behavior. ORs of medium income and high income were 2.01 (p = 0.04) and 1.39 (p = 0.46), respectively (low income was the reference group) (Zhang et al., 2009).

- Marital status is a social relationship which has a strong influence on health care attitudes and behavior.Findings from the study in USA showed the importance of marital status and gender differences in social network members' involvement in the management of a chronic illness. Married men probably receive the most social control because their wives are the most common source of social control for this group. (August & Sorkin, 2010).

- Number of children age less than 18 years in household is an influencing factor. Household contacts seem to be more important than exposure to patients. Living with three or more children (OR 13.8, p < 0.01) was a greater risk of influenza infection than living with one or two children (OR 5.3, p = 0.02) (Williams et al., 2010). This factor should be noticed and realized if the household have children age less than 18 years.

**Workplace:**

Workplace is the one influencing factor to health seeking behavior. There are many studies showed that work place influenced health seeking behavior as the study inAustralia revealed that healthcare worker had slightly higher rate of influenza infection than non-clinical staff and working in ICU identified as a risk factor for pandemic influenza (OR2.53; 95% CI 1.05-6.09) (Marshall et al., 2011). Additional, the same result of a quasi-experimental study in Thailand indicated that ICU health care workers were high attack rates of healthcare-associated influenza during the pre-intervention period(Apisarnthanarak et al., 2010).

**Hospital:**

The geographic area can be affected to health seeking behavior as shown in the study in Oman. The result showed that preference for geographical proximity as a reason for seeking health care (Al-Mandhari et al., 2008).

**Knowledge:**

The study in Vietnam found that knowledge motivated participants to early access to healthcare and aware the risk of eating sick/dead poultry, and perception of the threat of H5N1 (Manabel et al., 2012).

**Occupation:**

Occupation is defined as a person's regular work or profession including doctors, dentists, and nurses. They are the role model of their family, friends, and patients. But when they became sick, the current knowledge reveals important similarities between doctors and the generalpopulation in their healthcare access (Kay et al., 2008).

**Embarrassment:**

There are a lot of evidences indicated that when HCPs have got health problems, they disregard the advice they give their patients.The qualitative study in Ireland indicated that the general practitioner embarrassed to adopt the role of patient and concerned about confidentiality and embarrassment also influenced their reactions to personal illness. Doctors' attitudes delay their access to appropriate health care for themselves, their families (Thompson et al, 2001). The study of Davidson and Schattner found that 71% of doctors feel as embarrassed when seeing another doctor (Kay et al., 2008). These lead them to work though their illness although they would not expect their patients to work through. Working though illness also effected to their patients in term of quality of treatment.

**Underlying disease:**

People who perceive that influenza may lead their underlying disease get worse and they are at risk, will aware and protect them from influenza. There are many studies showed that perceived susceptibility has positively influence of preventing behavior. A descriptive study in Ugandans which explored healthcare seeking behavior among diabetic personsshowed that healthcare was sought in the professional healthcare sector because of severe symptom patterns related to DM and/or glycaemia control (Hjelm & Atwine, 2011).However, if someone has some underlying disease such as asthma, contracting the flu may lead them to be admitted in the hospital.

**Awareness of others:**

This element is one of spirituality which is an experience that provide feeling of understand, support, and inner wholeness. Being spiritual of HCPs will show helping behavior to others. HCPs who have awareness of others will try to place themselves in the other's situation to understand their feelingand their patient may feel better (Yoelao & Mohan, 2011). Thus this factor intends to lead HCPs to aware of transmitting influenzavirus to patients more than the one who will not aware of others.

**Time since the most recent ILI:**

In the recent years, swine flu and avian flu mutated to be human infectious disease and the flu were not a minor aliment as previous day as the most people thought. They spread widely to the other areasand caused major health problems in Thailand. Influenza disease burden varies from year to year as new antigenic variants emerge

that may cause more frequent or more severe disease than the preceding year (Simmerman et al., 2006). The different onset time of ILI may show the different health seeking behavior among HCPs due to perceived increasing severity of disease.

**Health seeking behavior to influenza-like illness among HCPs**

Although HCPs have much more health related knowledge than general people and they also have got their civil servant medical benefit scheme, health seeking behavior among HCPs sometimes is not different from general people. The influencingfactors toward health seeking behavior of influenza-like illness (dependent variables) can be measured by fourparameters. There are

* **Seeking treatment for illness:**
  - Appropriate behaviors: * Stay at home and bed rest
    * See doctor
    *Self-medication with physicians 'or pharmacists' suggestion
  - Inappropriate behaviors: * Working through illness by do nothing
    * Self-medication without physicians' or pharmacists' suggestion

* **Type of treatment render:**
  - Appropriate behaviors: * Government health services
    * Private health services
  - Inappropriate behaviors: * Drug store (without pharmacists)

* **Promptness of seeking treatment:**
  - Appropriate behaviors: Start to seek treatment or response within 3 days
  - Inappropriate behaviors: Start to seek treatment or response later than 3 days.

HCPs are more likely implicated as the source of spreading influenza in health care settings. One reason of transmitting influenza among HCPs is that they often continue to work while infecting with the virus. There are studies of health seeking behavior among HCPs such as the study in Australia revealed that the doctors when they got ill health they disregarded the advices they provided their patients and worked through their illness as the norm. The proportion of doctors whowere more likely working when sick was 50% (Davidson & Schattner, 2003).

The most studies of health seeking behavior in Thailand were conducted among patient toward different diseases.  There are a few studies conducted among HCPs as the study in Janthaburi revealed that healthcare workers who had got influenza vaccinationwere influenced by their perceptions not by their knowledge (Chanthatero et al., 2011).Additional, the study of health behaviors of personnel of the Department of Development of Thai Traditional and Alternative Medicines indicated that most people behave in the right way. Gender, age education level and income have no relationship with health behaviors of the person (Chua-on, Maranon, & Khattiya, 2011).

# CHAPTER III

# RESEARCH METHODOLOGY

## 3.1 Study area

The study was conducted at 7 hospitals at Angthong province. Seven hospitals included Angthong hospital (H1), Pamok hospital (H2), Chaiyo hospital (H3), Wisetchaichan hospital (H4), Samko hospital (H5), Phothong hospital (H6), and Sawangha hospital (H7). The HCPs of each hospital was random selected into the study.

## 3.2 Study design

In this study, the cross sectional study design was used to describe the factors influencing health seeking behavior toward influenza-like illness among HCPs at the same time and also determine the relationship between the influencing factors and health seeking behavior variables.

## 3.3 Study population

The reference population was HCPs who were doctors, dentists, and nurses and currently working in 7 hospitals in Angthong, 724 HCPs. Because of a few numbers of other HCPs that may not enough to be represented for their occupation and some hospitals had technician instead of that professionals. In addition, doctors, dentists, and nurses were the major clinical group who closed contact to the patients. Thus the study population   was HCPs who were doctors, dentists, and nurses and currently working at hospital in 7 hospitals in Angthong province during the study. They were random selected in each hospital.

## 3.4 Sample size

The objectives of this study were to describe influencing factors and health seeking behaviors in influenza-like illness and to determine the relationship between influencing factors and health seeking behavior. The researcher had been unable to find any specific information on prevalence of good and substandard health seeking behavior among HCPs in ILI. From reviewing literatures, the study of doctors' health seeking behavior toward

anxiety, hypertension, and asthma showed almost 50% of doctors working through their illness (suggesting substandard health seeking behavior) (Davidson & Schattner, 2003). This was the closest proportion regarding not good health seeking behavior among HCPs. Therefore, the researcher assumed the proportion of good health seeking behavior to ILI among HCPs to be 50% that gave the maximum sample size. (This assumption also yields the largest ("safest") sample size). The Statcalc routine (population survey subroutine) of Epi info was used to calculate required sample size, assuming prevalence of good health seeking behavior equals 50%. The total numbers of HCPs (doctors, dentists, and nurses.) at the 7 hospitals in Angthong were 724. Thus, the researcher used 724 persons as the total population for the sample size calculation.

**Step1** is Cochran's formula

$$n = \frac{Z^2_{\alpha/2} \, PQ}{d^2}$$

P    = Estimated prevalence = 0.50. This is an expected prevalence of at least some health-seeking behavior in the study participants. (Assumption of 50% prevalence also gives the maximum sample size (maximum power).)

Q    = 1 - P = 0.5

d    = Allowable error in estimating prevalence = 0.05

$\alpha$    = Probability of type I error = 0.05 (2-sided)

$Z_{\alpha/2}$    = Two-tailed Z score at alpha=0.05, equals 1.96.

n    = $\dfrac{1.96^2 \, (0.5)(0.5)}{(0.05)^2}$

n    = 384.16

**Step2** is found in the Statcalc routine in Epi info 7 of CDC

Sample size = $\dfrac{nN}{n+N}$

n = sample size from Cochran's formula

N = Total population

$$\text{Sample size} = \frac{(384)\,(724)}{(384)+(724)}$$

$$= 250.9$$

Total Sample Size = 251 the number of participant is added up 20% (= 51) to 302 in order to prevent drop out and/or incomplete retrieval.

## 3.5 Sampling technique

Selection flow chart is shown as following
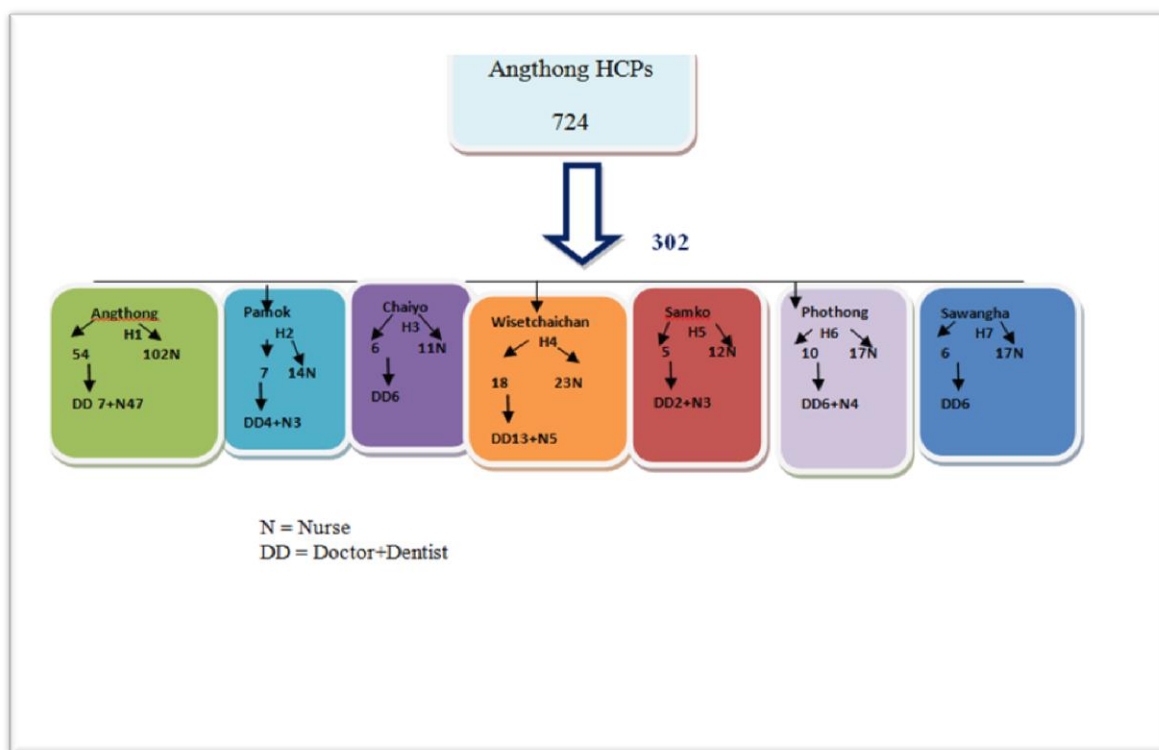


Figure 5: selection flow chart

Due to the influencing factors and health seeking behavior (outcome) of this study was HCPs population. The reference population was Angthong HCPs at all 7 hospitals. The name list of HCPs from provincial health office as of 2012 was used as a sampling

framework. Because of time limitation and budget constrain, the researcher did not include the HCPs at health promotion hospitals and private hospital in Angthong as the population. The total numbers of HCPs (doctors, dentists, and nurses.) at the 7 hospitals in Angthong was 724 including 75 doctors, 31 dentists, and 618 nurses.

Refer to calculating sample size; 302 HCPs who were doctors, dentists, and nurses were random selected and enrolled into the study. In order to small number of doctors and dentist, all of them (106) were enrolled as participants after asking for willing to participate. After the questionnaires were distributed to doctors and dentists, there were 44 doctors and dentists willing to join into the study. Thus the simple random sampling for nurses was performed. 258 nurses were random selected by using HCPs name list from provincial health office as of 2012 as a sampling framework. The simple random sampling was performed by using Microsoft excel program. The following lists were the number of doctors, dentists, and nurses after random sampling in each hospital.

      * H1: Angthong hospital, expected 54 doctors and dentists after asking for willingness 7 of doctors and dentists were enrolled and 149 of nurses were selected by simple random sampling.

      * H2: Pamok hospital, expected 7 doctors and dentists after asking for willingness 4 of doctors and dentists were enrolled and 17of nurses were selected by simple random sampling.

      * H3: Chaiyo hospital, expected 6 doctors and dentists and 11 of nurses were selected by simple random sampling.

      * H4: Wisetchaichan hospital, expected 18 doctors and dentists after asking for willingness 13 of doctors and dentists were enrolled and 24 of nurses were selected by simple random sampling.

      * H5: Samko hospital, expected 5 doctors and dentists after asking for willingness 2 of doctors were enrolled and 15 of nurses were selected by simple random sampling.

       \* H6: Phothong hospital, expected10 doctors and dentists after asking for willingness 6 of doctors and dentists were enrolled and 24of nurses were selected by simple random sampling.

       \* H7: Sawangha hospital, expected6 doctors and dentists and 17 of nurses were selected by simple random sampling.

The questionnaires were distributed to the random participants (nurses) and if they were not available the questionnaires were distributed to the other nurses who willing to participate.

3.5.1 Inclusion criteria

- Healthcare providers, who were doctors, dentists, and nurses and currently working at provincial hospital and district hospitals of Angthong province during study period.

- Healthcare providers who started to work at least 6 months before study initiation.

- Healthcare providers who were currently working in inpatient department (IPD), out-patient department (OPD), emergency room (ER),intensive care unit (ICU), dental room, operating room (OR), and other places where you contact with your patients.

- Healthcare providers who were at least 4 years graduation.

- Healthcare providers who were willing to participate into study.

3.5.2 Exclusion criteria

- Healthcare providers who are taking leave for learning, training during study period.

**3.6 Data collection tool**

**Structured questionnaire:** The data was collected by structured, self-administered questionnaires. The questionnaires were created by using the previous studies as a guideline and added some by the researcher. The questions were designed to collect the following information.

- Socio-demographic characteristics: Age, gender, marital status, income, number of children age less than 18 years in household.

- Using PPE

- Perceived severity of ILI

- Annual checkup

- Influenza vaccination

- Exposure to mass media

- Self-efficacy

- Workplace

- Hospital

- Knowledge

- Embarrassment

- Underlying disease

- Awareness of others

- Time since the most recent ILI

- Seeking treatment for illness: working through illness by do nothing, self-medication without physician prescription or pharmacist suggestion. self-medication with physician prescription or pharmacist suggestion, see doctor, rest at home

- Type of treatment render: government health service, private health service, Drug store (without pharmacists)

- Promptness of seeking treatment: Start to seek treatment or response within 3 days, more than 3 days

The questionnaires were divided into 4 parts as:

Part1: Demographic data, general health behaviors, and modifying factors.

Part 2: Knowledge toward ILI included 5 items in the questionnaire. Every item was considered to be of the same importance. Thus each item was standardized to a common range from minimum to maximum possible score (maximum score = +5, minimum score = -5, range=10). If the correct answer was chosen, the score would be 1 but if the correct answer was not chosen, the score would be -1. Likewise, if an incorrect answer was chosen, the score would be -1. If an incorrect answer was not chosen, the score will be 1. The level of knowledge was divided into 2 levels modified from Bloom's criteria (Kongsap, 2006) as shown below.

Level of knowledge (modified from Bloom's criteria)

- Having knowledge: more than or equal to 15 scores or more than 60%
- Lacking of knowledge: less than 15 scores or less than 60%

Part3: Measurement of respondents' perceptions through influenza-like illness, self-efficacy, and cue to action. There were 11questions to measure perception through influenza-like illness. All of questions were the positive direction. The questionnaires used 5 rating scales (Likert's scale) of choices. A 5 rating scales consist of 5= strongly agree, 4= agree, 3= neutral, 2= disagree, 1= strongly disagree.

Part 4: Measurement of health seeking behaviors

**Reliability & Validity**

The questionnaire was created based on the constructed variables and tested for validating by consulting 3 experts and then adjust to obtain the validity. The draft questionnaire was pretested in the similar group prior to data collection, tested for reliability, and validity. The pretesting was performed for 30 HCPs at Singhburi hospital, Singhburi province. After the validation the questionnaires were tested for reliability (internal consistency) by using Conbach's alpha coefficient.

The validity of questionnaires by consulting 3 experts was 0.94. And the questionnaires were pretested by using Conbach's alpha method for perception part.

Perception: Reliability of Conbach's alpha = 0.779

After pretest and test reliability of questionnaires, the researcher discussed with the expert for improving the clarity of questionnaires then the questionnaires were used for this study.

**3.7 Data collection**

Data collection was performed by using structured, self-administered questionnaires at their work place. The researcher and three research assistances stayed nearby for answering questions if needed. The three research assistances were trained a day before data collection. The questionnaires were re-checked by the research team for completeness before this researcher retrieved them. Total 302 sets of questionnaire were distributed and 290 sets were retrieved back (96.02%).

**3.8 Data analysis**

The data analysis was performed in each part as follows. Results of questionnaire were coded in a database and analyzed by using the Statistical Package for Social Sciences (SPSS) window software. The data analysis was divided as follows:

1. Descriptive portion: The demographic of participants was reported as frequency and percentage including age, gender, marital status, occupation, income, number of children age less than 18 years old in household, general behaviors part, modifying factors, and HSBs.

2. Analytic portion: Bivariate analysis was implemented to perform preliminary analyses in order to describe associations. Chi-square test was used for categorical independent variables. And the binary logistic regression was used for some independent variables including using PPE, knowledge, and perception score. Variables for which p <0.15 were carried forward to the first step of multivariable analysis. (The nature of each independent and dependent variable is presented in appendix D).

Multivariable analysis: All dependent variables were dichotomous in nature. Such initial analyses provide the predicting variables then multivariable analysis, logistic regression, was implemented to model relationships (regression) for each dependent variable and a set of predicting variables. The results were reported as modeled odds ratio (OR) with 95% confidence interval (CI) and p-value. A p-value < 0.05 was considered to be statistically significant. In this study, multivariable logistic regression was implemented into 2 steps.

Step I: Included all predicting variables from initial analysis into this step.

Step II: Excluded the variables which provided p-value more than 0.15 in previous step into this step and a p-value was 0.05 considered to be statistically significant.

**3.9 Ethical consideration**

The proposal was submitted and received an approval from Ethics Review Committee for Research Involving Human Research Subjects of Chulalongkorn University prior to the study initiation. Their names were recorded for the confidentiality and the data was coded. The questionnaires were assigned numerical code. As the anonymous

questionnaires, the informed consent was omitted. The respondents were free to answer or not answer the questions. All the data was kept confidentially except for the further use of researcher, provincial health offices.  Only group data was analyzed.

**3.10 Limitation of the study**

- This study was done among Angthong HCPs so that the findings were not generalized for Thailand.

- This study considered only nurses, doctors, and dentists in the clinical setting. Thus, a study result was not generalizable to other types of health care providers.

- This study is cross sectional study and thus it did not include the changes among the HCPs population overtime and the relationship may be lower than the real situation from selection bias.

- This cross sectional study may get the information bias from recall bias due to question for previous illness. In order to reduce recall bias, the confirmatory by using medical records should be done. But ILI was an illness which the most patients were not visit doctors due to it recovered itself. Thus most of ILI was not recorded into medical records.

**3.11 Expected benefits and application of the study**

The findings of this study can provide the influencing factors to health seeking behavior in influenza-like illness among HCPs and relationship between influencing factors and health seeking behavior. This information is useful for the provincial health office and 7 hospitals in Angthong (one provincial hospital and six district hospitals) to promote appropriate health seeking behaviors and increase influenza vaccination rate among HCPs in Angthong.

# CHAPTER IV

# RESULTS

This chapter describes the results collected from 290 HCPs in Angthong who were doctors, dentists, nurses and working in Angthong hospital and 6 district hospitals during February 26, 2013 to March 21, 2013. The results describe as follows:

Part I: The characteristics of socio-demographic present by descriptive statistic.

Part II: General health behaviors including perceptions, using PPE, annual checkup, exposed to mass media, self-efficacy, and influenza vaccination.

Part III: Modifying factors including occupation, hospital, work place, underlying disease, embarrassment, awareness of others, knowledge.

Part IV: Measurement of health seeking behaviors.

Part V: Bivariate analysis testing for association between independent variables and health seeking behaviors.

Part VI: Multivariable analysis; multiple logistic regression.

## 4.1 Part I: Socio-demographic characteristics of the respondents

Respondents' socio-demographic characteristics are summarized in table 2. The large age group was concentrated in more than 35 to 50 years old (160, 55.2%), 7.2 percent were male and 92.8 percent were female (269). The majority was married (151, 52.1%). The most average monthly income was more than 30,000 baht per month and the large majority had children age less than 18 in household (158, 54.5%). The mean duration of work was more than 20 years (97, 33.4%).

**Table 2 Socio-demographic characteristics of respondents**

| Socio-demographic characteristics<br>n = 290 | Number | % |
|---|---|---|
| **Age group (year)** | | |
| 20-35 | 101 | 34.8% |
| >35-50 | 160 | 55.2% |
| >50 | 29 | 10% |
| $\overline{X}$= 38.98, SD= 8.45, Min= 23, Max= 59 | | |
| **Gender** | | |
| Male | 21 | 7.2% |
| Female | 269 | 92.8% |
| **Marital status** | | |
| Single | 122 | 42.1% |
| Married | 151 | 52.1% |
| Divorce | 8 | 2.8% |
| Separate | 2 | 0.7% |
| Widow | 7 | 2.4% |
| **Income (baht per month)** | | |
| 10000-20000 | 42 | 14.5% |
| 20001-25000 | 64 | 22.1% |
| 25001-30000 | 55 | 19.0% |
| >30000 | 129 | 44.5% |
| **Having children age less than 18 in household** | 158 | 54.5% |

## 4.2  Part II: General health behaviors of the respondents

The most had got an annual checkup every year (268, 92.4%) and 131of them (45.2%) answered that they were 75% confident that they would do appropriate health seeking behaviors when they get ILI.  212, 73.1% got influenza vaccination every year and 197, 67.9% of them had got influenza vaccination for 2012.  They always used glove 216, 74.5%, mask 197, 67.9%, washed their hands when they worked 283, 97.65%, and gown 64, 22.1%. 220, 75.9% of them got other symptoms beside ILI and 188, 64.8% of the symptom was sore throat. 14.3% of respondents who had got additional symptoms preferred to work through their illness by do nothing while 9.1% who did not have additional symptom preferred to work through their illness by do nothing (see more detail in table 3).  Most of them got the health information via mass media especially television was the largest group of mass media (205, 70.7%). This study measured the respondents' perception of susceptibility, severity, benefit, barriers, cue to action, and self-efficacy. The findings of respondents' perception are shown in table 4. Among 11 questions of perceptions, most of them agree with these questions. The maximum mean scores was 4.72 for the statement "I perceived ILI is an illness and may transmit the pathogen to others". The minimum mean score was 3.55 for the statement " My financial security would be endangered ".

**Table 3 Association between severity and health seeking behaviors**

| Prevalence of health seeking behaviors | Additional symptoms | | P-value of Fisher's Exact Test |
|---|---|---|---|
| | Yes (%) | No (%) | |
| i69: Working through illness by do nothing | 14.3 | 9.1 | 0.259 |
| i70: Self-medication without suggestion | 2.9 | 5.0 | 0.740 |
| i71: Self-medication with suggestion | 14.3 | 16.4 | 0.851 |
| i72: See doctor | 72.9 | 73.2 | > 0.999 |
| i73: Rest at home | 22.9 | 21.4 | 0.868 |

**Table 4 Perception toward influenza-like illness of respondents**

| Perception<br><br>n= 290 | Strongly agree<br><br>n (%) | Agree<br><br>n (%) | Neutral<br><br>n (%) | Disagree<br><br>n (%) | Strongly disagree<br><br>n (%) | $\overline{x}$ | SD |
|---|---|---|---|---|---|---|---|
| **Susceptibility**<br>1.1 Using PPE can protect me from influenza | 124 (42.8) | 151 (52.1) | 9(3.1) | 5 (1.7) | 1 (0.3) | 4.35 | 0.661 |
| 1.2 Influenza is not minor aliment | 62 (21.4) | 178 (61.4) | 35 (12.1) | 14 (4.8) | 1 (0.3) | 3.99 | 0.749 |
| 1.3 My financial security would be endangered | 42 (14.5) | 124 (42.8) | 83 (28.6) | 33 (11.4) | 8 (2.8) | 3.55 | 0.996 |
| 1.4 I've got a risk of influenza infecting since I'm expose to patients | 91 (31.4) | 38 (47.6) | 37(12.8) | 20 (6.9) | 4 (1.4) | 4.01 | 0.919 |
| **Severity**<br>2.1 I perceived ILI is an illness and may transmits the pathogen to others | 210 (72.4) | 79 (27.2) | 1 (0.3) | 0 | 0 | 4.72 | 0.457 |
| 2.2 Influenza-like illness  make me absent from work | 86 (29.7) | 120 (41.4) | 53 (18.3) | 23 (7.9) | 8 (2.8) | 3.87 | 1.016 |
| **Benefit**<br>3.1 I believe medical checkup once a year lead me know my health status | 165 (56.9) | 120 (41.4) | 5 (1.7) | 0 | 0 | 4.55 | 0.532 |
| 3.2 I believe rest, food keep warming will let me get well from flu | 163 (56.2) | 115 (39.7) | 5 (1.7) | 7 (2.4) | 0 | 4.50 | 0.656 |
| **Barriers**<br>4.1 I believe influenza vaccination prevent me from infection. | 59 (20.3) | 136 (46.9) | 70 (24.1) | 23 (7.9) | 2 (0.7) | 3.78 | 0.883 |
| **Cue to action**<br>5.1 Health campaign i.e.  hand washing influenced   you to do in the right way | 78 (26.9) | 179 (61.7) | 32 (11.0) | 0 | 1 (0.3) | 4.15 | 0.624 |
| **Self-efficacy**<br>6.1 I believe I will do good health seeking behavior when I get ILI | 81 (27.9) | 186 (64.1) | 18 (6.2) | 5 (1.7) | 0 | 4.18 | 0.615 |

**4.3 Part III: Modifying factors of the respondents**

Table 4 shows the frequency of modifying factors of the respondents. Modifying factors are occupation, hospital, work place, embarrassment, underlying disease, awareness to other, time since the most recent ILI. Most were nurses (246, 84.8%) and the largest group was working at Angthong hospital (152, 52.4%). The majority worked in inpatient department 150, 51.7%. Only 65 (22.4%) had underlying disease. They felt neutral when they got treatment from the health care services (214, 73.8%). 228 (78.6%) of them were aware of preventing transmission influenza virus to their patient and 233 (80.3%) thought influenza vaccination was a part of their responsibility. Time since the most recent influenza-like illness mostly occurred within 1-3 month (111, 38.3%) and 83, 28.6% occurred more than 1-3 years.

**Knowledge of Influenza-Like Illness**

The study of knowledge regarding transmission of influenza, the prevention of influenza virus, symptoms of ILI, and influenza vaccination, the finding indicated that 160 (55.2%) of respondents had basic knowledge of ILI (score of knowledge more than 15 or 60%). From the result of this part showed that the HCPs had knowledge about prevent seasonal influenza by hand washing; cover mouth when coughing, and vaccination (285, 40.3%). In addition, the most of respondents answered the close contact, coughs, and sneeze from an infected person were the way of spreading influenza (289, 47.9%). Most (152, 52.4%) could not answer the recommend group of getting influenza vaccination.

**Table 5 Modifying factors of respondents**

| Modifying factors n = 290 | Number | % |
|---|---|---|
| **Occupation** | | |
| Doctor | 22 | 7.6 |
| Dentist | 22 | 7.6 |
| Nurse | 246 | 84.8 |
| **Hospital** | | |
| Angthong | 152 | 52.4 |
| Pamok | 22 | 7.6 |
| Chaiyo | 18 | 6.2 |
| Wisetchaichan | 32 | 11.0 |
| Samko | 17 | 5.9 |
| Phothong | 26 | 9.0 |
| Sawangha | 23 | 7.9 |
| **Workplace** | | |
| IPD | 150 | 51.7 |
| OR | 15 | 5.2 |
| Dental room | 20 | 6.9 |
| ICU | 14 | 4.8 |
| OPD/ER | 51 | 17.6 |
| Other | 40 | 13.8 |
| **Embarrassment (neutral)** | 214 | 73.8 |
| **Aware of influenza transmission to patient** | 228 | 78.6 |
| **Aware of influenza vaccine was responsibility** | 233 | 80.3 |
| **Time since the most recent ILI (1-3 months)** | 111 | 38.3 |

**Table 6 Knowledge toward influenza-like illness of respondents**

| Knowledge of ILI | Number | % |
|---|---|---|
| n = 290 | | |
| Having knowledge of ILI | 160 | 55.2 |
| Lacking of knowledge of ILI | 130 | 44.8 |

Score: Having knowledge = score ≥ 15

## 4.4 Part IV: Health seeking behaviors

The majority of respondents decided to see doctors while they had got ILI (212, 73.1%). The most reason for working through illness by do nothing when they got ILI was that ILI was a minor aliment (15, 5.2%) and the reason for self-medication from drugstore without expert's suggestion was that they were nurses (7, 2.4%). The government health services were the most healthcare services that the respondents chose (276, 95.2%). The average number of days of starting to seek for treatment was 2.97 days and 252, 86.9% started to seek treatment within 3 days. The reason for starting to seek treatment more than 3 days was wait and see (31, 10.7%). The detail of health seeking behaviors was shown in table 7.

**Table 7 Inappropriate and appropriate health seeking behaviors of respondents**

| Health seeking behaviors | Number | % |
|---|---|---|
| n =290 | | |
| **Inappropriate health seeking behaviors** | | |
| i69: Working through illness by do nothing | 30 | 10.3 |
| i70: Self-medication without suggestion | 13 | 4.5 |
| **Appropriate health seeking behaviors** | | |
| i71: Self-medication with suggestion | 46 | 15.9 |
| i72: See doctor | 212 | 73.1 |
| i73: Rest at home | 63 | 21.7 |

## 4.5 Part V Test of association between independent variables and health seeking behaviors: bivariate analysis

4.5.1 Test of association between socio-demographic and health seeking behaviors as shown in table 8.

**Table 8 The association between socio-demographic and health seeking behaviors.**

| Socio-demographic variables | Health seeking behaviors | | | | |
|---|---|---|---|---|---|
| | i69, P-value | i70, P-value | i71, P-value | i72, P-value | i73, P-value |
| **Age group** | | | | | |
| age 20-35 | 12(40.0%), 0.811 | 6(46.2%), 0.456 | 25(54.3%), **0.008** | 65(30.7%), **0.048** | 21(20.8%), 0.440 |
| >35-50 | 15(50.0%) | 7(53.8%) | 19(41.3%) | 124(58.5%) | 33(20.6%) |
| >50 | 3(10.0%) | 0(0%) | 2(4.3%) | 23(10.8%) | 9(31.0%) |
| **Gender** | | | | | |
| Male | 7(23.3%), **0.003** | 2(15.4%), 0.240 | 5(10.9%), 0.348 | 8(3.8%), **0.000** | 3(4.8%), 0.435 |
| Female | 23(76.7%) | 11(84.6%) | 41(89.1%) | 204(96.2%) | 60(95.2%) |
| **Marital status** | | | | | |
| Single | 14(46.7%), 0.756 | 8(61.5%), 0.285 | 28(60.9%), **0.019** | 78(36.8%), **0.011** | 23(36.5%), 0.504 |
| Married | 15(50.0%) | 5(38.5%) | 16(34.8%) | 120(56.6%) | 35(55.6%) |
| Divorced, separate, widow | 1(3.3%) | 0(0%) | 2(4.3%) | 14(6.6%) | 5(7.9%) |
| **Income** | | | | | |
| 10000-20000 | 2(6.7%), 0.276 | 2(15.4%), 0.596 | 6(13.0%), 0.561 | 33(15.6%), 0.836 | 9(14.3%), 0.229 |
| 20001-25000 | 9(30.0%) | 2(15.4%) | 13(28.3%) | 47(22.2%) | 13(20.6%) |
| 25001-30000 | 8(26.7%) | 1(7.7%) | 6(13.0%) | 40(18.9%) | 7(11.1%) |
| >30000 | 11(36.7%) | 8(61.5%) | 21(45.7%) | 92(43.4%) | 34(50.4%) |
| **No of child** | | | | | |
| Yes | 16(53.3%), 0.894 | 6(46.2%), 0.539 | 20(43.5%), 0.103 | 122(57.5%), **0.084** | 29(46.0%), **0.128** |
| No | 14(46.7%) | 7(53.8%) | 26(56.5%) | 90(42.5%) | 34(54.0%) |

p-value < 0.15

Cut point for multiple logistic regression model: p-value < 0.15
i69: Working through illness by do nothing
i70: Self-medication without suggestion
i71: Self-medication with suggestion
i72: See doctor
i73: Rest at home

4.5.2 Test of association between general health behaviors and health seeking behaviors as shown in table 9 and 10.

**Table 9 The association between general health behaviors and health seeking behaviors.**

| General health behaviors | Health seeking behaviors | | | | |
|---|---|---|---|---|---|
| | i69,P-value | i70, P-value | i71,P-value | i72, P-value | i73, P-value |
| **Annual checkup** | | | | | |
| No | 1(3.3%), 0.280 | 0(0%), 1.000 | 1(2.2%), 0.850 | 1(0.5%), 0.154 | 1(1.6%), 0.413 |
| Yes, do some year | 4(13.3%) | 1(7.7%) | 3(6.5%) | 12(5.7%) | 2(3.2%) |
| Yes, do every year | 25(83.3%) | 12(92.3%) | 42(91.3%) | 199(93.9%) | 60(95.2%) |
| **Self-efficacy** | | | | | |
| Cannot do | 1(3.3 %), 0.488 | 0(0%), 0.773 | 0(0%), 0.381 | 1(0.5%), 0.624 | 0(0%), 0.394 |
| Can do only 25% | 2(6.7%) | 1(7.7%) | 3(6.5%) | 13(6.1%) | 1(1.6%) |
| Can do 50% | 6(20.0%) | 1(7.7%) | 14(30.4%) | 39(18.4%) | 14(22.2%) |
| Can do 75% | 13(43.3%) | 7(53.8%) | 18(39.1%) | 97(45.8%) | 30(47.6%) |
| Can do 100% | 8(26.7%) | 4(30.8%) | 11(23.9%) | 62(29.2%) | 18(28.6%) |
| **Influenza vaccine** | | | | | |
| Didn't got | 11(36.7%), 0.202 | 5(38.5%), 0.346 | 21(45.7%), **0.002** | 46(21.7%), **0.001** | 1523.82%), 0.532 |
| Got | 19(63.3%) | 8(61.5%) | 25(54.3%) | 166(73.8%) | 48(76.2%) |
| **Influenza vaccine 2012** | | | | | |
| Didn't got | 12(40.0%), 0.326 | 5(38.5%), 0.762 | 23(50.0%), **0.005** | 58(27.4%), **0.005** | 19(30.2%), 0.713 |
| Got | 18(60.0%) | 8(61.5%) | 23(50.0%) | 154(72.6%) | 44(69.8%) |
| **Mass media** | | | | | |
| Not use | 7(10.4%), **0.064** | 2(15.4%), 1.000 | 7(15.2%), 0.422 | 17(8.0%), **0.001** | 9(14.3%), 0.475 |
| Use | 23(89.6%) | 11(84.6%) | 39(84.8%) | 195(92.0%) | 54(85.7%) |

P-value <0.15

i69: Working through illness by do nothing
i70: Self-medication without suggestion
i71: Self-medication with suggestion
i72: See doctor
i73: Rest at home

**Table 10 The association between using PPE and health seeking behaviors.**

| Variable | Health seeking behaviors | | | | |
|---|---|---|---|---|---|
| | i69, P-value | i70, P-value | i71, P-value | i72, P-value | i73, P-value |
| Using PPE | **0.014** | 0.411 | **0.021** | 0.840 | 0.765 |
| Perception score | **0.004** | 0.728 | **0.062** | **0.002** | 0.744 |

P-value <0.15

i69: Working through illness by do nothing
i70: Self-medication without suggestion
i71: Self-medication with suggestion
i72: See doctor
i73: Rest at home

4.5.3 Test of association between modifying factors and health seeking behaviors as shown in table 11 and 12.

**Table 11 The association between modifying factors and health seeking behaviors.**

| Modifying factors | Health seeking behaviors | | | | |
|---|---|---|---|---|---|
| | i69,P-value | i70,P-value | i71,P-value | i72,P-value | i73,P-value |
| **Occupation** | | | | | |
| Doctor | 5(22.7%), **0.044** | 1(4.5%), 0.572 | 6(27.3%), 0.162 | 9(40.9%), **0.000** | 2(9.1%), **0.009** |
| Dentist | 0(0%) | 2(9.1%) | 5(22.7%) | 13(59.1%) | 10(45.5%) |
| Nurse | 25(10.2%) | 10(4.1%) | 35(14.2%) | 190(77.2%) | 51(20.7%) |
| **Hospital** | | | | | |
| Angthong | 18(11.8%), 0.841 | 10(6.6%), 0.536 | 26(17.1%), 0.982 | 111(73%), 0.903 | 35(23%), 0.351 |
| Pamok | 3(13.6%) | 0(0%) | 3(16.5%) | 17(77.3%) | 4(18.2%) |
| Chaiyo | 1(5.6%) | 1(5.6%) | 2(11.1%) | 14(77.8%) | 4(22.2%) |
| Wiset | 3(9.4%) | 0(0%) | 5(15.6%) | 22(68.8%) | 11(34.4%) |
| Samko | 1(5.9%) | 0(0%) | 2(11.8%) | 14(82.4%) | 1(5.9%) |
| Phothong | 1(3.8%) | 1(3.8%) | 5(19.2%) | 19(73.1%) | 4(15.4%) |
| Sawangha | 3(13%) | 1(4.3%) | 3(13%) | 15(65.2%) | 4(17.4%) |
| **Workplace** | | | | | |
| IPD | 20(13.3%), 0.187 | 6(4.0%), 0.822 | 23(15.3%), 0.343 | 105(70.0%), 0.353 | 26(17.3%), **0.035** |
| OR | 1(6.7%) | 1(6.7%) | 3(20%) | 13(86.7%) | 2(13.3%) |
| Dental room | 0(0%) | 2(10.0%) | 630%) | 12(60.0%) | 9(45.0%) |
| ICU | 1(7.1%) | 0(0%) | 3(21.4%) | 11(78.6%) | 2(14.3%) |
| OPD/ER | 2(3.9%) | 2(3.9%) | 8(15.7%) | 41(80.4%) | 11(21.6%) |
| Other | 6(15.0%) | 2(5.0%) | 3(7.5%) | 30(75.0%) | 13(32.5%) |
| **Embarrassment** | | | | | |
| Shy | 0(0%), 0.259 | 0(0%), 0.786 | 1(50%), 0.228 | 2(100%), 0.331 | 0(0%), 0.747 |
| Anxiety | 4(6.5%) | 2(3.2%) | 10(16.1%) | 49(79%) | 16(25.8%) |
| Neutral | 23(10.7%) | 10(4.7%) | 35(16.4%) | 151(70.6%) | 45(21.0%) |
| Other | 3(25.0%) | 1(8.3%) | 0(0%) | 10(83.3%) | 2(16.7%) |

**Table 11 The association between modifying factors and health seeking behaviors (continue).**

| Modifying factors | Health seeking behaviors | | | | |
|---|---|---|---|---|---|
| | i69,P-value | i70,P-value | i71,P-value | i72,P-value | i73,P-value |
| **Awareness 1** | | | | | |
| Just a flu | 5(16.7%), **0.000** | 1(7.7%),1.000 | 5(10.9%),0.375 | 7(3.3%), **0.007** | 2(3.2%), **0.121** |
| It's my self | 1(3.3%) | 0(0%) | 0(0%) | 2(0.9%) | 0(0%) |
| I believe I am healthy | 9(30.0%) | 2(15.4%) | 5(10.9%) | 28(13.2%) | 7(11.1%) |
| I aware more about transmission | 15(50.0%) | 10(76.9%) | 36(78.3%) | 175(82.5%) | 54(85.7%) |
| **Awareness 2** | | | | | |
| Disagree | 2(6.7%),0.8653 | (23.1%), **0.143** | 6(13.0%), **0.045** | 5(2.4%), **0.011** | 3(4.8%),0.431 |
| Not sure | 5(16.7%) | 2(15.4%) | 8(17.4%) | 29(13.7%) | 6(9.5%) |
| Agree | 23(76.7%) | 8(61.5%) | 32(69.6%) | 178(84.0%) | 54(85.7%) |
| **Underlying disease** | | | | | |
| Don't have | 22(73.3%),0.555 | 8(61.5%),0.175 | 41(89.1%), **0.041** | 164(77.4%),0.878 | 48(76.2%),0.764 |
| Have | 8(26.7%) | 5(38.5%) | 5(10.9%) | 48(22.6%) | 15(23.8%) |
| **Time since the most ILI** | | | | | |
| 1-3 m | 8 (26.7%), **0.046** | 8(61.5%),0.375 | 26(56.5%), **0.034** | 76(35.8%),0.314 | 20(31.7%),0.744 |
| >3-6 m | 4 (13.3%) | 0(0%) | 5(10.9%) | 34(16.0%) | 11(17.5%) |
| >6-9 m | 1 (3.3%) | 1(6.5%) | 3(11.5%) | 23(10.8%) | 7(11.1%) |
| >9-12 m | 4 (13.3%) | 1(2.2%) | 1(3.8%) | 19(9%) | 5(7.9%) |
| >1-3 yr | 13 (43.3%) | 3(23.9%) | 11(13.3%) | 60(28.3%) | 20(31.7%) |

P-value <0.15

i69: Working through illness by do nothing
i70: Self-medication without suggestion
i71: Self-medication with suggestion
i72: See doctor
i73: Rest at home

**Table 12 The association between knowledge and health seeking behaviors**

| Knowledge | Health seeking behaviors | | | | |
|---|---|---|---|---|---|
| | i69, P-value | i70, P-value | i71, P-value | i72, P-value | i73, P-value |
| **kq1scorewgt** | 0.372 | **0.005** | 0.424 | **0.049** | 0.541 |
| **kq2scorewgt** | **0.068** | **0.059** | 0.646 | 0.522 | **<0.001** |
| **kq3scorewgt** | 0.246 | 0.836 | 0.757 | 0.473 | 0.721 |
| **kq4scorewgt** | 0.497 | 0.177 | 0.774 | 0.990 | **0.083** |
| **kq5scorewgt** | 0.573 | 0.308 | 0.204 | **0.120** | 0.986 |

p-value <0.15
**kq1scorewgt**: knowing appropriate reason for staying at home when get ILI
**kq2scorewgt**: knowing how to prevent seasonal influenza
**kq3scorewgt**: knowing how seasonal influenza spread
**kq4scorewgt**: knowing the recommended group for influenza vaccination
**kq5scorewgt**: knowing cause of ILI

### 4.6 Part VI: Multivariable analysis; multiple logistic regression

The multiple logistic regression was implemented to model relationships within dichotomous dependent variables and predicting variables. The result of multiple logistic regression shows none of standard error more than one.

### 4.6.1 Test for association and modeling relationship between influencing variables Inappropriate health seeking behavior; working through illness by do nothing.

**Bivariate analysis** between health seeking behavior; working through illness by do nothing, and male, using PPE, mass media, perception score, knowing how to prevent seasonal influenza, doctor, more awareness about influenza transmission to patient, and time since the most recent ILI showed (in table 8, 9, 10, 11, 12) that there were an association between working through illness by do nothing and these influencing factors. After performing bivariate analyses for each independent variable, if they were significant at p-value < 0.15 then they were selected to the multivariable analysis.

**Multiple logistic regression** analysis was performed by using SPSS to enter all of the independent variables at one time (enter method) for including variables.

- Step one: entered all independent variables for performing multiple logistic regression including male, using PPE, exposed to mass media, perception score, knowing how to prevent seasonal influenza, doctor, more awareness about influenza transmission to patient, and time since the most recent ILI into this step.

- Step two: excluded independent variables which provided p-value > 0.15 from previous step which were doctor, exposed to mass media, knowing how to prevent seasonal influenza, time since the most recent ILI. Male, using PPE, perception score, more awareness about influenza transmission to patient, and time since the most recent ILI were the independent variables which entered into this step. The significant p-value < 0.05 of each independent variable was selected as influencing factors. The result is shown in table 13.

**Table 13 Final multiple logistic regression model for the health seeking behavior working through illness by doing nothing.**

| Variables | B | S.E. | Odds ratio | p-value | 95% CI | |
|---|---|---|---|---|---|---|
| | | | | | Lower | Upper |
| Male | 2.312 | 0.598 | 10.09 | <0.001 | 3.122 | 32.612 |
| Using PPE | -0.305 | 0.128 | 0.74 | 0.018 | 0.574 | 0.948 |
| Perception score | -0.094 | 0.051 | 0.91 | 0.064 | 0.824 | 1.005 |
| Aware of influenza transmission to patient | -1.398 | 0.451 | 0.25 | 0.002 | 0.102 | 0.598 |
| Time since the most recent ILI | 0.289 | 0.130 | 1.34 | 0.026 | 1.035 | 1.723 |
| Constant | 4.620 | 2.393 | 101.52 | 0.053 | | |

Chi square omnibus test of model coefficient= 39.464, df=5, p< 0.001

Multiple logistic regression analysis was employed to model the odds of working through illness by do nothing when influenza-like illness occurs. In this analysis, the probability of

the model chi square (39.464) was <0.001. This existence supported the relationship between independent variables and HSB; workings through illness by do nothing. None of the independent variable in this analysis had a standard error lager than 2.0. The finding indicated that significant factors related to health seeking behavior; working through illness by do nothing were male, using PPE, more awareness about influenza transmission to patient, and time since the most recent ILI but perception score was not significant. Male was the most influenced factor. The model was able correctly to classify for an overall percentage of 91.4%. The model for predicting the health seeking behavior; working through illness by do nothing was

ln odd of working through illness by do nothing = 4.620+2.312 (male) -0.305 (using PPE) -0.094(perception score)  -1.389(more awareness about influenza transmission to patient) +0.289 (time since the most recent ILI)

Interpretation:
- The p-value for the variable male was < 0.001 which was significant. This supported the relationship that male were more likely to work through illness by do nothing than female. It implies that a one unit increase (male), the ln odds of working through illness by do nothing will increase (OR= 10.09, p-value <0.001, 95%CI 3.122-32.612).
- The p-value for the variable using PPE was 0.018 which was significant. This supported the relationship that the respondent who more using PPE was less likely to work through illness by do nothing than less use. It implies that a one unit increase (using PPE), the ln odds of working through illness by do nothing will decrease. (OR= 0.74, p-value = 0.018, 95%CI 0.574- 0.948).
- The p-value for the variable perception score was 0.064 which was not significant. This supported the relationship that the respondent who was high perception score was less likely to work through illness by do nothing than low score. It implies

that a one unit increase (perception score), the ln odds of working through illness by do nothing will decrease but not significant.

- The p-value for the variable more awareness about influenza transmission to patient was 0.002 which was significant. This supported the relationship that the respondents who were aware about influenza transmission to patient were less likely to work through illness by do nothing than not aware. It implies that a one unit increase (awareness about influenza transmission to patient), the ln odds of working through illness by do nothing will decrease (OR= 0.25, p-value = 0.002, 95%CI 0.102- 0.598).

- The p-value for the variable time since the most recent ILI was 0.026 which was significant. This supported the relationship that the respondents who were got long period of time since the most recent ILI were more likely to work through illness by do nothing than short time. It implies that a one unit increase (period of time since the most recent ILI), the ln odds of working through illness by do nothing will increase (OR= 1.34, p-value = 0.026, 95%CI 1.035- 1.723).

- HSB; working through illness by do nothing is an inappropriate behavior. Refer to these results, a one unit increase; male and long period of time since the most recent ILI, increase inappropriate behavior compare to female and short period of time since the most recent ILI. Otherwise, a one unit of using PPE and more awareness about influenza transmission to patient increase, the ln odd of an inappropriate behavior will decrease statistical significant.

**4.6.2 Test for association and modeling relationship between influencing variables and Inappropriate health seeking behavior; self medication without suggestion.**

**Bivariate analysis** between health seeking behavior; self medication without suggestion and knowing reason for staying at home when get ILI, knowing how to prevent seasonal influenza, agree with vaccination is a part of responsibility. The result showed that there were associations between the influencing factors. After performing bivariate analyses for each independent variable, if they were significant at p-value < 0.15 then select them to the multivariable analysis.

**Multiple logistic regression**

- Step one: entered all independent variables for performing multiple logistic regression; knowing reason for staying at home when get ILI, knowing how to prevent seasonal influenza, agree with vaccination is a part of responsibility into this step.

- Step two: excluded independent variables which provided p-value > 0.15 from previous step which was agree with vaccination is a part of responsibility. And there were some independent variables which entered into this step including knowing reason for staying at home when get ILI, knowing how to prevent seasonal influenza.  The significant p-value < 0.5 of each independent variable was selected as influencing factor. The result is shown in table 14.

**Table 14 Final multiple logistic regression model for the health seeking behavior; self-medication without suggestion.**

| Variables | B | S.E. | Odds ratio | p-value | 95%CI Lower | Upper |
|---|---|---|---|---|---|---|
| Knowing appropriate reason for staying at home when get ILI | -0.149 | 0.061 | 0.86 | 0.015 | 0.764 | 0.971 |
| Knowing how to prevent seasonal influenza | 0.345 | 0.219 | 1.41 | 0.116 | 0.919 | 2.170 |
| Constant | -3.860 | 0.913 | 0.02 | <0.001 | | |

Chi square omnibus test of model coefficient= 10.417, p= 0.015

Multiple logistic regression analysis was employed to model the odds of self-medication without suggestion when influenza-like illness occurs. In this analysis, the probability of the model chi square (10.417) was 0.015. This existence supported the relationship between independent variables and self-medication without suggestion. None of the independent variable in this analysis had a standard error lager than 2.0. The finding

indicated that significant factors related to health seeking behavior; self-medication without suggestion were knowing reason for staying at home when get ILI, knowing how to prevent seasonal influenza. The model was able correctly to classify for an overall percentage of 95.5%.

The model for predicting the health seeking behavior; self-medication without suggestion was

ln odd of self-medication without suggestion = 3.860-0.149 (knowing reason for staying at home when get ILI)+0.345(knowing how to prevent seasonal influenza)

Interpretation

- The p-value for the variable knowing reason for staying at home when get ILI was 0.015 which was significant. It means that high score knowing reason for staying at home when get ILI was less likely to do self-medication without suggestion than low score. It implies that a one unit increase (score of knowing reason for staying at home when get ILI), the ln odds of self-medication without suggestion will decrease (OR= 0.86, p-value = 0.015, 95%CI 0.764- 0.971).

- The p-value for the variable knowing how to prevent seasonal influenza was 0.116 which was not significant. It implies that a one unit increase (score of knowing how to prevent seasonal influenza), the ln odds of self-medication without suggestion will increase but not significant.

- HSB; self-medication without suggestion is an inappropriate health seeking behavior. Refer to this result, a one unit of score of knowing reason for staying at home when get ILI increase, the ln odd of an inappropriate health seeking behavior will decrease statistical significant.

**4.6.3 Test for association and modeling relationship between influencing variables and appropriate health seeking behavior; self-medication with suggestion.**

**Bivariate analysis** between health seeking behavior; self-medication with suggestion and age, marital status, having of child, using PPE, perception score, having influenza vaccination every year , having influenza vaccination in 2012, underlying disease, agree

with vaccination is a part of responsibility , and time since the most recent ILI. In bivariate analysis indicated that there were association between self-medication with suggestion and influencing factors. After performing bivariate analyses for each independent variable, if they were significant at p-value < 0.15 then select them to the multivariable analysis.

**Multiple logistic regression**

- Step one: entered all independent variables for performing multiple logistic regression; age, marital status, having of child, using PPE, perception score, having influenza vaccination every year , having influenza vaccination in 2012, underlying disease, agree with vaccination is a part of responsibility , and time since the most recent ILI into this step.

- Step two: excluded independent variables which provided p-value > 0.5 from previous step which were  age, marital status, having of child, using PPE, perception score, having influenza vaccination every year , having influenza vaccination in 2012, agree with vaccination is a part of responsibility.  And there were some independent variables provide significant p-value including using PPE, perception score, underlying disease, and time since the most recent ILI and enter these variables into this step. The significant p-value < 0.5 of each independent variable was selected as influencing factor. The result is shown in table 15.

**Table 15 Final multiple logistic regression model for the health seeking behavior; self-medication with suggestion.**

| Variables | B | S.E. | Odds ratio | p-value | 95%CI | |
|-----------|---|------|------------|---------|-------|---|
| | | | | | Lower | Upper |
| Using PPE | 0.253 | 0.105 | 1.29 | 0.016 | 1.049 | 1.582 |
| Perception score | -0.086 | 0.040 | 0.92 | 0.031 | 0.848 | 0.992 |
| Underlying disease | -0.908 | 0.506 | 0.40 | 0.072 | 0.150 | 1.086 |
| Time since the most recent ILI | -0.236 | 0.105 | 0.79 | 0.025 | 0.642 | 0.970 |
| Constant | 0.513 | 1.990 | 1.67 | 0.797 | | |

Chi square omnibus test of model coefficient= 19.545, p=0.001

Multiple logistic regression analysis was employed to model the odds of self-medication with suggestion when influenza-like illness occurs. In this analysis, the probability of the model chi square (19.545) was 0.001.This existence supported the relationship between independent variables and self-medication with suggestion. None of the independent variables in this analysis had a standard error lager than 2.0. This study showed that significant factors related to health seeking behavior; self-medication with suggestion were using PPE, perception score, and time since the most recent ILI but underlying disease was not significant. The model was able correctly to classify for an overall percentage of 83.4%. The model for predicting the health seeking behavior; self-medication with suggestion was

ln odd of self-medication with suggestion = 0.513+0.253 (using PPE)-0.086 (perception
score)-0.908(underlying disease)-0.236(time since the most recent ILI)

Interpretation:

- The p-value for the variable using PPE was 0.016 which was significant. This supported the relationship that more using PPE was more likely to self-medication with suggestion than less use. It implies that a one unit increase (using PPE), the ln

odds of self-medication with suggestion will increase (OR= 1.29, p-value = 0.016, 95%CI 1.049-1.582).

- The p-value for the variable perception score was 0.031 which was significant. This supported the relationship that high perception score was less likely to self medication with suggestion low score. It implies that a one unit increase (perception score),  the ln odds of self-medication with suggestion will decrease (OR= 0.92, p-value = 0.031, 95%CI 0.848- 0.992).

- The p-value for the variable underlying disease was 0.072 which was significant. This supported the relationship that having underlying disease was less likely to self medication with suggestion than not have. It implies that a one unit increase (underlying disease), the ln odds of self-medication with suggestion will decrease but not significant.

- The p-value for the variable time since the most recent ILI was 0.025 which was significant. This supported the relationship that long time since the most recent ILI was less likely to self medication with suggestion than short time. It implies that a one unit increase (time since the most recent ILI), the ln odds of self-medication with suggestion will decrease (OR= 0.79, p-value = 0.025, 95%CI 0.642-0.970).

- HSB; self-medication with suggestion is an appropriate health seeking behavior. Refer to these results, a one unit of using PPE increase, the ln odd of an appropriate health seeking behavior will increase. Likewise, A one unit of perception score  and long period of time since the most recent ILI increase, the ln odd of  an appropriate health seeking behavior will decrease statistical significant .

.**4.6.4 Test for association and modeling relationship between influencing variables and appropriate health seeking behavior; see doctor.**

**Bivariate analysis** between health seeking behavior; see doctor and age, male, marital status, having of child, perception score, having influenza vaccination every year), having influenza vaccination 2012, exposed to mass media, knowing the reason for staying at home when got ILI, knowing cause of ILI, occupation, more awareness about influenza

transmission to patient, and agree with vaccination is a part of responsibility. In bivariate analysis indicated that there were association between see doctor and influencing factors. After performing bivariate analyses for each independent variable, if they are significant at p-value of 0.15 then select them to the multivariable analysis.

**Multiple logistic regression**

- Step one: entered all independent variables for performing multiple logistic regression; age, male, marital status, having of child, perception score, having influenza vaccination every year, having influenza vaccination 2012, exposed to mass media, knowing the reason for staying at home when got ILI, knowing cause of ILI, occupation, more awareness about influenza transmission to patient, and agree with vaccination is a part of responsibility into this step.

- Step two: excluded independent variables which provided p-value > 0.5 from previous step which were age, having child, knowing the reason for staying at home when got ILI, occupation, agree with vaccination is a part of responsibility and there were some independent variables provide significant p-value including male, marital status, perception score, having influenza vaccination every year, having influenza vaccination in 2012, exposed to mass media, knowing cause of ILI , more awareness about influenza transmission to patient and then entered into this step.

- Step three: excluded independent variables which provided p-value  > 0.15 from previous step which was having influenza vaccination in 2012. And there were some of independent variables which entered into this step including male, marital status, perception score, having influenza vaccination every year, exposed to mass media, knowing cause of ILI, more awareness about influenza transmission to patient. The significant p-value = 0.05 was used. Multiple logistic regression analysis is shown in table 16.

**Table 16 Final multiple logistic regression model for the health seeking behavior; see doctor.**

| Variables | B | S.E. | Odds ratio | p-value | 95%CI Lower | Upper |
|---|---|---|---|---|---|---|
| Male | -1.475 | 0.507 | 0.23 | 0.004 | 0.085 | 0.617 |
| Marital status Married (ref=single) | 0.619 | 0.305 | 1.86 | 0.042 | 1.022 | 3.373 |
| Separate group (ref=single) | 1.011 | 0.731 | 2.75 | 0.167 | 0.656 | 11.509 |
| Perception score | 0.077 | 0.035 | 1.08 | 0.030 | 1.008 | 1.157 |
| Influenza vaccination every year | 0.582 | 0.315 | 1.79 | 0.065 | 0.964 | 3.320 |
| Exposed to mass media | 1.061 | 0.416 | 2.89 | 0.011 | 1.279 | 6.521 |
| Cause of ILI | -0.162 | 0.075 | 0.85 | 0.031 | 0.733 | 0.986 |
| Aware more about influenza transmission to their patients | 0.533 | 0.346 | 1.70 | 0.124 | 0.864 | 3.361 |
| Constant | -4.139 | 1.599 | 0.02 | 0.010 | | |

Chi square omnibus test of model coefficient= 46.195, p < 0.001

Multiple logistic regression analysis was employed to model the odds of see doctor when influenza-like illness occurs. In this analysis, the probability of the model chi square (46.195) was <0.001.This existence supported the relationship between independent variables and see doctor. None of the independent variables in this analysis had a standard error lager than 2.0.This study showed that significant factors related to health seeking behavior; see doctor were male, marital status (married), perception score, influenza vaccination every year, exposed to mass media, knowing cause of ILI, more awareness about influenza transmission to patient.  The model was able correctly to classify for an

overall percentage of 77.6%. The model for predicting the health seeking behavior; see doctor was

ln odd of seeing doctor = -4.139-1.475(male) +0.619(married) +1.011(separated group) +0.077(perception score)+0.582(influenza vaccination every year)+1.061(exposed to mass media)-0.162(knowing cause of ILI)+0.533(more awareness about influenza transmission to patient)

Interpretation:

- The p-value for the variable male was 0.004 which was significant. This supported the relationship that male was less likely to see doctor than female. It implies that a one unit increase (male), the ln odds of see doctor will decrease (OR= 0.23, p-value = 0.004, 95%CI 0.085- 0.617).

- The p-value for the variable marital status (married, separate group) was 0.042 which was significant and 0.167 which were not significant. This supported the relationship that marital status (married) was more likely to see doctor than single. It implies that a one unit increase (married), the ln odds of see doctor will increase (OR= 1.86, p-value = 0.042, 95%CI 1.022- 3.373). And the respondents who were being separate were more likely to see doctor than single but not significant. The p-value for the variable perception score was 0.030 which was significant. This supported the relationship that high perception score was more likely to see doctor than low score. It implies that a one unit increase (perception score), the ln odds of see doctor will increase (OR= 1.08, p-value = 0.030, 95%CI 1.008- 1.157).

- The p-value for the variable influenza vaccination every year was 0.065 which was not significant. It implies that a one unit increase (influenza vaccination every year), the ln odds of see doctor will increase but not significant.

- The p-value for the variable exposed to mass media was 0.011 which was significant. This supported the relationship that exposed to mass media was more likely to see doctor than unexposed. It implies that a one unit increase (exposed to

mass media), the ln odds of see doctor will increase (OR= 2.89, p-value = 0.011, 95%CI 1.279- 6.521).

- The p-value for the variable knowing cause of ILI was 0.031 which was significant. This supported the relationship that high score of knowing cause of ILI was less likely to see doctor than low score . It implies that a one unit increase (knowing cause of ILI), the ln odds of see doctor will decrease (OR= 0.85, p-value = 0.031, 95%CI 0.733- 0.986).

- The p-value for the variable more awareness1about influenza transmission to patient was 0.124 which was not significant. It implies that a one unit increase (aware more about influenza transmission to patient), the ln odds of see doctor will increase by not significant.

- HSB; see doctor, is an appropriate health seeking behavior. Refer to these results, a one unit increase marital status (married), perception score, and exposed to mass media, the ln odd of an  appropriate health seeking behavior will increase statistical significant. Likewise, a one unit increase; male and high score of knowing cause of ILI, the ln odd of an appropriate behavior will decrease statistical significant.

**4.6.5 Test for association and modeling relationship between influencing variables and appropriate health seeking behavior; rest at home.**

**Bivariate analysis** between health seeking behavior; rest at home, having of child, workplace, knowing how to prevent seasonal influenza, knowing the recommended group to get influenza vaccination, occupation, and more awareness about influenza transmission to patient. The result of study indicated that there were associations between rest at home with influencing factors. In bivariate analysis indicated that there were association between rest at home and influencing factors. After performing bivariate analyses for each independent variable, if they are significant at p-value of 0.15 then select them to the multivariable analysis.

**Multiple logistic regression**

- Step one: entered all independent variables for performing multiple logistic regression; having of child, workplace, knowing how to prevent seasonal

influenza, knowing the recommended group to get influenza vaccination, occupation, and more awareness about influenza transmission to patient into this step.

- Step two: excluded independent variables which provided p-value > 0.15 from previous step which were workplace, knowing the recommended group to get influenza vaccination, occupation, and more awareness about influenza transmission to patient. And there were some independent variables provide significant p-value including having of child, occupation, and knowing how to prevent seasonal influenza. Multiple logistic regression analysis is shown in table 17.

**Table 17 Final multiple logistic regression model for the health seeking behavior; rest at home.**

| Variables | B | S.E. | Odds ratio | p-value | 95%CI | |
|-----------|---|------|------------|---------|-------|---|
| | | | | | Lower | Upper |
| Having of child | -0.443 | 0.311 | 0.64 | 0.154 | 0.349 | 1.180 |
| Occupation<br>  Dentist<br>(ref=doctor) | 2.140 | 0.868 | 8.50 | 0.014 | 1.549 | 46.611 |
|   Nurse<br>(ref=doctor) | 1.440 | 0.776 | 4.22 | 0.064 | 0.922 | 19.313 |
| Knowing how to prevent seasonal influenza | 0.372 | 0.104 | 1.45 | <0.001 | 1.183 | 1.777 |
| Constant | -3.714 | 0.871 | 0.02 | <0.001 | | |

Chi square omnibus test of model coefficient= 24.099, p < 0.001

Multiple logistic regression analysis was employed to model the odds of rest at home when influenza-like illness occurs. In this analysis, the probability of the model chi square (24.099) was <0.001.This existence supported the relationship between independent variables and rest at home. None of the independent variables in this analysis had a

standard error lager than 2.0.This study showed that influencing factors related to health seeking behavior; rest at home were having of child, occupation (dentist, nurse), and knowing how to prevent seasonal influenza. The model was able correctly to classify for an overall percentage of 79%. The model for predicting the health seeking behavior; rest at home was

ln odd of resting at home  =  -3.714-0.443(having of child) +2.140(dentist) +1.440(nurse)

+0.372 (Knowing how to prevent seasonal influenza)

Interpretation:

- The p-value for the variable having of child can be prevented was 0.154 which was not significant. It means that having child was less likely to rest at home than not have. It implies that a one unit increase (having child in household),  the ln odds of rest at home will decrease. However, the variables, having of child, did not show significant p-value.

- The p-value for the variable occupation (dentist) was 0.014 which was significant and occupation (nurse) 0.064 which was not significant. This supported the relationship that dentist was more likely to rest at home than doctor. It implies that a one unit increase (dentist), the ln odds of rest at home will increase (OR= 8.50, p-value = 0.014, 95%CI 1.549- 46.611). And the respondents who were nurses were more likely to rest at home than doctor but not significant.

- The p-value for the variable knowing how to prevent seasonal influenza was < 0.001 which was significant. This supported the relationship that high score of knowing how to prevent seasonal influenza was more likely to rest at home than low score. It implies that a one unit increase (knowing how to prevent seasonal influenza), the ln odds of rest at home will increase (OR= 1.45, p-value < 0.001, 95%CI 1.183-1.777).

- HSB; rest at home is an appropriate health seeking behavior. Refer to these results, a one unit increase occupation (dentist), knowing how to prevent seasonal

influenza, the ln odd of an appropriate health seeking behavior will increase statistical significant.

After employing bivariate analysis, the set of predicting variables were retrieved. Then multiple logistic regression was implemented. Refer to table 19 even though total independent variables are 19 (100 cells) but only 9 (15 cells) of them provided statistical significant on final multivariate logistic regression ($p < 0.05$). Some predicting variables provide significant p-value in different HSBs and different direction such as male provided positive direction of working through illness by do nothing but negative direction with see doctor. For conclusion was presented below.

- Male: The positive direction of an inappropriate HSB.

    The negative direction of an appropriate HSB.

- Using PPE: The negative direction of an inappropriate HSB.

    The positive direction of an appropriate HSB.

- Perception score: The negative direction of an appropriate HSB.

    The positive direction of an appropriate HSB.

- Knowledge: The negative direction of an inappropriate and appropriate HSB.

    The positive direction of an appropriate HSB.

- Time since the most recent ILI: The positive direction of an inappropriate HSB.

    The negative direction of an appropriate HSB.

The overall results which were significant are presented in table18.

**Table 18 Direction of statistically significant associations for each outcome**

| Independent variables | Inappropriate behaviors | | Appropriate behaviors | | |
|---|---|---|---|---|---|
| | Working through illness by do nothing | Self- medication without suggestion | Self- medication with suggestion | See doctor | Rest at home |
| Age | | | | | |
| Male** (ref=female) | + | | | - | |
| Married** (ref=single) | | | | + | |
| Income | | | | | |
| Having of child | | | | | |
| Using PPE* | - | | + | | |
| Severity | | | | | |
| Annual checkup | | | | | |
| Influenza vaccination† | | | | | |
| Mass media | | | | + | |
| Self-efficacy | | | | | |
| Perception score§ | | | - | + | |
| Workplace | | | | | |
| Hospital | | | | | |
| Knowledge¶ | | - (item 1) | | - (item 5) | +(item 2) |
| Dentist** (ref=doctor) | | | | | + |
| Embarrassment | | | | | |
| Underlying disease | | | | | |
| Awareness to other‡ | - (1) | | | | |
| Time since the most recent ILI | + | | - | | |

*Using PPE has 4 questions                **gender= male/female
†Influenza vaccination has 2 questions       **marital status= single/married/separated
§Perception score has 11 questions         **occupation= doctor/dentist/nurse
¶Knowledge has 5 questions                ‡Awareness to other has 2 questions

**kq1scorewgt**: knowing appropriate reason for staying at home when get ILI

**kq2scorewgt**: knowing how to prevent seasonal influenza

**kq3scorewgt**: knowing how seasonal influenza spread

**kq4scorewgt**: knowing the recommended group for influenza vaccination

**kq5scorewgt**: knowing cause of ILI

# CHAPTER V

# DISSCUSSION

Our understanding is not complete regarding which predicting variables are associated with health seeking behaviors. This study shows statistically significant predicting variables after employing multiple logistic regression to model the odds of these health seeking behaviors as follows.

     **Male** were more likely to work through illness by do nothing when they got influenza-like illness more than female, this difference was statistically significant. The logistic showed that if the respondent were male, the ln odd of working through illness by do nothing were increase by 10.09 (OR10.09, p-value < 0.001, 95%CI 3.122- 32.612). This data supported from another study, which found that incontinent women were more likely to receive treatment after consulting a health professional than male and female were more likely to see doctor than male (Yue et al., 2007). As this study, Male was less likely to see doctor by 0.23 compare to female (OR 0.23, p-value =0.004, 95%CI 0.085-0.617). In addition, if noticed only male, the study showed that the number of male doctor were 13 and only 5 of them preferred to see doctor when they got influenza-like illness it may due to they were doctor thus they treated themselves.  Male is the predicting variable which provided significant p-value with two health seeking behaviors on logistic regression. Those HSBs are working through illness by do nothing (positive direction) and see doctor (negative direction).  The summarizing table of influencing factor; male is presented in table 19 below.

**Table 19 The summarizing table of influencing factor; male.**

| Studies | Influencing factors and HSBs |
|---|---|
| **The present study (n=290)** | • Male were more likely to do nothing than female (OR10.09, p-value <0.001, 95%CI 3.122-32.612).<br>• Male were less likely to see doctor than female (OR 0.23, p-value =0.004, 95%CI 0.085-0.617). |
| **Yue et al., 2007 (n=28,724)** | Female were more likely to receive treatment than male (AOR = 1.12, p < 0.01) |

This study inquired the respondents regarding **awareness of preventing flu transmission to their patients.** Even though 228, 78.6% answered they were aware of preventing flu transmission to their patients but 15, 6.6% of them also preferred to working through illness by do nothing when they got ILI. The respondents who were aware more about influenza transmission to patient were less likely to work through illness by do nothing than who were not aware (OR 0.25, p-value = 0.002, 95%CI 0.102-0.598). The other study supported that Thai health care workers shared five themes representing the core of spirituality including insight to others (Yoelao & Mohan, 2011). 175, 82.5% of respondents, who were aware of preventing flu transmission to their patients, went to see doctor when they got influenza-like illness. If they were more awareness of preventing flu transmission to their patients, seeing doctor was increase but not significant. The summarizing table of influencing factor; more awareness about influenza transmission to patient is presented in table 20 below.

**Table 20 The summarizing table of influencing factor; more awareness about influenza transmission to patient.**

| Studies | Influencing factors and HSBs |
|---|---|
| **The present study (n=290)** | More awareness about influenza transmission to patient were less likely to do nothing compare to not awareness (OR 0.25, p-value =0.002, 95%CI 0.102-0.598). |
| **Yoelao & Mohan, 2011 (n= 50)** | Thai health care workers shared the core of spirituality. including insight to others |

In a critical review of health belief model related investigations indicated that the one who perceived susceptibility seemed to do preventive health behavior. (Janz & Becker, 1984). This statement supported the finding of this study that high rate of **using PPE** (represent for perceived susceptibility) was presented. The mean of using PPE (exclude gown) was 8.31 from 9 and 151, 52.1% were agree with using PPE prevented them from influenza infection. The cohort study in using of PPE showed that PPE was significantly protective. None of the healthcare workers who used of masks or N-95 respirators was seropositive for influenza virus. Use of N-95 masks was also associated with protecting against respiratory illness symptoms (Adalja, 2011: Online). Due to using PPE is a representative of perceived susceptibility, if the respondents were more perceive susceptibility (increase using PPE), the ln odd of health seeking behavior, working through illness by do nothing, will decrease (OR 0.74, p-value =0.018, 95%CI 0.574-0.948). Likewise, if they were more perceive susceptibility (increase using PPE), the ln odd of self-medication with suggestion was increase (OR 1.29, p-value =0.016, 95%CI 1.049-1.582). Perceive susceptibility (using PPE) provided both positive and negative direction in different health seeking behaviors. Perceive susceptibility (using PPE) is the predicting variable which provided significant p-value with two health seeking behaviors on logistic regression. Those HSBs are working through illness by do nothing (negative direction) and self-

medication with suggestion (positive direction). The summarizing table of influencing factor; using PPE is presented in table 21 below.

**Table 21 The summarizing table of influencing factor; using PPE.**

| Studies | Influencing factors and HSBs |
|---|---|
| The present study (n=290) | • High rate of using PPE (represent for perceived susceptibility)<br>• Increase using PPE were less likely to do nothing compare to less used (OR 0.74, p-value =0.018, 95%CI 0.574-0.948).<br>• Increase using PPE were more likely to do self-medication with suggestion compare to less used (OR 1.29, p-value =0.016, 95%CI 1.049-1.582). |
| Janz & Becker, 1984 (critical review of 17 studies) | Perceived susceptibility seemed to do preventive health behavior |
| Adalja, 2011: Online (n=139) | Using of PPE showed that PPE was significantly protective. |

The rate of **having influenza vaccination every year** was 73.1% and in 2012 vaccination were 67.9%. But the study of Thai medical worker showed that the vaccination rate among Thai medical workers was 89% which was high rate (Chotpitayasunondh et al., 2011). Conversely with the cross-sectional study at Prapokklao Hospital, Janthaburi indicated that influenza vaccination coverage among Health care workers remains low rate of 58.15 %. The level of compliance of this study was lower than Thai medical worker study but higher than Janthaburi study. These may due to the study area was located in influenza outbreak area and the respondents were strongly agree and agree with vaccination prevented them from influenza infection 20.3%, 46.9%, respectively. Thus this may lead the quit higher rate than Janthaburi study. But when compared vaccination rate with Thai medical worker study was conducted in a Queen Sirikit National Institute of Child Health which was a specialized hospital. The more facilities due to being a large hospital may lead to a higher vaccination rate than this study rate. Having influenza vaccination every year was significant positive correlated with HSB; see doctor by 1.79 on logistic

regression compare to not having vaccination but not significant. The summarizing table of influencing factor; having influenza vaccination every year is presented in table 22 below.

**Table 22 The summarizing table of influencing factor; having influenza vaccination every year.**

| Studies | Influencing factors and HSBs |
|---|---|
| **The present study (n=290)** | • Influenza vaccination every year rate was 73.1%.<br>• Influenza vaccination in 2012 rate was 67.9%. |
| **Chotpitayasunondh et al., 2011 (n= 1466 )** | • Influenza vaccination rate was 89%. |
| **Chanthatero et al., 2011 (n= 402 )** | • Influenza vaccination rate was 58.1%. |

In the analysis found that they strongly agree and agree with all **perceptions** toward influenza such as "I perceived ILI is an illness and may transmit the pathogen to others" and "I believe medical checkup once a year lead me know my health status" etc. High perception score decrease working through illness by do nothing compare to low score of perception on logistic regression but not significant. Likewise, high perception score decrease self-medication with suggestion compare to low score. Furthermore, increasing of perception score would increase of HSB; see doctor, compare to low score. Perception score is the predicting variable which provided significant p-value with two health seeking behaviors on logistic regression. Those HSBs are self-medication with suggestion (OR = 0.92, p-value= 0.031, 95%CI 0.848-0.992) and see doctor (OR= 1.08, p-value= 0.030, 95%CI 1.008-1.157) which are appropriate HSB. Actually, Perception score provided association with working through illness by do nothing behavior on logistic regression but not significant. These finding can clarify that even though high score of perception was less likely to self-medication with suggestion than low score but they were more likely to see doctor than low score and see doctor behavior is a HSB which is better than self-medication

with suggestion behavior. Finally, even though the respondents perceived more severity such as fatigue than others when they got ILI. But the HSBs did not different.

The other study found that the perception of severity is based on medical information or **knowledge**. (Jr., ND: online). Thus having adequate knowledge is important to engage in healthy behavior. This study showed that the respondent who strongly agree with "I perceived ILI is an illness and may transmits the pathogen to others" had got score of knowledge $> = 15$ but not significant. Moreover, the respondent who got knowledge score less than15 preferred to work through illness by do nothing (8, 6.2%) but not significant. Even though 248, 96.9% knew the reason for staying at home when got ILI but when they were questioned regarding health seeking behavior most of them preferred to see doctor (192, 90.6%) instead. Having high score of knowing reason for staying at home when got ILI decrease self-medication without suggestion compare to low score (OR 0.86, p-value =0.015, 95%CI 0.764-0.971). And if score of knowing how to prevent seasonal influenza were increase, self-medication without suggestion would increase compare to low score on logistic regression but not significant. If the respondent got high score of knowing how to prevent seasonal influenza significant increase of resting at home compare to low score (OR 1.45, p-value < 0.001, 95%CI 1.183-1.777). If they got high score of knowing cause of ILI see doctor behavior would decrease compare to low score (OR 0.85, p-value =0.031, 95%CI 0.733-0.986). Knowledge score is the predicting variable which provided significant p-value with three health seeking behaviors on logistic regression. Those HSBs are self-medication without suggestion (negative direction) which is inappropriate HSB, see doctor (negative direction) and rest at home (positive direction) which are appropriate HSBs. The summarizing table of influencing factor; knowledge score is presented in table 23 below.

**Table 23 The summarizing table of influencing factor; knowledge score**

| Studies | Influencing factors and HSBs |
|---|---|
| The present study | • High score of perception was less likely to self-medication with suggestion compare to low score (OR 0.92, p-value =0.031, 95%CI 0.848-0.992).<br>• High score of perception was more likely to see doctor compare to low score (OR 1.08, p-value =0.030, 95%CI 1.008-1.157.<br>• High score of knowing reason for staying at home was less likely to self-medication without suggestion compare to low score (OR 0.86, p-value =0.015, 95%CI 0.764-0.971).<br>• High score of knowing how to prevent seasonal influenza was more likely to rest at home compare to low score (OR 1.45, p-value <0.001, 95%CI 1.183-1.777).<br>• High score of knowing cause of ILI was less likely to see doctor compare to low score (OR 0.85, p-value =0.031, 95%CI 0.733-0.986). |
| Janz & Becker, 1984 | Perceived susceptibility was a stronger contributor to understanding preventive health behavior than sick role behavior |
| Jr., ND: online | Perception of severity is based on medical information or knowledge. |

Even though, the respondent who got **underlying disease** would decrease to do self-medication but not significant. Most preferred to see doctor (48, 73.8% of 65) when they got ILI. These resulte reflect a study in Ugandans which explored healthcare seeking behavior among diabetic persons showed that healthcare was sought in the professional healthcare sector because of severe symptom patterns related to DM and/or glycaemia control (Hjelm & Atwine, 2011).

**Exposed to mass media** was highly correlated with seeing doctor behavior compare to not expose to mass media (OR 2.89, p-value < 0.011, 95%CI 1.279-6.521).

The supported study of avian influenza campaign improved avian influenza prevention (Kanamori et al., 2006: Online).

The respondents who were **married** were more likely to see doctor than single. If they were married, see doctor behavior would increase compare to single single (OR 1.86, p-value < 0.042, 95%CI 1.022-3.373). Likewise, if they were in separated group, see doctor behavior would increase compare to single but not significant.  It is supported by August & Sorkin that married men probably receive the most social control because their wives are the most common source of social control for this group than unmarried. Married patient received of more frequent attempts and greater opportunities for network members to influence their health behaviors.

**Having child age less than 18 in household** was a greater risk of influenza infection.  Living with three or more children (OR 13.80, p < 0.01) was a greater risk of influenza infection than living with one or two children (OR 5.30, p = 0.02) (Williams et al., 2010). Thus this study expected to discover that the respondents who have child in household would do appropriate health seeking behaviors to prevent influenza infection. The finding showed that there was association between having child and health seeking behaviors; rest at home but not significant.

**Dentists** were more likely to rest at home than doctor. If they were dentists, the ln odds of resting at home would increase (OR 8.50, p-value < 0.014, 95%CI 1.549-46.611). In addition, nurses were more likely to rest at home than doctor but not significant.

**Time since the most recent ILI** is one of influencing factor. Influenza disease burden varies from year to year as new antigenic variants emerge that may cause more frequent or more severe disease than the preceding year (Simmerman et al., 2006). The different onset time of ILI may show the different health seeking behavior among HCPs due to perceived increasing severity of disease. This finding showed that if time since the most recent ILI was so long, working through illness by do nothing behavior would increase compare to short period of time since the most recent ILI (OR 1.34, p-value < 0.026, 95%CI 1.035-1.723). It may due to long period of time of ILI experience would lead them to do careless behavior. Even though self-medication with suggestion is an appropriate behavior, if time since the most recent ILI was so long, self-medication with suggestion would decrease compare to short period of time (OR

0.79, p-value < 0.025, 95%CI 0.642-0.970). Time since the most recent ILI is the predicting variable which provided significant p-value with two health seeking behaviors on logistic regression. Those HSBs are working through illness by do nothing and self-medication with suggestion. The summarizing table of influencing factor; exposed to mass media, marital status, having child age less than 18 in household, occupation, time since the most recent ILI are presented in table 24 below.

**Table 24 The summarizing table of influencing factor; exposed to mass media, marital status, having child age less than 18 in household, occupation, time since the most recent ILI.**

| Studies | Influencing factors and HSBs |
|---------|------------------------------|
| The present study (n=290) | Expose to mass media was more likely to see doctor compare to not expose (OR 2.89, p-value < 0.011, 95%CI 1.279-6.521). |
| Kanamori et al., 2006: Online (n= 2,850) | Avian influenza campaign improved avian influenza prevention. |

**Table 24 The summarizing table of influencing factor; exposed to mass media, marital status, having child age less than 18 in household, occupation, time since the most recent ILI (Continue).**

| Studies | Influencing factors and HSBs |
|---|---|
| The present study (n=290) | • Married were more likely to see doctor than single (OR 1.86, p-value < 0.042, 95%CI 1.022-3.373).<br>• Dentists were more likely to rest at home than doctor (OR 8.50, p-value < 0.014, 95%CI 1.549-46.611).<br>• Long period of time since the most recent ILI was more likely to do nothing compare to short period of time (OR 1.34, p-value < 0.026, 95%CI 1.035-1.723).<br>• Long time since the most recent ILI was less likely to do self-medication with suggestion compare to short period of time (OR 0.79, p-value < 0.025, 95%CI 0.642-0.970). |
| August & Sorkin, 2010 (n=1477) | Married men probably receive the most social control because their wives are the most common source of social control for this group than unmarried. Married patients' receipt of more frequent attempts and greater opportunities for network members to influence their health behaviors. |
| Simmerman et al., 2006 (n=1853) | Influenza disease burden varies from year to year that may cause more severe disease than the preceding year. |

Multicollinearity in the logistic regression solution is detected by examining the standard errors for the b coefficients. Standard errors larger than 2.0 are often considered to indicate multicollinearity among independent variables (except the

constant) (Texas university, ND: online). Multicollinearity is not a problem in this study due to there is none of data which showed standard error more than one. Although nineteen independent variables were test for association, only nine of them provided significant p-value for health seeking behavior. This may due to the sample of this study are doctors, dentists, and nurses who have got high education. Thus    this study did not find the significant different in some influencing variables such as annual checkup, self-efficacy etc.    Some influencing factors which associated with health seeking behavior but not provided statistical significant after employing logistic regression were age, income, annual checkup, self-efficacy, workplace, hospital, and embarrassment were not influence to any health seeking behaviors. For income, this may due to all healthcare providers have got their civil servant medical benefit scheme. Annual checkup and self-efficacy did not influence to any health seeking behavior may due to they were all healthcare providers. Workings in different hospitals or work place were not influence to health seeking behavior due to Angthong is a small city and the geographic areas are almost the same in each district and the condition of all patients in this province were similar thus expose to patients in different work place  was not effect  to any health seeking behaviors. Due to influenza-like illness is not sensitive health problem as psychiatric problem thus they did not feel embarrassment.

# CHAPTER VI

# CONCLUSION AND RECCOMMENDATIONS

This research was a cross-sectional study aimed to identify influencing factors and health seeking behaviors in influenza-like illness among healthcare providers in Angthong and determine relationships between potentially influencing factors and health seeking behaviors.The study was conducted in Angthong hospital and six district hospitals in Angthong during February 26th, 2013 to March 28th, 2013.The 302 healthcare providers in 7 hospitals in Angthong province were selected by using simple random sampling and questionnaires were retrieved 290 sets thus here were 3.98% of incomplete retrieving questionnaires.

## 6.1 Conclusion

The main goal of this study was to identify and evaluate the potentially influencing factors associated with health seeking behaviors. Factors for which p<0.15 in bivariate analysis, and which were included in first-step logistic regression models, were as follows.

| Health seeking behavior | Influencing factors |
|---|---|
| • **Inappropriate behavior** | |
| **Working through illness by do nothing** | Male, using PPE,exposed to mass media, perception score, knowing how to prevent seasonal influenza, doctor, more awareness about influenza transmission to patient, time since the most recent ILI. |
| **Self-medication without ILI, suggestion** | Knowing reasons for staying at home when get knowing how to prevent seasonal influenza, agree with vaccination is a part of responsibility. |
| • **Appropriate behavior** | |
| **Self-medication with suggestion** | Age, marital status, having child, using PPE, perception score, having influenza vaccination every year , having influenza vaccination in |

|  |  |
|---|---|
|  | 2012, underlying disease, agree with vaccination is a part of responsibility, and time since the most recent ILI |
| **See doctor** | Age, male, marital status (married, separated; ref= single, having child, perception score, having influenza vaccination every year, having influenza vaccination2012, exposed to mass media, knowing the reason for staying at home when got ILI, knowing cause of ILI, occupation, more awareness about influenza transmission to patient, and agree with vaccination is a part of responsibility. |
| **Rest at home** | Having child, workplace, knowing how to prevent seasonal influenza, knowing the recommended group to get influenza vaccination, occupation(dentist; ref= doctor, nurse; ref= doctor), and more awareness about influenza transmission to patient |

Factors for which p <0.15 in first-step logistic models, and which were included in second-step (final) models. Even though nineteen independent variables were test for association and only nine of them provided significant p-values (p<0.05), as shown below.

**Table 25 Inappropriate health seeking behavior; Working through illness by**

**do nothing**

| Influencing factors | Direction |
|---|---|
| Male | **Positive**<br>Male were more likely to work through illness by do nothing than female. |
| Perceived susceptibility (using PPE) | **Negative**<br>More perception of susceptibility (high rate of using PPE) was less likely to work through illness by do nothing than low perception. |
| More awareness about influenza transmission to patient | **Negative**<br>Aware about transmission was less likely towork through illness by do nothing than not aware. |
| Time since the most recent ILI | **Positive**<br>Long time since the most recent ILI was more likely to work through illness by do nothing than short time. |

**Table 26Inappropriatehealth seeking behavior; Self-medication without suggestion**

| Influencing factors | Direction |
|---|---|
| Knowing reason for staying at home when get ILI | **Negative**<br>High score of knowing reason for staying at home was less likely to do self-medication without suggestion than low score. |

**Table 27 Appropriatehealth seeking behavior; Self-medication with suggestion**

| Influencing factors | Direction |
|---|---|
| Using PPE | **Positive**<br>More perception of susceptibility (high rate of using PPE) was more likely to do self-medication with suggestion than low perception. |
| Perception score | **Negative**<br>High perception score was less likely to do self-medication with suggestion than low score. |
| Time since the most recent ILI | **Negative**<br>Long time since the most recent ILI was less likely to do self-medication with suggestion than short time. |

**Table 28 Appropriate health seeking behavior; See doctor**

| Influencing factors | Direction |
|---|---|
| Male | **Negative**<br>Male were less likely to see doctor than female. |
| Married (ref=single) | **Positive**<br>Married was more likely to see doctor than single. |
| Perception score | **Positive**<br>High perception score was more likely to see doctor than low score. |
| Exposed to mass media | **Positive**<br>Exposed to mass media was more likely to see doctor than unexposed. |
| Knowing cause of ILI | **Negative**<br>High score of knowing cause of ILI was less likely to see doctor than low score. |

**Table 29 Appropriatehealth seeking behavior; Rest at home**

| Influencing factors | Direction |
|---|---|
| Dentist (ref= doctor) | **Positive**<br>Dentist was more likely to rest at home than doctor. |
| Knowing how to prevent seasonal influenza | **Positive**<br>High score of knowing how to prevent seasonal influenza was more likely to rest at home than low score. |

## 6.2 Recommendation

### For healthcare providers

- According to research finding, Perceived susceptibility (using PPE) was influenced factors for two health seeking behaviors (working through illness by do nothing and self-medication with suggestion). Thus empowerment to increase and maintain rate of using PPE will promote good health seeking behaviors of healthcare providers.Likewise, perception score were influenced factors for three health seeking behaviors (working through illness by do nothing, self-medication with suggestion, and see doctor).

- A substantial number of participants reported inappropriate health seeking behaviors (doing nothing or self-medication without suggestion). It is important to reduce the prevalence of such inappropriate behaviors in health care providers. If they working through illness by do nothing when they get ILI, they may risk transmitting influenza virus to their patients. Likewise, self-medication without suggestion may increase risk of developing severe conditions.Encouragement healthcare providers to avoid these inappropriate health seeking behaviors will be benefit for their patients and their health.

### For healthcare services

- Billboard (mass media) mayaneffective way for hospital to promote health campaignsto healthcare providers.

- The rate of vaccination from this study was 67.9% in 2012. The increasing and maintenance rate of vaccination should be implemented.

**For Further study**

- There was a large difference between numbers of males and females in this study. If number of male subjects were increase, more reliable results might be obtained. Also as the occupation, doctor and dentist, there were a few numbers of doctors and dentists to compare health seeking behaviors with nurses increasing study sites in order to increase the number of doctors and dentists should be considered.

- Income is a potential influencing factor but in this study found that it was not significant association due to they had got their civil servant medical benefit scheme. Income was influencing factor for other groups of people but was not for healthcare providers. Further study for other groups of people should create indirect question forgetting the information of income due to it is a sensitive issue. The indirect question may imply to their real income.

- The further study may conduct in not only doctors, dentists, and nurses but also all healthcare providers for generalizable data.

- Although nineteen independent variables were test for association and only nine of them provided significant p-value on logistic regression. This indicates that present understanding of factors related to health-seeking behaviors remains limited. Further study should be conducted to increase this understanding.

- This cross sectional study may get the information bias from recall bias due to question for previous illness. In order to reduce recall bias, the confirmatory by using medical records should be done. But ILI was an illness which the most patients were not visit doctors due to it recovered itself. Thus most of ILI was not recorded into medical records.

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**APPENDICES**

# Appendix A

# Questionnaires

Screening participants form

Please check X in the column for your answers

|  | Yes | No |
|---|---|---|
| 1.      Are you a physician, dentist, or nurse of the provincial or district hospital in Angthong? |  |  |
| 2.      Do you start your career at least 6 months? |  |  |
| 3.      Do you have to contact with the patients when you are on duty? |  |  |
| 4.      Did you graduate at least 4 years of your graduation? |  |  |
| 5.      Are you willing to answer the questionnaires? |  |  |
| 6.      Do you on the period of taking leave for learning or training? |  |  |

ID ☐☐☐

**Questionnaires**

**Topic: Health seeking behavior in influenza-like illness among healthcare providers at Angthong.**

Instruction: Please check ☒ in the box as appropriate.

**Part I: Demographic data, modifying factors, cue to action**

1.    How old are you now? (if more than or equal to 6 months added up to 1 year)

..................... years old.

2.    Gender                    ☐ Male          ☐ Female

3.    Marital status

☐ Married            ☐ Separated

☐ Divorced          ☐ Single

☐ Widowed          ☐ Other (specify) _____

4.    Have you ever had an illness that included fever and cough in the same time in the last 3 years?

☐ Yes                    ☐ No(If "No" stop to answer and

thank you)

5. When was the most recent that you had got an illness that included fever and cough?

☐ 1-3 months ago

☐ >3-6 months ago

☐ >6-9 months ago

☐ >9-12 months ago

☐ >1-3 years ago

6. Are there any symptoms besides fever and cough? (may choose more than one)

- ☐ None
- ☐ Chill
- ☐ Sore throat
- ☐ Headache or body ache
- ☐ Nausea and/or vomiting
- ☐ Fatigue
- ☐ Other, please specify_____

7. Did you see your doctor when you got the symptoms as item 5 and/or item 6 and did you have the diagnosis?

- ☐ No
- ☐ Yes, the diagnosis was_____
- ☐ Yes, but didn't know the diagnosis

8. What do you do?

- ☐ Physician
- ☐ Dentist
- ☐ Nurse

9. Which hospital do you usually work?

- ☐ Angthong hospital
- ☐ Chaiyo
- ☐ Pamok
- ☐ Phothong
- ☐ Sawaengha
- ☐ Samko
- ☐ Wisetchaichan

10. How long do you work as this professional?

- ☐ 6month- 1 year
- ☐ >1- 5 years
- ☐ >5- 10 years
- ☐ >10-15 years
- ☐ >15-20 years
- ☐ >20 years

11. Where is your work place? (The places where you are usually work not for part time).

☐ IPD ☐ OPD or ER

☐ OR ☐ ICU

☐ Dental room ☐ other (specify) _____

12. How much your income do you have per month?

☐ 10000-15000 Baht ☐ 15001-20000 Baht

☐ 20001-25000 Baht ☐ 25001-30000 Baht

☐ ≥ 30000 Baht

13. How many children age less than 18 years in your household?

☐ No ☐ Yes (how many)_____

14. Do you have any underlying disease?

☐ No ☐ Yes (specify)_____

15. How do you feel when you get some treatments from some health care services for your illness?

☐ Embarrassment ☐ Feel free

☐ Worry ☐ Other (specify)_____

16. How often do you do or use of any PPE when you are on duty?

| | Always | Sometimes | Hardly | Never |
|---|---|---|---|---|
| Gloves | | | | |
| Mask | | | | |
| Gown | | | | |
| Hand washing | | | | |

17. Do you have annual checkup every year?

☐ No, please give reason____

☐ Yes, I do some years, please give reason____

☐ Yes, I do every year, please give reason____

18. How do you know about influenza vaccination campaign? (may choose more than one)

☐ None of media

☐ Newspaper

☐ Radio

☐ Television

☐ Billboard

☐ Brochure

19. How much do you *believe* you can do appropriate health seeking behaviors when you get ILI? (Strecher et al., 1986).

☐ I cannot do

☐ I can do only 25%

☐ I can do 50%

☐ I can do 75%

☐ I can do 100%

20. Do you have got influenza vaccination at least once a year as recommendation?

☐ Yes ☐ No

21. For the year 2012, do you already have got influenza vaccination?

☐ Yes ☐ No

22. When you feel you get flu, do you aware of preventing transmission to your patient?

- ☐ It does not matter. It's just flu.
- ☐ It's myself. It does not relate to my patient.
- ☐ I believe, I am healthy. Even though I got flu, I can work as usual.
- ☐ I'm aware more about influenza transmission to my patient. Because it may lead my patientsuffer than usual.

23. I Think influenza vaccination is a part of my responsibility to my patients by updating vaccination every year. (Sealea, Leask, &MacIntyre, 2011)

- ☐ I Agree
- ☐ Disagree
- ☐ Unsure

**Part II: Knowledge of influenza-like illness** (Draw some parts from University of Alberta, ND: Online)

1. What is the most important reason of staying at home and bed rest necessary for HCPs? (choose only one)

- ☐ To prevent transmission and protect your patient
- ☐ To get well soon
- ☐ To relax
- ☐ To use my sick leave

2. How do you think seasonal influenza can be prevented?(may choose more than one)

- ☐ Hand washing, cover mouth when coughing or sneezing, vaccination
- ☐ Using PPE i.e. mask, gown, and gloves
- ☐ Take antibiotic to prevent infection
- ☐ Nothing can prevent seasonal influenza
- ☐ Rest at home when get flu

3.  How seasonal influenza is spread? (may choose more than one)

☐ Close contacts, coughs, and sneeze from an infected person

☐ Drinking from a same glass

☐ Blood transfusion

☐ Touching doorknobs previously handled by an infected person

4.  Who are the recommended group to get influenza vaccination? (may choose more than one)

☐ Elderly age ≥ 65 years old

☐ Healthcare providers

☐ Children age 6-23 months

☐ People with fever at the time of vaccination

5.  What are the possible causes of influenza-like illness (fever and cough)? (may choose more than one)

☐ Influenza infection

☐ Allergic rhinitis

☐ Pneumonia

☐ Dengue hemorrhagic fever

**Part III: Perception cue to action, and self-efficacy (**Draw some parts fromDivision of cancer control & population science, ND: online)

| Perception | level of perception | | | | |
|---|---|---|---|---|---|
| | **Strongly agree** | **Agree** | **Neutral** | **Disagree** | **Strongly disagree** |
| **Susceptibility** | | | | | |
| 1.1 Using PPE can protect me from influenza | | | | | |
| 1.2 Influenza is not minor aliment for me | | | | | |
| 1.3 My financial security would be endangered if I and my family got influenza infection | | | | | |
| 1.4 I've got a risk of influenza infecting since I'm expose to patients | | | | | |
| **Severity** | | | | | |
| 2.1 I perceived ILI is an illness and may transmits the pathogen to others | | | | | |
| 2.2 Influenza-like illness make me absent from work | | | | | |
| **Benefit** | | | | | |
| 3.1 Ibelievemedical checkup once a year lead me know my health status. | | | | | |
| 3.2 I believe rest, food, keep warming will let me get well from flu. | | | | | |
| **Barriers** | | | | | |
| 4.1 I believe influenza vaccination prevent me from infection. | | | | | |
| **Cue to action** | | | | | |
| 5.1 Health campaign i.e. hand washing, vaccination influenced  you to do so | | | | | |
| **Self-efficacy** | | | | | |
| 6.1 I believe I will do good health seeking behavior when I get ILI | | | | | |

**Part IV: Health seeking behavior**

1.  What would you do when you get influenza-like illness?(may choose more than one)

☐ Nothing can do just remain your routine life(answer this please go to item2 then skip to item 4)

☐ Self-medicationwithout expert's prescription(answer this go to item 3)

☐ Self-medicationwith expert's prescription(answer this skip to item4)

☐ See doctor(answer this skip to item4)

☐ Rest at home (answer this skip to item4)

2.  Reason for do nothing (may choose more than one)

☐ I believe I'm healthy

☐ Influenza-like illness is a minor aliment

☐ Influenza-like illness is absolutely not transmission

☐ It does not matter if I work through my illness

☐ Other (specify)......................

3.  Reason for self-medication from drug store without suggestion from doctors or pharmacists was..... (may choose more than one)

☐ Flu, I know what medicine I should take

☐ I don't want to see doctors because of complicated process

☐ I'm a doctor/dentist, I can treat myself

☐ I'm a nurse, I can treat myself

4. Where would you seek for treatment?(may choose more than one)

☐ Government health services

☐ Private health services

☐ Drug store because I'm a doctor

☐ Drug storewith expert's prescription

☐ Drug store without expert's prescription

5. How long would you start to seek for treatment after you feel sick?

      _____ days(if answer within 3 days go to item 6and stop)

(if answer more than 3 days skip to item 7)


6. Reason for seeking treatment within 0-3 days after get ILI was (may choose more than one)

      ☐ Prevent transmission influenza to others

      ☐ Concern of complication

      ☐ Want to get well soon

      ☐ Suffer from its symptoms


7. Reason for seeking treatment more than 3 days after get ILI was (may choose more than one)

      ☐ Wait and see before seeking treatment

      ☐ It does not matter, flu is minor ailment.

      ☐ No time

      ☐ Flu can recover without treatment.

**แบบฟอร์มการคัดกรองผู้มีส่วนร่วมในการวิจัย**

กรุณาทำเครื่องหมาย  X  หน้าคำตอบที่ท่านต้องการ

| | ใช่ | ไม่ใช่ |
|---|---|---|
| 1. ท่านทำงานเป็นแพทย์ ทันตแพทย์ หรือพยาบาลในโรงพยาบาลของรัฐในจังหวัดอ่างทอง | | |
| 2. ท่านเริ่มทำงานในอาชีพนี้เป็นเวลา 6 เดือนขึ้นไป | | |
| 3. ท่านทำงานอยู่ในหน่วยงานที่สัมผัสกับผู้ป่วย เช่น หอผู้ป่วย ตึกผู้ป่วยนอก เป็นต้น | | |
| 4. ท่านสำเร็จการศึกษาในระบบการศึกษาในสาขาวิชาชีพของท่าน อย่างน้อย 4 ปี | | |
| 5. ท่านเต็มใจตอบแบบสอบถาม | | |
| 6. ขณะนี้ท่านไม่ได้ลาศึกษาต่อ หรือลาอบรม | | |

ID ☐☐☐

**แบบสอบถาม**

**เรื่องพฤติกรรมแสวงหาการดูแลสุขภาพต่อกลุ่มอาการคล้ายไข้หวัดใหญ่ของบุคลากรทางการแพทย์จังหวัด**

**อ่างทอง**

คำอธิบาย กรุณาทำเครื่องหมาย ☒ หน้าคำตอบที่ต้องการและกรุณาตอบคำถามให้ครบทุกข้อ

**ส่วนที่1**ข้อมูลทั่วไปปัจจัยร่วม สิ่งชักนำให้ปฏิบัติ

1 อายุ(หากเศษเดือน มากกว่า หรือ เท่ากับ 6 เดือน ให้ปัดเป็น 1 ปี) _____ ปี

2 เพศ ☐ ชาย ☐ หญิง

3 สถานภาพ

☐ สมรส ☐ โสด

☐ หย่า ☐ แยก

☐ หม้าย ☐ อื่นๆ (โปรดระบุ)_____

4 ในช่วง 3 ปีที่ผ่านมา คุณเคยมีอาการไข้และไอในเวลาเดียวกัน หรือไม่

☐ เคยมี ☐ ไม่เคยมี (หยุดตอบคำถาม ขอบคุณ)

5คุณเคยมีอาการดังข้อ4 เมื่อใด

☐ 1-3เดือนก่อน

☐ >3-6เดือนก่อน

☐ >6-9เดือนก่อน

☐ >9-12เดือนก่อน

☐ >1-3 ปีก่อน

6คุณมีอาการอื่นๆนอกเหนือจากอาการในข้อ 4 หรือไม่ (ตอบได้มากกว่า 1 ข้อ)

☐ ไม่มี

☐ หนาวสั่น

☐ เจ็บคอ

☐ ปวดศีรษะ และ/ หรือ ปวดเมื่อยตามตัว

☐ คลื่นไส้ และ / หรือ อาเจียน

☐ อ่อนเพลีย

☐ อาการอื่นๆ (โปรดระบุ)_____

7 หลังจากมีอาการในข้อ5และหรือ ข้อ6 คุณได้ไปพบแพทย์เพื่อรับการรักษา และทราบผลการวินิจฉัยหรือไม่ว่า

ป่วยเป็นอะไร

☐ ไม่ได้พบแพทย์

☐ ไปพบแพทย์ ผลการวินิจฉัยเป็น_____

☐ ไปพบแพทย์แต่ไม่ทราบผลการวินิจฉัย

8 คุณมีอาชีพ

☐ แพทย์

☐ ทันตแพทย์

☐ พยาบาล

9โรงพยาบาลที่คุณทำงาน**อยู่ประจำคือ**

☐ โรงพยาบาลอ่างทอง ☐โรงพยาบาลแสวงหา

☐ โรงพยาบาลไชโย ☐โรงพยาบาลสามโก้

☐ โรงพยาบาลป่าโมก ☐โรงพยาบาลวิเศษชัยชาญ

☐ โรงพยาบาลโพธิ์ทอง

10คุณทำงานในวิชาชีพนี้เป็นระยะเวลาเท่าใด

☐ 6 เดือน ถึง 1ปี      ☐มากกว่า 10 ถึง 15 ปี

☐ มากกว่า 1 ถึง 5 ปี      ☐มากกว่า 15 ถึง 20 ปี

☐ มากกว่า 5 ถึง 10 ปี      ☐มากกว่า 20 ปี ขึ้นไป

11สถานที่ที่คุณทำงานประจำคือ

☐ แผนกผู้ป่วยใน      ☐แผนกผู้ป่วยนอก หรือ ฉุกเฉิน

☐ ห้องผ่าตัด      ☐ไอ ซี ยู

☐ ห้องทันตกรรม      ☐ อื่นๆ (โปรดระบุ)____

12คุณมีรายได้ต่อเดือนเท่าใด

☐ 10000-15000 บาท      ☐15001-20000 บาท

☐ 20001-25000 บาท      ☐25001-30000 บาท

☐ $\geq$ 30000 บาท

13 ภายในบ้านที่คุณพักอาศัยมีเด็กอายุน้อยกว่าหรือเท่ากับ 18ปี อาศัยอยู่ด้วยหรือไม่ ถ้ามี มีกี่คน

☐ ไม่มี      ☐ มี_____คน

14 คุณมีโรคประจำตัวหรือไม่

☐ ไม่มี      ☐ มี (โปรดระบุ)_____

15 คุณรู้สึกอย่างไรเมื่อเจ็บป่วยและต้องไปรับการรักษาในสถานพยาบาลใดๆ

☐ อาย      ☐ เฉยๆ

☐ วิตกกังวล      ☐ อื่นๆ (โปรดระบุ)_____

16 ขณะปฏิบัติงาน คุณปฏิบัติ หรือใช้อุปกรณ์ป้องกันการติดเชื้อ เหล่านี้ บ่อยเพียงใด (กรุณาทำเครื่องหมายในช่อง
ที่ต้องการตอบ)

| | ปฏิบัติหรือใช้เป็นประจำ | ปฏิบัติหรือใช้บางครั้ง | ปฏิบัติหรือใช้นานๆครั้ง | ไม่เคยปฏิบัติหรือไม่ใช้ |
|---|---|---|---|---|
| ถุงมือ | | | | |
| หน้ากากอนามัย | | | | |
| เสื้อกราวน์ | | | | |
| การล้างมือ | | | | |

17 คุณตรวจร่างกายเป็นประจำทุกปีหรือไม่

☐ ไม่ตรวจโปรดระบุเหตุผล_____

☐ ตรวจบ้างบางปีโปรดระบุเหตุผล_____

☐ ตรวจเป็นประจำทุกปี โปรดระบุเหตุผล_____

18 คุณรับทราบโปรแกรมส่งเสริมสุขภาพเกี่ยวกับไข้หวัดใหญ่จากสื่อประเภทใด (ตอบได้มากกว่า 1 ข้อ)

☐ ไม่ได้รับรู้จากสื่อ

☐ หนังสือพิมพ์

☐ วิทยุ

☐ โทรทัศน์

☐ ป้ายประกาศ

☐ แผ่นพับ

19 คุณมั่นใจว่าจะมีพฤติกรรมแสวงหาสุขภาพที่เหมาะสมเมื่อมีอาการคล้ายไข้หวัดใหญ่ ได้มากน้อยเพียงใด

☐ ทำไม่ได้

ไม่ค่อยมั่น ☐ ทำได้                    25%

☐ มั่นใจปานกลาง 50%

☐ มั่นใจ 75%

☐ มั่นใจ 100%

20 คุณได้รับการฉีดวัคซีนป้องกันไข้หวัดใหญ่อย่างน้อยปีละครั้งหรือไม่

☐ ไม่ได้ฉีด

☐ ฉีด

21 ในปีที่ผ่านมานี้ (2555) คุณได้รับการฉีดวัคซีนป้องกันไข้หวัดใหญ่หรือไม่

☐ ไม่ได้ฉีด

☐ ฉีด

22 เมื่อคุณรู้สึกว่าเป็นไข้หวัด คุณมักจะ.........

☐ ฉันไม่เป็นไร เพราะเป็นแค่ไข้หวัด

☐ ตัวฉันที่เป็นหวัด ไม่เกี่ยวกับผู้ป่วย

☐ ฉันเชื่อว่าตนเองแข็งแรงถึงแม้จะเป็นหวัดก็สามารถทำงานได้ตามปกติ

☐ ฉันระมัดระวังเสมอเรื่องการแพร่เชื้อไข้หวัดไปสู่ผู้ป่วย เพราะอาจทำให้อาการป่วยของผู้ป่วย

แย่ลงจากการติดเชื้อไข้หวัด

23 คุณเห็นด้วยกับการฉีดวัคซีนป้องกันไข้หวัดใหญ่ทุกปีและเห็นว่าเป็นความรับผิดชอบของคุณที่มีต่อผู้ป่วย

หรือไม่

☐ เห็นด้วย

☐ ไม่เห็นด้วย

☐ ไม่แน่ใจ

**ส่วนที่2 ความรู้เกี่ยวกับกลุ่มอาการคล้ายไข้หวัดใหญ่**

1 เหตุผลสำคัญที่สุดของการหยุดอยู่กับบ้านเมื่อเป็นไข้หวัดใหญ่คืออะไร

☐ เพื่อป้องกันการแพร่กระจายเชื้อสู่ผู้ป่วย

☐ เพื่อหายจากไข้หวัดใหญ่เร็วๆ

☐ เพื่อผ่อนคลาย

☐ เพื่อใช้สิทธิการป่วยลา

2 โรคไข้หวัดใหญ่สามารถป้องกันได้โดยวิธีใด (ตอบได้มากกว่า 1 ข้อ)

☐ ล้างมือ ปิดปากเมื่อไอ จาม และ ฉีดวัคซีน

☐ การใช้อุปกรณ์ป้องกันการติดเชื้อ เช่น ถุงมือ หน้ากากอนามัย เสื้อกราวน์

☐ รับประทานยาปฏิชีวนะเพื่อป้องกันไข้หวัดใหญ่

☐ ไม่มีอะไรที่จะสามารถป้องกันไข้หวัดใหญ่ได้

☐ หยุดพักอยู่กับบ้านเมื่อเป็นไข้หวัดใหญ่

3 โรคไข้หวัดใหญ่แพร่กระจายเชื้อโดยวิธีใด (ตอบได้มากกว่า 1 ข้อ)

☐ สัมผัสใกล้ชิด จากการ ไอ จามของผู้ที่เป็นไข้หวัดใหญ่

☐ ดื่มน้ำแก้วเดียวกัน

☐ การบริจาคโลหิต

☐ การสัมผัสลูกบิดประตูต่อจากผู้ที่เป็นไข้หวัดใหญ่

4 กลุ่มบุคคลที่ทางรัฐบาลแนะนำให้ฉีดวัคซีนป้องกันไข้หวัดใหญ่คือ (ตอบได้มากกว่า 1 ข้อ)

☐ ผู้สูงอายุ ที่มีอายุตั้งแต่ 65 ปีขึ้นไป

☐ บุคลากรทางการแพทย์

☐ เด็กอายุตั้งแต่ 6 ถึง 23 เดือน

☐ ผู้ที่มีไข้ ณ วันที่จะฉีดวัคซีน

5 กลุ่มอาการคล้ายไข้หวัดใหญ่ (ไข้และไอ)เกิดจากสาเหตุใด(ตอบได้มากกว่า 1 ข้อ)

☐ การติดเชื้อไวรัสไข้หวัดใหญ่

☐ ปอดบวม

☐ ภูมิแพ้

☐ ไข้เลือดออก

**ส่วนที่3 การรับรู้ สิ่งชักนำให้ปฏิบัติ การรับรู้ความสามารถของตนเอง**

| การรับรู้ | ระดับการรับรู้ | | | | |
|---|---|---|---|---|---|
| | เห็นด้วยอย่างยิ่ง | เห็นด้วย | เฉยๆ | ไม่เห็นด้วย | ไม่เห็นด้วยอย่างยิ่ง |
| **การรับรู้โอกาสเสี่ยงของการเป็นโรค** | | | | | |
| 1.1 อุปกรณ์ป้องกันส่วนบุคคลช่วยป้องกันฉันจากไข้หวัดใหญ่ได้ | | | | | |
| 1.2 ไข้หวัดใหญ่ไม่ใช่โรคเล็กน้อยสำหรับฉัน | | | | | |
| 1.3 ความมั่นคงทางการเงินของครอบครัวอาจถูกกระทบได้หากฉันและคนในครอบครัวเป็นไข้หวัดใหญ่ | | | | | |
| 1.4 ฉันเสี่ยงต่อการติดไข้หวัดใหญ่เพราะฉันต้องใกล้ชิดกับผู้ป่วย | | | | | |
| **การรับรู้ความรุนแรงของโรค** | | | | | |
| 2.1 ฉันรู้ว่าไข้หวัดใหญ่เป็นโรคที่สามารถแพร่กระจายเชื้อสู่ผู้อื่นได้ | | | | | |
| 2.2 ไข้หวัดใหญ่ทำให้ฉันต้องหยุดงาน | | | | | |
| **การรับรู้ถึงประโยชน์ของการรักษาและป้องกันโรค** | | | | | |
| 3.1 ฉันเชื่อว่าการตรวจสุขภาพทำให้ทราบถึงสภาวะสุขภาพ | | | | | |
| 3.2 ฉันเชื่อว่าการพักผ่อน ทานอาหารให้เพียงพอ ดูแลร่างกายให้อบอุ่น ทำให้หายจากไข้หวัดใหญ่ได้ | | | | | |
| **การรับรู้ต่ออุปสรรค** | | | | | |
| 4.1 ฉันเชื่อว่าวัคซีนสามารถป้องกันฉันจากไข้หวัดใหญ่ได้ | | | | | |
| **สิ่งชักนำให้ปฏิบัติ** | | | | | |
| 5.1 สื่อที่ส่งเสริมสุขภาพเกี่ยวกับการป้องกันไข้หวัดใหญ่ช่วยให้ฉันปฏิบัติตัวได้ถูกต้อง | | | | | |
| **การรับรู้ความสามารถของตนเอง** | | | | | |
| 6.1 ฉันเชื่อว่าจะมีพฤติกรรมแสวงหาสุขภาพที่เหมาะสมเมื่อฉันมีอาการคล้ายไข้หวัดใหญ่ | | | | | |

**ส่วนที่ 4 พฤติกรรมการแสวงหาการดูแลสุขภาพ**

1คุณปฏิบัติตัวอย่างไรเมื่อรู้สึกว่ามีอาการคล้ายไข้หวัดใหญ่ (ตอบได้มากกว่า 1 ข้อ)

☐ ไม่ต้องทำอะไร ใช้ชีวิตตามปกติ**(หากตอบข้อนี้กรุณาไปข้อ 2และข้ามไปข้อ 4)**

☐ ซื้อยามารับประทานเอง โดยไม่มีใบสั่งยาจากแพทย์ หรือเภสัชกรแนะนำ**(หากตอบข้อนี้กรุณา**

**ข้ามไปข้อ3)**

☐ ซื้อยามารับประทานเอง โดยมีแพทย์ หรือ ผู้เชี่ยวชาญแนะนำ**(ตอบข้อนี้กรุณาข้ามไปข้อ 4)**

☐ พบแพทย์**(ตอบข้อนี้กรุณาข้ามไปข้อ 4)**

☐ นอนพักอยู่บ้าน**(ตอบข้อนี้กรุณาข้ามไปข้อ 4)**

2. เหตุผลของการไม่ทำอะไรเมื่อคุณรู้สึกมีอาการคล้ายไข้หวัด หรือใช้ชีวิตตามปกติคืออะไร (ตอบได้มากกว่า 1

ข้อ)

☐ ฉันเชื่อว่าฉันสุขภาพดีพอ

☐ อาการคล้ายไข้หวัดใหญ่เป็นเรื่องเล็กน้อย

☐ อาการคล้ายไข้หวัดใหญ่ไม่ใช่โรคติดต่อ

☐ ไม่เป็นไรหากฉันต้องไปทำงานเมื่อมีอาการคล้ายไข้หวัดใหญ่

☐ อื่นๆ (โปรดระบุ)......................

3. เหตุผลของการซื้อยาจากร้านขายยามารับประทานเอง โดยไม่ได้รับคำแนะนำจากแพทย์หรือเภสัชกรคือ(ตอบได้

มากกว่า 1 ข้อ)

เป็นแค่ไข้ห ☐ ฉันคิดว่าฉันรู้ว่าต้องทานยาอะไร

☐ ไม่อยากไปพบแพทย์ เพราะมีขั้นตอนยุ่งยาก

☐ ฉันสามารถรักษาตนเองได้ ฉันเป็นแพทย์/ ทันตแพทย์

☐ ฉันสามารถรักษาตนเองได้ ฉันเป็นพยาบาล

4 คุณจะไปรับการรักษาเมื่อมีอาการคล้ายไข้หวัดใหญ่ที่ไหน (ตอบได้มากกว่า 1 ข้อ)

☐ ถานพยาบาลของรัฐ

☐ สถานพยาบาลเอกชน

☐ ร้านขายยา เพราะฉันเป็นแพทย์

☐ ร้านขายยา เพราะฉันได้รับคำปรึกษาจากแพทย์ หรือผู้เชี่ยวชาญแล้ว

☐ ร้านขายยา โดยไม่มีใบสั่งยาจากแพทย์ หรือคำแนะนำจากผู้เชี่ยวชาญ

5 คุณจะเริ่มแสวงหาการรักษาเมื่อใดหากคุณรู้สึกว่ามีอาการคล้ายไข้หวัดใหญ่

_____ วัน (หากตอบภายใน 3 วันตอบข้อ 6 แล้วหยุด)

(หากตอบมากกว่า 3 วันขึ้นไป ข้ามไปตอบข้อ 7)

6 เหตุผลของการรีบแสวงหาการรักษา*ภายใน 3* วันเมื่อเริ่มมีอาการคล้ายไข้หวัดคือ (ตอบได้มากกว่า 1 ข้อ)

☐ ป้องกันการแพร่กระจายเชื้อให้ผู้ป่วยและคนอื่นๆ

☐ กลัวลุกลามเป็นมากขึ้นกว่าไข้หวัด

☐ อยากหายเร็วๆ

☐ มีความไม่สุขสบายจากอาการคล้ายไข้หวัด

7 เหตุผลของการเริ่มแสวงหาการรักษาของคุณเมื่อมีอาการคล้ายไข้หวัดมากกว่า3 วันขึ้นไปคือ (ตอบได้มากกว่า 1 ข้อ)

☐ รอดูอาการก่อนเพราะไข้หวัดไม่รักษาก็หายได้

☐ คิดว่าไม่เป็นไร ไข้หวัดเป็นเรื่องเล็ก

☐ ไม่มีเวลา

☐ อาการคล้ายไข้หวัดจะหายเอง

# Appendix B

# Study schedule

| No. | Research Activities | Time, Oct 2012-Sept2013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Oct | | | | Nov | | | | Dec | | | | Jan | | | | Feb | | | | Mar | | | | Apr | | | | May | Jun | Jul | Aug | Sept |
| | | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | | | | | |
| 1 | Writing a proposal, consulting advisor | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Submit the first draft | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Revise the first draft | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Proposal examination | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Revise proposal | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Ethical submission | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Pretest questionnaire | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Questionnaires distribution | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Data management & analysis | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Report writing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | Thesis examination | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | Revision | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | Submit final product | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# Appendix C

# Estimated budget

| Activities | Unit | Number | Unit cost | Total cost |
|---|---|---|---|---|
| • **Pretesting** | | | | |
| –Photocopy (questionnaire) | Number | 30 | 0.50x7p | 105 |
| –Transportation fee | Baht/day | 1 | 800 | 800 |
| –Souvenirs for participants | Baht | 30 | 5 | 150 |
| –Local person | Person | 1 | 300 | 300 |
| –Miscellaneous | | | 300 | 300 |
| | | | | 1,655 |
| • **Data collection** | | | | |
| –Photocopy (questionnaire) | Number | 380 | 0.50x7p | 1,330 |
| –Transportation fee | Baht/day | 7 | 800 | 5,600 |
| –Souvenirs for participants | Baht | 380 | 5 | 1,900 |
| –Local person | Person | 7 | 500 | 3,500 |
| –Accommodation | Day | 7 | 1000 | 7,000 |
| – Miscellaneous | | | 500 | 500 |
| | | | | 19,830 |
| • **Thesis document process** | | | | |
| –Thesis documentation | | | | 10,000 |
| | | | Grand total | 31,485 |

## Appendix D

## Type of data

| Variables | Measurement scale |
|---|---|
| **Independent variables** | |
| Age | Categorical |
| Gender | Categorical |
| Marital status | Categorical |
| Income | Categorical |
| Number of children age less than 18 years in household | Categorical |
| Using PPE | Ordinal: always, sometimes, hardly, never, and Categorical |
| Perceived severity of ILI | Categorical |
| Annual checkup | Categorical |
| Influenza vaccination | Categorical |
| Expose to mass media | Ordinal: newspaper, radio, television, billboard, brochure and Categorical |
| Self-efficacy | Categorical |
| Work place | Ordinal: IPD, OPD, ER, OR, ICU, Dental room |
| Hospital | Ordinal |
| Knowledge | Continuous |
| Occupation | Ordinal: doctor, dentist, nurse |
| Embarrassment | Categorical |
| Underlying disease | Categorical |
| Awareness of others | Categorical |
| Time since the most recent ILI | Categorical |
| **Dependent variables** | |
| Seeking treatment for illness | Dichotomous: Working through illness by do nothing Self-medication without physicians' or pharmacists' suggestion. Self-medication with physicians' or pharmacists' suggestion See doctor Stay at home and bed rest |
| Type of treatment renders | Ordinal: government health services, Private health services, drug store |
| Promptness of seeking treatment | Continuous: number of day(s) |
| Reason for do nothing | Ordinal |

# Appendix E

# Ethical approval letter

AF 02-12

**The Ethics Review Committee for Research Involving Human Research Subjects,
Health Science Group, Chulalongkorn University**
Institute Building 2, 4 Floor, Soi Chulalongkorn 62, Phyathai Rd., Bangkok 10330, Thailand,
Tel: 0-2218-8147  Fax: 0-2218-8147  E-mail: eccu@chula.ac.th

----------------------------------------------------------------

COA No. 038/2013

## Certificate of Approval

**Study Title  No.188.1/55**    :    HEALTH SEEKING BEHAVIORS IN INFLUENZA-LIKE ILLNESS
AMONG HEALTHCARE PROVIDERS IN ANGTHONG PROVINCE,
THAILAND

**Principal Investigator**    :    MS.BENJAMAPORN CHAIPUNG

**Place of Proposed Study/Institution :**    College of Public Health Sciences,
Chulalongkorn University

The Ethics Review Committee for Research Involving Human Research Subjects, Health
Science Group, Chulalongkorn University, Thailand, has approved constituted in accordance with
the International Conference on Harmonization – Good Clinical Practice (ICH-GCP) and/or Code
of Conduct in Animal Use of NRCT version 2000.

Signature: ..................................    Signature: ..................................
(Associate Professor Prida  Tasanapradit, M.D.)    (Assistant Professor Dr. Nuntaree  Chaichanawongsaroj)
Chairman    Secretary

Date of Approval    : 10  February 2013    Approval Expire date :  9  February 2014

**The approval documents including**

    1)  Research proposal
    2)  Patient/Participant Information Sheet
    3)  Researcher
    4)  Questionnaires

Protocol No. ...188 . 1 / 55...
Date of Approval... 10 FEB 2013
Approval Expire Date... - 9 FEB 2014

The approved investigator must comply with the following conditions:
    *1.  The research/project activities must end on the approval expired date of the Ethics Review Committee for
      Research Involving Human Research Subjects, Health Science Group, Chulalongkorn University (ECCU).
      In case the research/project is unable to complete within that date, the project extension can be applied one
      month prior to the ECCU approval expired date.*
    *2.  Strictly conduct the research/project activities as written in the proposal.*
    *3.  Using only the documents that bearing the ECCU's seal of approval with the subjects/volunteers (including
      subject information sheet, consent form, invitation letter for project/research participation (if available).*
    *4.  Report to the ECCU for any serious adverse events within 5 working days*
    *5.  Report to the ECCU for any change of the research/project activities prior to conduct the activities.*
    *6.  Final report (AF 03-12) and abstract is required for a one year (or less) research/project and report within
      30 days after the completion of the research/project. For thesis, abstract  is required and report within  30
      days after the completion of the research/project.*

# VITAE

| | |
|---|---|
| Name | : Benjamaporn Chaipung |
| Date of birth | : 28th March, 1968 |
| Place of birth | : Surin province, Thailand |
| Education | : Master degree of science (biotechnology) King Mongkut's University Technology Thonburi (1994-1997) |
| | : Bachelor degree of science (nurse and midwifery) Mahidol University (1986-1990) Second class honor |
| Work experience | : Medical Research Technologist (HIV Clinical Reasearch) Thailand MOPH-U.S. CDC Collaboration (TUC) 2007-Present |
| | : Medical Research Technologist (Perinatal) Thailand MOPH-U.S. CDC Collaboration (TUC) 2005-2007 |
| | : Research Nurse Thailand MOPH-U.S. CDC Collaboration (TUC) 2003-2005 |
| | : Registered Nurse Siriraj hospital 1990-2003 |