

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

Benjamaporn Chaipung^{1,2}, Robert Sedgwick Chapman^{1,*}

¹College of Public Health Sciences, Chulalongkorn University, Bangkok 10330, Thailand

² Thailand MOPH - U.S. CDC Collaboration, Nonthaburi 11000, Thailand

ABSTRACT: This cross-sectional study aimed to describe and determine relationships between influencing factors and health seeking behaviors (HSB) in influenza-like illness (ILI) among 290 doctors, dentists, and nurses in seven hospitals in Angthong during February to March 2013. Simple random sampling and structured questionnaire were used. Most of respondents were between 35 - 50 years old and 92.8% were female. They were nurses 84.8%, physicians 7.6%, and dentists 7.6%. Sixty-five (22.4%) had underlying disease and one hundred eleven (38.3%) had ILI during the past 3 months. Hand washing was the most common practice they used when they worked (97.6%) and always wearing gloves 74.5%. Annual checkup was performed 92.4%. Television was the most common mass media used (205, 70.7%). Forty two point five percent were more confident to take care themselves when got ILI. The prevalence of influenza vaccination in 2012 was 67.9%. They were aware more about influenza transmission to their patients (228, 78.6%) and 233 (80.3%) thought influenza vaccination were a part of their responsibility. One hundred sixty (55.2%) had basic knowledge regarding influenza infection. Inappropriate HSB and their influencing factors were concluded as follows; do nothing was significantly associated with male, aware of influenza transmission to patient, using PPE, and time since the most recent ILI. Male were more likely to do this HSB than female (OR= 10.09, *p-value*<0.001, 95%CI 3.122-32.612). Self-medication without suggestion; High score of knowledge regarding reason for staying at home was less likely to do this HSB than low score (OR= 0.86, *p-value*<0.015, 95%CI 0.764-0.971). Appropriate HSB and their significant influencing factors were concluded as follows; Self-medication with suggestion was significantly associated with using PPE, perception score, and time since the most recent ILI. High rate of using PPE (perceived susceptibility) was more likely to do this HSB than low rate (OR= 1.29, *p-value*<0.016, 95%CI 1.049-1.582). See doctor was associated with male, married (ref=single), knowledge regarding 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*<0.005, 95%CI 1.279-6.521). Likewise, rest at home was significantly associated with knowledge regarding 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).

Keywords: Health seeking behavior, Influenza-like illness, Healthcare providers

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 their family. These rights are for all human beings including healthcare providers

(HCPs) [1]. HCPs are expected to great take care of themselves better than general population [2]. Therefore, HCPs are often role models and they are expected to be healthy. But there are more evidences that shown risky health behaviors among HCPs such as low rate of vaccination of influenza, working through their illness. This could imply that better health knowledge does not mean better health status. Health care workers were not tended

* Correspondence to: Robert Sedgwick Chapman
E-mail: rschap0421@gmail.com

Cite this article as:

Chaipung B, Chapman RS. Health seeking behaviors in influenza-like illness among healthcare providers in Angthong province, Thailand. *J Health Res.* 2014; 28(2): 127-34.

to participate more in worksite health promotion programs comparing to other working populations [3]. Health seeking behaviors (HSB) defined as any activity that responded by individuals who perceive themselves to be ill for finding the proper remedy. Nevertheless, a study in Australia showed that doctors were reluctant to find out for health care through usual mechanisms and found it difficult to adopt the role of patient [2]. In recent years, pandemic influenza has been a global public health issue. During the severe acute respiratory syndrome (SARS) epidemic, healthcare workers were the most affected group and attack rates were more than 50% [4]. The Thai study revealed that influenza A infection rate was more than 10% among ICU 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 US\$ 2710 (8130 baht) per outbreak and US\$ 256(7680 baht) for annual vaccination of all 77 ICU healthcare workers [5]. Furthermore, the economic losses caused by influenza outbreak were US\$ 23.4-62.9 million (702-1887 million baht) [6]. Although vaccination can reduce influenza infection, influenza vaccination coverage among health care workers in Thailand remains low. The Influenza vaccination rate of healthcare workers was 58.15% [7]. They believe that without underlying disease or co-morbidity, the vaccine was unnecessary (43.2%) and fear of serious adverse effects (31.8%) [8]. The highest peak of H1N1 infection was in the Central region of Thailand [9]. Angthong is one of the central provinces of Thailand. There is not much available information regarding vaccination rate among HCPs. The information may not reflect to the real situation of health status because some of them work through their illness. From this information, the tendency of HCPs' health status may not be as good as expectation. In addition, there is not much available information of HSB among HCPs when they get ILI.

MATERIALS AND METHODS

Study design

Cross sectional study designs were used to describe the factors influencing HSB toward ILI among HCPs during February 21, 2013- March 28, 2013.

Study population and sample size

The reference populations were HCPs who experienced ILI during past 3 years before study

initiation including doctors, dentists, and nurses and currently working in 7 hospitals in Angthong, 724 HCPs. Total number of population were randomly selected in each hospital for 302 sample. And HCPs had been started to work at least 6 months before study initiation.

Measurement tool

Structured questionnaires were created by using the previous studies as a guideline and added some by the researcher and used as measurement tool. The pretesting was performed for 30 HCPs at Singhburi hospital. The validity by consulting three experts was 0.94 and the reliability of Cronbach's alpha of perception part was 0.779.

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). The level of knowledge was divided into 2 levels modified from Bloom's criteria as shown below.

Level of knowledge;

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

Data collection

Data collection was performed by using structured, self-administered questionnaires at their work place. The researcher and three research assistants were trained a day before data collection and stayed nearby for answering some questions if needed. Re-checked questionnaires by researchers were done for completeness before retrieving. The questionnaires, 290 (90.62%), were retrieved back and used for analyzing.

Data analysis

The data analysis was performed in each part. 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: descriptive portion; the demographic of participants were reported as frequency and percentage. In addition, analytic portion; most dependent variables are categorical in nature. Bivariate analysis was implemented to perform preliminary analyses in order to assess 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. Then multivariable analysis, logistic regression, was implemented to describe how

Table 1 Socio-demographic and modifying factors of respondents

Socio-demographic characteristics (n=290)	Number	%
Age group (years)		
20-35	101	34.8
>35-50	160	55.2
>50	29	10
\bar{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)		
10,000 – 20,000	42	14.5
20,001 – 25,000	64	22.1
25,001 – 30,000	55	19.0
> 30,000	129	44.5
Having children age less than 18 in household	158	54.5
Modifying factors (n = 290)	Number	%
Occupation		
Doctor	7.6	22
Dentist	7.6	22
Nurse	246	84.8
Hospital		
Anghong	152	52.4
Pamok	22	7.6
Chaiya	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

dependent variables were associated a set of influencing factors. The results were reported as individual odds ratio (OR) with 95% confidence interval (CI). A *p-value* < 0.05 was considered to be statistically significant.

Ethical consideration

The proposal was submitted and received an approval from Ethics Review Committee for Research Involving Human Research Subjects of Chulalongkorn University on February 10, 2013. Their names were not recorded for the

confidentiality. The questionnaires were assigned numerical code. All the data was kept confidentially except for the further use of researcher, provincial health offices. Only group data was analyzed.

RESULTS

Socio-demographics

All 290 questionnaires were retrieved. The large age group were in 35 to 50 years old (160, 55.2%), 7.2% were male and 92.8% were female.

Table 2 Perception toward influenza-like illness of respondents

Perception N= 290	Strongly agree N (%)	Agree N (%)	Neutral N (%)	Disagree N (%)	Strongly disagree N (%)	\bar{X}
Susceptibility						
- Using PPE can protect me from influenza	124 (42.8)	151 (52.1)	9 (3.1)	5 (1.7)	1 (0.3)	4.35
- Influenza is not minor ailment	62 (21.4)	178 (61.4)	35 (12.1)	14 (4.8)	1 (0.3)	3.99
- My financial security would be endangered	42 (14.5)	124 (42.8)	83 (28.6)	33 (11.4)	8 (2.8)	3.55
- 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
Severity						
- 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
- 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
Benefit						
- 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
- 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
Barriers						
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
Cue to action						
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
Self-efficacy						
I believe I will do good HSB when I get ILI	81 (27.9)	186 (64.1)	18 (6.2)	5 (1.7)	0	4.18

The majority was married (151, 52.1%). The average monthly income was more than 1,000 US\$ per month and majority had children age less than 18 in household (158, 54.5%). The socio-demographic and modifying factors are shown in Table 1.

General health behaviors

The duration of work was more than 20 years (97, 33.4%). Annual checkup every year were performed (268, 92.4%) and 131 (45.2%) were more confident to do appropriate HSBs when they got ILI. More than half (197, 67.9%) had got influenza vaccination for 2012. They always used glove (216, 74.5%), mask (197, 67.9%), wash their hands when they worked (283, 97.65%), and gown (64, 22.1%). Television was the most common mass media used to get influenza information (205, 70.7%). The respondents' perception is shown in Table 2.

Modifying factors

Most were nurses (246, 84.8%), physicians 7.6%, and dentists 7.6%. The largest group was working at Anghong hospital (152, 52.4%) and 150 (51.7%) of them worked in inpatient

department. Sixty-five (22.4%) had underlying disease. Two hundred fourteen (73.8%) felt neutral when they got treatment from the health care services. Two hundred twenty eight (78.6%) were aware of preventing transmission influenza virus to their patient and 233 (80.3%) thought influenza vaccination was a part of their responsibility. Less than half had recent ILI within 1-3 months (111, 38.3%).

Knowledge

Knowledge about transmission of influenza, prevention of influenza virus, symptoms, and vaccination were determined by using questionnaires. One hundred sixty (55.2%) had basic knowledge of ILI (score of knowledge more than 60%). HCPs had knowledge regarding prevent flu by hand washing, cover mouth when coughing, and vaccination (285, 40.3%). In addition, the most replied the close contact, coughs, and sneeze from an infected person were the way of spreading influenza (289, 47.9%). One hundred fifty two (52.4%) could not answer the recommend group for vaccination and only 115 (39.7%) could answer correctly.

Table 3 Health seeking behaviors of respondents

Health seeking behaviors (n =290)	Number	%
Inappropriate health seeking behaviors		
Do nothing	30	10.3
Self-medication without suggestion	13	4.5
Appropriate health seeking behaviors		
Self-medication with suggestion	46	15.9
See doctor	212	73.1
Rest at home	63	21.

Table 4 Multiple logistic regression model for the health seeking behaviors with influencing factors

Variables	B	S.E.	Odds ratio	p-value	95% CI	
					Lower	Upper
HSB; do nothing						
Male	2.312	0.598	10.091	<0.001	3.122	32.612
Aware of influenza transmission to patient	-1.398	0.451	0.247	0.002	0.102	0.598
Using PPE	-0.305	0.128	0.737	0.018	0.574	0.948
Perception score	-0.094	0.051	0.91	0.064	0.824	1.005
Time since the most recent ILI	0.289	0.130	1.335	0.026	1.035	1.723
Constant	4.920	2.393	101.515	0.053	Chi square omnibus test of model coefficient= 39.464 P<0.001	
HSB; self-medication without suggestion						
Reason for staying at home	-0.149	0.061	0.861	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	0.021	<0.001	Chi square omnibus test of model coefficient= 9.250 P<0.010	
HSB; self-medication with suggestion						
Using PPE	0.253	0.105	1.288	0.016	1.049	1.582
Perception score	-0.086	0.040	0.917	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	0.789	0.025	0.642	0.970
Constant	0.513	1.990	1.670	0.797	Chi square omnibus test of model coefficient= 19.545 P<0.001	
HSB; see doctor						
Male	-1.475	0.507	0.229	0.004	0.085	0.617
Marital status						
Married (ref=single)	0.619	0.305	1.856	0.042	1.022	3.373
Separate (ref=single)	1.011	0.731	2.75	0.167	0.656	11.509
Cause of ILI	-0.162	0.075	0.850	0.031	0.733	0.986
Exposed to mass media	1.061	0.416	2.888	0.011	1.279	6.521
Perception score	0.077	0.035	1.080	0.030	1.008	1.157
Influenza vaccination every year	0.582	0.315	1.79	0.065	0.964	3.320
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	0.016	0.010	Chi square omnibus test of model coefficient= 46.195 P<0.001	
HSB; rest at home						
Having child	-0.443	0.311	0.64	0.154	0.349	1.180
Occupation						
Dentist (ref=doctor)	2.140	0.868	8.498	0.014	1.5494	6.611
Nurse (ref=doctor)	1.440		4.22	0.064	0.922	19.313
Knowing how to prevent influenza	0.372	0.104	1.450	<0.001	1.183	1.777
Constant	-3.714	0.871	0.024	<0.001	Chi square omnibus test of model coefficient= 24.099 P<0.001	

HSBs

Table 3 presents respondents' HSBs. They decided to see doctors while they got ILI (212, 73.1%). The most common reason for do nothing was ILI was a minor ailment (15, 5.2%) and the reason for self-medication from drugstore without expert's suggestion was they were nurses (7, 2.4%). The government health services were the most healthcare services that they preferred (276, 95.2%). The average number of days 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%). On logistic analysis; the associations between HSBs and their influencing variables are presented in Table 4.

Inappropriate HSB; do nothing: male were more likely to do nothing than female by 10.09 (p -value < 0.001, 95%CI 3.122-32.612), the more awareness of influenza transmission to patient was less likely to do nothing than not aware (OR 0.25, p -value =0.002, 95%CI 0.102-0.598). As well as more using PPE was less likely to do nothing than less use (OR 0.74, p -value =0.018, 95%CI 0.574-0.948). In addition, increasing of perception score was less likely to do nothing but not significant. Long term of time since the most recent ILI was more likely to do nothing than short term (OR 1.34, p -value =0.026, 95%CI 1.035-1.723). Self-medication without suggestion (defined as using medication from drug store without suggestion from physician or pharmacist): High score of knowledge regarding "reason for staying at home" was less likely to do self-medication without suggestion than low score (OR 0.86, p -value =0.015, 95%CI 0.764-0.971).

Appropriate HSB; self-medication with suggestion (defined as using medication from drug store with suggestion from physician or pharmacist): Influencing factors significantly associated with self-medication with suggestion were using PPE, perception score and time since the most recent ILI. The high rate of using PPE was more likely to do self-medication with suggestion than low rate (OR 1.29, p -value =0.016, 95%CI 1.049-1.582). Increasing of perception score and long time since the most recent ILI were less likely to do self-medication with suggestion than low score and short time (OR 0.91, p -value =0.031, 95%CI 0.848-0.992 and OR 0.79, p -value =0.025, 95%CI 0.642-0.970 respectively). See doctor was associated with male, married, knowledge regarding 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). Rest at home was significant associated with knowledge regarding 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).

DISCUSSION

There are fourteen factors which show association with HSBs after employing multiple logistic regression. Finding from other study showed that male were a group that trend to behave inappropriate HSBs [10]. In this study male were more likely to do nothing when they got ILI more than female and less likely to see doctor than female.

Awareness of preventing flu transmission to their patients was the one of influencing factor. The respondent who had more awareness of preventing flu was less likely to do nothing than not aware. We found that 175 (82.5%) who were aware of preventing flu transmission to their patients preferred to do appropriate HSB; see doctor, when they got ILI.

Perceived susceptibility was a stronger contributor to do preventive health behavior [11]. Using PPE is a representative for perceived susceptibility. This reflect the finding of study that high rate of using PPE was less likely to do inappropriate HSB; do nothing than low rate and was more likely to do appropriate HSB; self-medication with suggestion than low rate. One hundred fifty one (52.1%) were agree with using PPE prevented them from influenza infection and supported by the study of using PPE showed that PPE was significantly protective [12]. The respondents with high rate of using PPE trend to do appropriate HSB.

The influenza vaccination rate of this study (67.9%) was lower than Queen Sirikit National Institute study (89%) [8] but higher than Jantaburi study (58.1%) [7]. These may due to the study area was located in influenza outbreak area which lead the higher rate than Jantaburi study. But Queen Sirikit National Institute study was a specialized hospital which had more facilities. It may lead to a higher vaccination rate than this study rate.

The respondents strongly agreed and agreed with all perceptions toward influenza. Increasing of perception score was less likely to do nothing and self-medication with suggestion than low score. On the other hand, Increasing of perception score was more likely to do an appropriate HSB; see doctor than low score.

The other study found that the perception of

seriousness is based on medical information or knowledge [13]. Thus having adequate knowledge is important to engage healthy behavior and high perception of seriousness should get high score of knowledge. We found that 58.6% and 55% of who strongly agreed with "I perceived ILI is an illness and may transmit the pathogen to others" had got score of knowledge ≥ 15 . And the respondent who got knowledge score less than 15 chose to do nothing HSB (8, 6.2%) but not significant. Even though 248, 96.9% answered the right reason for staying at home when got ILI but when they were asked about HSB when they got ILI most chose 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. High scores of knowing how to prevent seasonal influenza significant increase of resting at home HSB compare to low score. High score of knowing cause of ILI was less likely to see doctor HSB than low score. This finding opposed the expectation. The reason for negative direction for appropriate HSB has not been identified but may relate to other unmeasured factors.

Most of having underlying disease preferred to see doctor HSB (48, 73.8%) when they got ILI. This result reflects another study showed that healthcare was sought in the professional healthcare sector because of severe symptom patterns related to diabetes mellitus and/or glycaemia control [14]. Exposed to mass media was highly correlated with seeing doctor behavior. The supported study of avian influenza campaign can improve avian influenza prevention [15].

Married men received greater opportunities for network members to influence their health behaviors [16]. We found that the respondents who were married (ref=single) were more likely to see doctor than single. We expected to discover that the respondents who have child in household would do appropriate HSBs to prevent influenza infection. The finding showed that there was association between number of child and HSBs; rest at home but not significant. Furthermore, the respondents who got the most recent ILI more than last 3 month was more likely to do nothing than short time. It may due to long time experience would lead them to do careless behavior. We do not know why long time since the most ILI was less likely to do self-medication with suggestion HSB than short time even though it is appropriate HSB. It may relate to other unmeasured factors.

However, there were some influencing factors which associated with HSBs but not provided statistical significant after employing logistic

regression. Due to all healthcare providers have got their civil servant medical benefit scheme. Thus income may not be influencing factor for HCPs. Likewise, annual checkup and self-efficacy did not influence to any HSB. It may due to all healthcare providers knew how to take care themselves. Workings in different hospitals or work place were not influence to HSB 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 exposed to patients in different work place was not effect to any HSB. Furthermore, ILI is not sensitive health problem as psychiatric problem thus they did not feel embarrassment.

ACKNOWLEDGEMENT

The authors express sincere gratitude to advisor for his valuable advices and encourage throughout the thesis process and also grateful to co-advisor for their suggestions and kind supports. I would like to extend the appreciation for the support received from staff at Angthong provincial health office, all seven hospital staff in Angthong for providing me with valuable information and support.

REFERENCES

1. United Nations [UN]. Universal declaration [internet]; 1984 [cited 2012 Nov 17]. Available from: <http://www.un.org/en/documents/vdhr/index.shtml>
2. Davidson SK, Schattner PL. Doctors' health-seeking behaviour: a questionnaire survey. *Med J Aust.* 2003; 179(6): 302-5.
3. Jonsdottir IH, Borjesson M, Ahlborg G, Jr. Healthcare workers' participation in a healthy-lifestyle-promotion project in western Sweden. *BMC Public Health.* 2011; 11: 448. doi: 10.1186/1471-2458-11-448.
4. Wilder-Smith A, Low JG. Risk of respiratory infections in health care workers: lessons on infection control emerge from the SARS outbreak. *Southeast Asian J Trop Med Public Health.* 2005; 36(2): 481-8.
5. Apisarnthanarak A, Puthavathana P, Kitphati R, Auewarakul P, Mundy LM. Outbreaks of influenza A among nonvaccinated healthcare workers: implications for resource-limited settings. *Infect Control Hosp Epidemiol.* 2008; 29(8): 777-80.
6. Simmerman JM, Lertiendumrong J, Dowell SF, Uyeki T, Olsen SJ, Chittaganpitch M, et al. The cost of influenza in Thailand. *Vaccine.* 2006; 24(20): 4417-26.
7. Chanthatero K, Boonmark P, Kimsri N, Kamolsukyuenyong A, Charoentum N. Factors related to influenza A (H1N1) vaccination among healthcare workers in Prapokklao Hospital. *J Prapokklao Hosp Clin Med Educat Center.* 2011; 28(2): 85-97.
8. Chotpitayasunondh T, Sawanpanyalert N, Bumrungsak R, Chunthitwong P, Chainatraporn P. Influenza vaccination among health care workers in Thailand. *BMC Proceedings.* 2011; 5(Suppl. 6): 84.

9. Meeyai A, Cooper B, Coker R, Pan-ngum W, Akarasewie P, Iamsirithaworne S. Pandemic influenza H1N1 2009 in Thailand. *WHO South-East Asia Journal of Public Health*. 2012; 1(1): 59-68.
10. Klein SL, Passaretti C, Anker M, Olukoya P, Pekosz A. The impact of sex, gender and pregnancy on 2009 H1N1 disease. *Biol Sex Differ*. 2010; 1(1): 5. doi: 10.1186/2042-6410-1-5.
11. Janz NK, Becker MH. The Health Belief Model: a decade later. *Health Educ Q*. 1984; 11(1): 1-47.
12. Adalja AA. Transmission of 2009 pandemic influenza to healthcare workers [internet]; 2011 [cited 2012 Oct 10]. Available from: <http://www.santarosa.fl.gov/coad/documents/Emergency%20Managers%20Weekly%20Report%2012-23-11.pdf>
13. Health belief model [cited 2012 Oct 07]. Available from: <http://www.jblearning.com/samples/0763743836/chapter%204.pdf>
14. Hjelm K, Atwine F. Health-care seeking behaviour among persons with diabetes in Uganda: an interview study. *BMC Int Health Hum Rights*. 2011 Sep 26; 11: 11. doi: 10.1186/1472-698X-11-11.
15. Kanamori S, Thongthien P, Kobayashi J, Jongsuksantigul P, Champangern W, Butraporn P, et al. School-based avian influenza prevention and control in Thailand randomized controlled trial [Internet]; 2011 [cited 2012 Oct 07]. Available from: <http://www.tm.mahidol.ac.th/jitmm2008/download/14102008-jitmm-c7-Kanamori-Avian-Influenza.pdf>
16. August KJ, Sorkin DH. Marital status and gender differences in managing a chronic illness: the function of health-related social control. *Soc Sci Med*. 2010; 71(10): 1831-8. doi: 10.1016/j.socscimed.2010.08.022.