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Original Article

# Knowledge, Attitude, and Practice toward Avian Flu among Students in a Public University in Pahang, Malaysia

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## Abstract

**Background:** Avian influenza (AI) is a disease that causes infection in birds with AI A virus. In Malaysia, the first outbreak of AI in poultry was detected in Kelantan on August 2004. This study aimed to examine the knowledge, attitude, and practice (KAP) toward AI among students in a public university in Pahang, Malaysia. **Materials and Methods:** This was a cross-sectional study had been conducted starting from March 11, 2013 until March 20, 2013 on 100 students. Data regarding sociodemographics characteristics and KAP toward AI had been collected by distributing the questionnaires to the participants in their hostels and classes and were analyzed using SPSS software. **Results:** The mean knowledge, attitude, and practice were 21.47 (4.181), 44.28 (4.845), and 8.69 (1.921), respectively. There were significant differences regarding the level of knowledge among different group of age ($P = 0.041$) and departments ($P = 0.001$). The older group of individuals were more knowledgeable. The students from health science had a higher level of knowledge. Regarding the practices, there was no significant difference in the level of practice toward the prevention of AI across the different gender, age, hometown, and department. There was also the significant correlation between knowledge and practices ($r = +0.217$, $P = 0.030$), but no association was found between knowledge and attitude or attitude and practice. **Conclusion:** Overall participants had moderate knowledge and practices regarding prevention of AI. Nonetheless, they had expressed good positive attitude toward the prevention of disease. Therefore, public health agencies should play a role to spread information and increase awareness among students about this infectious disease.

**Keywords:** Attitude, avian influenza, knowledge, Malaysia, practice, university students

## Introduction

Avian influenza (AI) is a disease that causes infection in birds transmitted with AI A virus. This virus occurs naturally in wild aquatic birds worldwide, but it can infect the poultry birds and another animal species. The transmission of virus from infected birds to other birds can occur through saliva, nasal secretions, and feces. The virus does not usually infect humans. However, confirm cases of human infection from several subtypes of AI have been reported since 1997.[1] The virus can be transmitted from infected birds to human by direct contact with infected poultry or surface contaminated with secretions or excretions of infected birds.[2] The first outbreak of human influenza was reported in Hong Kong in 1997, and since late 2003, this outbreak had spread to poultry and caused fatalities in human in almost eight East Asian countries including Cambodia, China, Indonesia, Thailand, and Vietnam.[3-5] In Malaysia, the first outbreak of avian flu was detected in Pasir Pekan, Kelantan on August 17, 2004.[6,7] The virus was discovered from local livestock after a routine check on the village. Since 2005, about 35 highly pathogenic AI viruses were isolated from 12 localities of the state of Kelantan, Malaysia. Therefore, effective prevention and risk management had been done to prevent the spread of this virus. These include culling of infected and exposed poultry, quarantine the infected areas and active and continuous surveillance of signs of the diseases, and mortalities in the poultry and pigs.[8-11] Knowledge, attitude, and practices (KAPs) toward certain disease or infection are one of the most important keys in controlling and preventing

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the spread of the disease to the public.[12-14] Based on the previous studies of KAP toward avian flu worldwide, most of the people in some endemic countries such as India, China, Egypt, Nepal, Cambodia, and Thailand had high level of knowledge and awareness toward avian flu compared to the people from country that had low or no cases of avian flu.[15-22] In addition, people living in high-risk population had more concern about their protective measures and behaviors toward avian flu.[19,21,23,24] Therefore, to control the spread of the disease, prevention and awareness of this pandemic among populations are utmost important. Protective behaviors and practices toward the prevention of AI will contribute to reduce the risk of the disease. Since the H1N1 pandemics that occurred in 2009, KAP study on influenza A H1N1 was done on patients attending primary health care clinic in Kuala Lumpur on 2010.[25]

In the past few years, study of KAP toward AI had been done in some infected countries such as Thailand, China, Italy, Turkey, and Afghanistan. Poultry workers were the highest risk group of getting AI. A survey was conducted on Italian poultry workers regarding their KAP toward AI and found that knowledge of transmission and preventive measures among the workers should be improved.[20] International travelers also included as the potential group to spread the virus during an outbreak. In New York, a survey about KAP of avian flu had been conducted to the travelers who will fly to the Asian countries. Their findings showed that most of the participants were aware about influenza preventive measures, but only half of them had received influenza vaccine during the previous season. They also discovered that Asian travelers who did not work with health care or animal care had low knowledge about the H5N1 transmission risk factors.[26] In Thailand, a survey conducted on residents of rural area regarding KAP of avian flu revealed that public educational campaign was effective in promoting people about the preventive measures toward the prevention of AI disease.[27]

However, in Malaysia, there was lack of research on KAP of AI. Nonetheless, a survey had been conducted among health sciences students of a public University, in response to the pandemic influenza H1N1, to assess behavioral responses of educated young adults and concluded that "health-seeking behavior and behavior changes among educated young adults in Malaysia should be improved."[28] Therefore, data of the current study will contribute greatly toward a better health care of Malaysian common people. This study is done to evaluate the level of KAP regarding AI among students in a public university in Kuantan, Pahang. They were asked about their knowledge in AI, their awareness about the occurrence of this disease, and their action toward the prevention of this disease. This study aims to give benefits to public, government, and ministry of health in their effort to control the incidence of AI in Malaysia. Specific Objectives were (1) to measure the level of KAP toward avian flu among the students, (2) to observe the relationship between KAP regarding AI among the students, and (3) to investigate the factors associated with knowledge and practices toward prevention of AI among the students.

## Materials and Methods

This survey was conducted in a public university in Kuantan, Pahang due to the availability of the study individuals. Furthermore, the research related to KAP of AI still lacking in this campus. The students from one of the faculties which consist of three departments including biotechnology (BT), biomedical science (BMS), and computational and theoretical science (CTS) were eligible to participate in this survey. Among them, 100 participants had been selected to answer the questionnaire. This is a cross-sectional study which had been conducted in order to answer the research objectives. This study design had been chosen because it is the simplest type of study design and it was aimed to measure the specific data at the same point in time in a given population.[29] It can also be finished in a short period of time and inexpensive. This study was aimed to investigate the KAP toward avian flu among the students. The flowchart shows [Figure 1] the methodology that was followed until the research had been completed.

Power and Sample Size Program (PS Software) version 3.0.43 (Informer Technologies, Inc., Vanderbilt University, 2525 West End Ave #1100, Nashville, TN 37203, USA) were used to calculate sample size with the assumption that $\alpha = 0.05$, power = 0.8, m = 1, $\delta = 2.7$, and $\sigma = 6.8$. The standard deviation (SD) ($\sigma = 6.8$) was taken from the previous study in Italy.[20] The sample size calculated was rounded to 100. The research participants were selected through convenience sampling which is one of the nonprobability sampling designs. The convenience sampling method is one of the simplest sampling methods whereby the individual is selected based

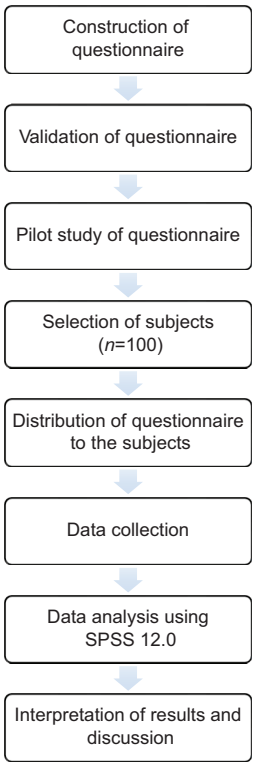


**Figure 1:** Flowchart of the methodology of the study

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on the availability of them to participate in the study.[30] The study participants were selected by approaching them in their hostels and classes. The quota sampling was done to divide them into the same numbers for genders. The number of individuals from three different departments had been divided equally. All students from the departments of BT, BMS, and CTS were eligible to be included in this study irrespective of age and gender. The approval to conduct the study has obtained from the Department of BMS, International Islamic University Malaysia.

Data collection had been done starting from March 11 to March 20, 2013 by distributing the questionnaire with an informed consent form to 100 participants. The content of the questionnaires had been checked by experts to ensure it is relevant to the study purpose. Then, the pilot study was conducted by testing the questionnaire on some students to test the face validity of the questionnaire to ensure that it would be well and easily understood by the participants. To achieve the objectives of this study, the questionnaire had been divided into four sections including their sociodemographic characteristics, knowledge about avian flu, their attitudes toward this disease, and their practice toward the prevention of this disease. For sociodemographic characteristics, the data such as age, gender, department, and hometown had been collected. Then, for the second section which is knowledge about avian flu, they had been asked about the general information regarding avian flu which included definition, mode of transmission, vehicles of transmission, and risk groups. The answer for each question was either "true," "false," or "do not know" whereby the correct, wrong, and "do not know" answers were given the scoring of 2, 0, or 1, respectively. Next, the third section was about their attitude regarding AI. To measure their level of attitude, the questionnaire was constructed based on their level of agreements toward the ways to prevent AI infection which had been categorized from totally disagree to strongly agree. There were five stages of agreement, and the score had been given based on their answers which are totally disagree = 1, disagree = 2, uncertain = 3, agree = 4, and strongly agree = 5. Finally, the last section asked about their practices toward the prevention of AI. In this part, they had to state how frequent they applied the actions related to the prevention of AI in their daily life whether it had been applied for "all the times," "sometimes," or "never been practiced." For positive practices, the scoring was 2, 1, or 0 for "all the times," "sometimes," or "never been practiced," respectively. On the hand, the scoring was reversed for negative practices. All collected data were keyed into SPSS software (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp) and analyzed by descriptive statistics, independent *t*-test, one-way ANOVA, and correlation test. The significance level was set at 0.05 for 95% confidence interval.

## Results

Sociodemographic characteristics that had been studied here include gender, age, hometown, and Department of Study. The total participants in this study were 100 which consists of half male, 50 (50%) and half female, 50 (50%). There were 40 (40%) individuals of age 18–22 and 60 (60%) individuals of age 23–26 years old. Then, regarding their hometown, 58 (58%) of the individuals came from the urban area, and 42 (42%) of them came from the rural area. Other than that, based on their Department of Study, 32 (32%) of the individuals were from CTS, 34 (34%) individuals from BMS, and another 34 (34%) individuals from BT.

The mean knowledge score obtained from this study was 21.47 (SD = 4.181) from the total score of 32, with the highest mark obtained was 32 whereas the lowest mark was 12. Referring to the scale, most of the individuals had moderate knowledge regarding AI. It shows that 41% of them had a high level of knowledge regarding avian flu, followed by 39% for average and 20% for low level of knowledge [Table 1].

It demonstrated that most of them know the basic knowledge about the definition of avian flu because 68% of them could answer the question correctly [Table 2]. However, only 30% of them can answer the question about the similarity of sign and symptoms of avian flu with swine flu. Regarding the mode of transmission of AI, the participants knew that this infection could be transmitted from animal-to-animal (58%), animal-to-human (70%), and human-to-human (61%); otherwise, most of them did not know that avian flu was able to spread by touching uncooked poultry, eggs, and frozen poultry. In addition, 61% of them did not know that other animal can be the vehicle to transmit this disease. Majority of the participants (67%) realized that poultry workers were at high risk to get this disease.

The mean-score of attitude regarding AI was 44.28 (sd=4.845) from the total score of 50, with the highest mark obtained was 50 whereas the lowest mark was 30. 97% of the study participants expressed good attitude and none had expressed poor attitude towards the prevention of avian flu [Table 1]. Most of the study individuals either strongly agreed or agreed with all the statements [Table 3]. However, 26% of the participants were uncertain that preparing raw poultry and other

**Table 1: Total of individuals based on scale regarding knowledge, attitude, and practice regarding avian influenza (*n*=100)**

| Result (score) | *n* (%) |
|---|---|
| Knowledge | |
| Good (24-32) | 41 (41) |
| Moderate (17-23) | 39 (39) |
| Poor (0-16) | 20 (20) |
| Attitude | |
| Good (34-50) | 97 (97) |
| Moderate (17-33) | 3 (3) |
| Poor (0-16) | 0 |
| Practice | |
| Good (10-14) | 38 (38) |
| Moderate (6-9) | 59 (59) |
| Poor (0-5) | 3 (3) |

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foods using different knives is a good practice. On the other hand, the mean score for practice level was 8.69 (SD = 1.921) from the total score of 14, with the highest mark obtained was 14 whereas the lowest mark was 2. About 38% of them demonstrated a high level of practice [Table 1]. The frequency of each practice had been depicted in Table 4.

**Table 2: Knowledge regarding avian influenza (*n*=100)**

| Statement | True, *n* (%) | False, *n* (%) | Do not know, *n* (%) |
|---|---|---|---|
| Definition | | | |
| Avian influenza is a contagious infection | 68 (68)* | 1 (1) | 31 (31) |
| It is caused by Highly Pathogenic Influenza A (H5N1) virus | 46 (46)* | 5 (5) | 49 (49) |
| Avian influenza is similar with swine influenza regarding their signs and symptoms | 30 (30)* | 12 (12) | 58 (58) |
| Mode of transmission | | | |
| Animal-to-animal | 58 (58)* | 8 (8) | 34 (34) |
| Animal-to-human | 70 (70)* | 2 (2) | 28 (28) |
| Human-to-human | 61 (61)* | 5 (5) | 34 (34) |
| Touching uncooked poultry | 34 (34)* | 14 (14) | 52 (52) |
| Touching uncooked eggs | 18 (18)* | 23 (23) | 59 (59) |
| Touching uncooked frozen poultry | 12 (12)* | 28 (28) | 60 (60) |
| Vehicles of transmission | | | |
| Poultry | 59 (59)* | 7 (7) | 34 (34) |
| Birds | 70 (70)* | 4 (4) | 26 (26) |
| Other animals | 22 (22)* | 17 (17) | 61 (61) |
| Risk groups | | | |
| Poultry workers | 67 (67)* | 2 (2) | 31 (31) |
| Butchers | 47 (47)* | 9 (9) | 44 (44) |
| Hunters | 35 (35)* | 23 (23) | 42 (42) |
| Veterinarians | 35 (35)* | 27 (27) | 38 (38) |

*Correct answer

In comparing the total score between different departments using ANOVA test, a significant difference was observed for the total score of knowledge but not for the total score of practice [Table 5]. On the other hand, in comparing between age group, genders, and hometown, no significant difference was observed for the total score of knowledge [Table 6] and practice [Table 7], except for a total score of knowledge between age group whereby the score was higher in the older age group.

The study participants' knowledge and attitude scores had a little positive significant correlation based on their *r* value (0.217) and *P* value (0.030) which means that level of knowledge was proportional to the level of attitude [Figure 2]. However, there was no significant correlation between practice and knowledge scores [Figure 3] and between practice and attitude scores [Figure 4] due to their $P > 0.05$.

## Discussion

The overall findings concluded that the individuals had moderate to the good average level of knowledge and practices toward AI, but they expressed a high level of attitude in terms of the prevention of AI. However, the results of association demonstrated that only groups of age and department showed the significant difference in the level of knowledge. Meanwhile, there was no significant different between all groups of these sociodemographic factors regarding their practices toward the prevention of AI. Other than that, information obtained also had been used to observe the relationship between the levels of KAP itself. The findings demonstrated that there was a significant correlation between knowledge and attitude.

**Table 3: Attitude toward the prevention of avian influenza (*n*=100)**

| Statement | Strongly agree, *n* (%) | Agree, *n* (%) | Uncertain, *n* (%) | Disagree, *n* (%) | Totally disagree, *n* (%) |
|---|---|---|---|---|---|
| We should wash our hands with soap | | | | | |
| Before eating | 79 (79)* | 15 (15) | 5 (5) | 1 (1) | 0 |
| Before touching raw poultry meat | 49 (49)* | 22 (22) | 17 (17) | 5 (5) | 7 (7) |
| After touching raw poultry meat | 74 (74)* | 18 (18) | 7 (7) | 1 (1) | 0 |
| Using of gloves to touch raw poultry meat is a good hygienic practice | 59 (59)* | 16 (16) | 23 (23) | 2 (2) | 0 |
| Preparing raw poultry and other foods using different knives is a good practice | 38 (38)* | 28 (28) | 26 (26) | 8 (8) | 0 |
| We should clean the cutting boards after preparing raw poultry meat | 61 (61)* | 22 (22) | 12 (12) | 3 (3) | 2 (2) |
| We need to build up good body resistance through | | | | | |
| Balanced diet | 55 (55)* | 31 (31) | 13 (13) | 3 (3) | 0 |
| Regular exercise | 58 (58)* | 27 (27) | 11 (11) | 3 (3) | 1 (1) |
| We need to maintain | | | | | |
| Good personal hygiene | 82 (82)* | 13 (13) | 4 (4) | 0 | 1 (1) |
| Good environmental hygiene | 81 (81)* | 16 (16) | 2 (2) | 0 | 1 (1) |

*Expected attitude

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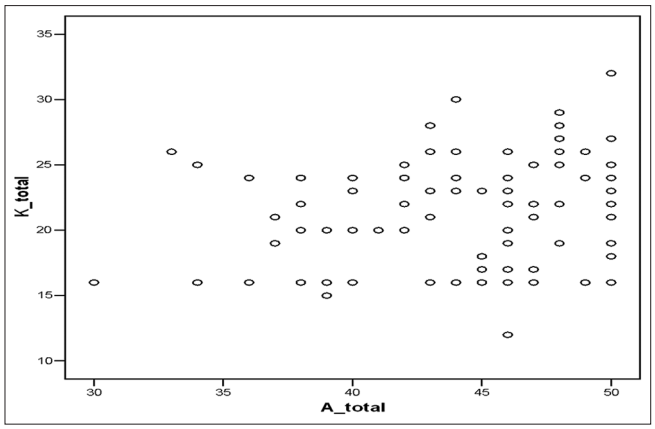


**Figure 2:** Correlation between attitude and knowledge scores

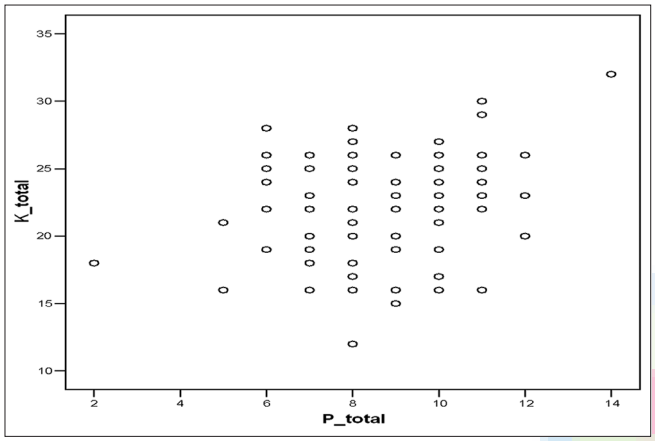


**Figure 3:** Correlation between practices and knowledge scores

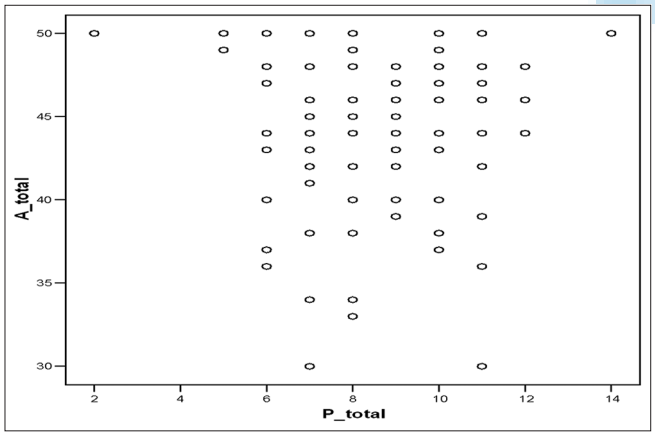


**Figure 4:** Correlation between practices and attitude

The results showed that most of the individuals had an average level of knowledge regarding AI. This finding reflected the study in Suphan Buri Province in Thailand which concluded most of the respondents had a moderate level of knowledge.[19] In contrast, another of North Africa found that there was a good level of knowledge among the household backyard poultry breeders residing in Fayoum Governorate, in rural Egypt.[31] In addition, one more from Europe revealed that a large number of respondents had no detailed understanding of AI.[15] The present study, the level of knowledge was not as high as expected as study participants were not much familiar with AI because of low incidence in the study area and lack of

**Table 4: Practices toward the prevention of avian influenza (*n*=100)**

| Activity | All the times, *n* (%) | Sometimes, *n* (%) | Never, *n* (%) |
|---|---|---|---|
| I wash my hands with soap before eating | 36 (36)* | 56 (56) | 8 (8) |
| I wash my hands with soap after eating | 49 (49)* | 50 (50) | 1 (1) |
| I cover my nose and mouth when I am | | | |
| Sneezing | 66 (66)* | 33 (33) | 1 (1) |
| Coughing | 64 (64)* | 35 (35) | 1 (1) |
| When I have influenza-like symptoms such as cough, runny nose, and sore throat | | | |
| I wear surgical mask | 5 (5)* | 25 (25) | 70 (70) |
| I consult the doctor promptly | 7 (7)* | 58 (58) | 35 (35) |
| I live very closely with poultry | 5 (5) | 31 (31) | 64 (64)* |

*Expected practice

**Table 5: Comparing total score of knowledge and practice regarding avian flu between different department using ANOVA test**

| Variable | *n* | K-score, mean (SD) | *F*-statistic (df) | *P* |
|---|---|---|---|---|
| Knowledge | | | | |
| BMS | 34 | 22.65 (3.659) | 7.786 (2, 97) | <0.001 |
| BT | 34 | 22.41 (3.846) | | |
| CTS | 32 | 19.22 (4.256) | | |
| Practice | | | | |
| BMS | 34 | 9.00 (1.792) | 0.739 (2, 97) | 0.480 |
| BT | 34 | 8.62 (2.045) | | |
| CTS | 32 | 8.44 (1.933) | | |

BMS: Biomedical science, BT: Biotechnology, CTS: Computational and theoretical science, SD: Standard deviation

**Table 6: Comparing total score of knowledge regarding avian flu between different age group, gender, and hometown using independent *t*-test**

| Variable | *n* | Knowledge score, mean (SD) | *t*-statistic (df) | *P* |
|---|---|---|---|---|
| Age (year) | | | | |
| 18-22 | 40 | 20.43 (4.471) | −2.074 (98) | 0.041 |
| 23-26 | 60 | 22.17 (3.858) | | |
| Gender | | | | |
| Male | 50 | 21.52 (4.339) | 0.119 (98) | 0.906 |
| Female | 50 | 21.42 (4.061) | | |
| Hometown | | | | |
| Urban | 58 | 21.72 (4.229) | 0.712 (98) | 0.478 |
| Rural | 42 | 21.12 (4.139) | | |

SD: Standard deviation

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**Table 7: Comparing total score of practice regarding prevention of avian flu between different age group, gender, and hometown using independent *t*-test**

| Variable | *n* | A-score, mean (SD) | *t*-statistic (df) | *P* |
|---|---|---|---|---|
| Age | | | | |
| 18-22 | 40 | 9.00 (1.974) | 1.322 (98) | 0.189 |
| 23-26 | 60 | 8.48 (1.873) | | |
| Gender | | | | |
| Male | 50 | 8.36 (2.107) | −1.735 (98) | 0.086 |
| Female | 50 | 9.02 (1.672) | | |
| Hometown | | | | |
| Urban | 58 | 8.66 (2.074) | −0.212 (98) | 0.833 |
| Rural | 42 | 8.74 (1.712) | | |

SD: Standard deviation

information about the disease. Hence, their concerns and fear toward AI are also low. Most of the individuals knew about the definition of AI which can be defined as a contagious infection. Similarly, the previous study in Italy had also concluded that 63.8% from the total of 257 workers correctly defined AI as a contagious disease.[20] This indicates that the individuals knew that AI disease could spread among human or animals. However, not more than 50% of individuals knew that the disease was caused by an H5N1 virus and had similar signs and symptoms with swine influenza (H1N1).

Regarding the mode of transmission, most of the participants recognized that this infection could be transmitted between animal-to-animal, animal-to-human, and human-to-human. A study in Italy also stated that most of the respondents knew about these modes of transmission.[20] They showed that more than 80% of individuals had answered correctly for these questions. However, in this present study, more than 50% of individuals did not know that this disease can spread by touching uncooked poultry, uncooked eggs, and uncooked frozen poultry. In terms of knowledge regarding the vehicle of transmission, the most well-known vectors are birds and poultry. Most of the participants were also able to identify that wild birds and poultry are the common vectors.[20] They also knew that poultry workers were the highest risk group to get this infection compared to the veterinarians and butchers.[20] The current study findings also discovered that the level of knowledge increased with the increment of their age. This complement a study was done among the adult population in Italy.[15,20] They found that older respondents with a higher educational level were more likely to be knowledgeable.[15] The current study also determined the relationship between the Department of Study and their level of knowledge. Participants from the Department of BMS and BT had higher knowledge as compared to those from CTS Department. CTS Department is a mathematical-based program whereby their students were not exposed to the health sciences knowledge. Therefore, most of them were not familiar with this disease and had little idea about this infection. This result is to with the finding regarding KAP toward H1N1 on El-Minia university students in Egypt which found that nonmedical students had a lower level of knowledge as compared to medical students.[32] This finding was also consistent with the result from a study in Turkey which declared that students under health-related programs were more knowledgeable than those registered under nonhealth-related programs.[33] In addition, another Chinese study had explored their research in Shenzhen City and Xiuning County that urban residents were more knowledgeable about AI as compared to rural villagers.[21] Similar observations were also noticed in several previous Asian studies.[17,34] In contrast, the present study did not find any difference in the level of knowledge between the rural and urban located participants. This may be due to the level of education among the rural located participants in this population. Even though they lived in rural area, most of them had the good educational background, like the people in the urban area.

More than 50% of the participants showed a positive attitude toward all the practices that had been stated in the questionnaire. However, due to lack of knowledge and information regarding the transmission of AI, some of them did not know that the using of gloves to touch raw poultry meat can prevent the transmission of AI virus. In addition, a few of the participants showed negative attitude regarding the practice of washing hand with soap before touching raw poultry meat. They thought that this practice could not give any effect in reducing the spread of this disease. Furthermore, the present study also concluded that the level of attitude was not influenced by the level of knowledge whereby most of individuals had high attitude although they had poor knowledge regarding AI avian flu.

Most of the individuals got average score regarding their practices in preventing AI. Regarding the practices of washing hand with soap before and after eating, not more than 50% of individuals did these for all the times. It shows a standard practice because the rest of the participants also did these even for sometimes. One study from Nepal revealed that hand washing with soap and water became the most prevalent practice based on the frequency of reported practices.[17] However, the current study finding showed that most of them covered their nose and mouth every time during sneezing and coughing. In addition, when they had influenza-like symptoms, only a small group of them had worn a surgical mask and consulted the doctor promptly for all the times. It could be because the practice of wearing a mask is not common in this area, making them feel weird to wear it. They were also not aware of their healthy and just wait for the symptoms to disappear by themselves. Nevertheless, most of them never live very closely with poultry, and furthermore, most of the participants came from the urban area. Thus, the chances of exposure to poultry are low.

Regarding the factors that can influence their practices toward the prevention of AI, the levels of practice were the same regardless of their age, gender, Department of Study, and hometown. Other than that, this finding also shows that their level of knowledge was correlated with their level of

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practice. The participants might apply the practice based on their knowledge toward avian flu. This finding was supported by a previous study which stated that knowledge influences behavior.[15] There was a statistically significant association between the participants who failed to wash hands and using gloves with the lack of knowledge regarding practices.[15]

This current finding is also consistent with an earlier study which stated that people who had more knowledge acted more preventively with regard to their daily practices.[17] However, their level of practices was not affected by their attitude. In this study, most of the participants showed a positive attitude toward avian flu, but they did not apply the behavior in their daily routine. Another study reported that most rural Cambodians still practice at risk poultry handling although they had high awareness and widespread knowledge regarding AI.[35] Therefore, it can be concluded that high awareness does not necessarily lead to the behavioral changes.

### Limitation of the study

This is a cross-sectional study with its inherent limitations. Therefore, the current study only shows a snapshot of the research question. Moreover, because of small sample size and single centre study findings unable to generalize for the whole country.

## Conclusion

The current study found that knowledge was lower in younger students. Furthermore, knowledge was lower in students from CTS. There was no statistically significant difference observed between any groups. Better and more extensive health promotion activities including research studies are advocated to improve knowledge and practice to prevent the disease.

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### Conflicts of interest

There are no conflicts of interest.

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