

ORIGINAL ARTICLE

Knowledge, Attitude and Practice on Leptospirosis among Undergraduate Students in University Putra Malaysia

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ABSTRACT

Introduction: Leptospirosis is an infectious and zoonotic disease caused by pathogenic bacteria called leptospires which can be transmitted through the exposure to the urine or excretion of infected animals, and also water or soil that being contaminated with secretion of the infected animals. Leptospirosis remains a concern in Malaysia, as the number of cases had steadily increased. This study aims to determine the knowledge, attitude and practice (KAP) among final year students of selected programmes in Universiti Putra Malaysia (UPM). **Methods:** A cross sectional study was conducted among students of Environmental and Occupational Health (ENVOCH) (57 students), Nursing (22 students) and Veterinary Medicine (97 students). Thus, the total sample sizes were 170, however the response rate were 81.76%. Questionnaire was used as the study instrumentation. **Results:** There was a significant association between race and knowledge, also gender and attitude with $p < 0.05$, ($p = 0.008$) and ($p = 0.001$) respectively. Furthermore, there was also an association between attitude and practice ($p < 0.05$). Meanwhile, there was a significant difference on the knowledge between students of ENVOCH with Veterinary Medicine and Nursing with Veterinary Medicine ($p < 0.05$). **Conclusion:** Most of the final year students in this study had moderate level of KAP towards Leptospirosis disease. Thus, improvement in education and training must be done to face this issue.

Keywords: Knowledge, Attitude, Practice, Leptospirosis, Final year students of UPM

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INTRODUCTION

Leptospirosis is an infectious disease caused by pathogenic bacteria called *Leptospira interrogans* that may affect both human and animals resulting in morbidity and mortality (1, 2). In 1917, rats was discovered to be the source of human infection, and subsequently some previous studies have showed that other wild mammals can also act as potential carriers, including flying foxes (3). Rats, mice, wild rodents, dogs, swine and cattle are the principle sources of Leptospirosis infection (4). The main sources of Leptospirosis infection are urine of infected or carrier animals, contaminated surface water, soil and mud (3).

The transmission can happen when people have direct contact with the contaminated urine of infected animals or indirectly through the exposure to water or soil that contaminated with urine or secretion of infected animals (5).

Worldwide, the Leptospirosis incidence is reported at around 0.1 to 100 per 100,000 population (6). Meanwhile, epidemics happen with incidence of more than 100 per 100,000 population particularly in rainy season and flooding (1). There were around 1.03 million cases and 58,900 deaths each year due to Leptospirosis worldwide which make the disease as a leading zoonotic cause of morbidity and mortality (7). China, Southeast Asia, Africa and South and Central America have a warm and humid environment that make the disease endemic in that area (8). Locally, there was a dramatic increases in human Leptospirosis cases over the last decade. Based on the data from Disease Control Division of Ministry of Health (4), the cases of Leptospirosis in Malaysia showed a rising trend from year 2009 to 2014 with 1418 cases in 2009 and it increased to 7806 cases in 2014 with 92 deaths. In 2016, 5284 cases were recorded with 52 deaths. Therefore, Leptospirosis cases increased by 69% from 2009 to 2014 (Fig. 1). Until the end of year 2015, there were 8291 cases and 78 deaths due to Leptospirosis reported in Malaysia. Meanwhile, in 2016, Leptospirosis cases reported in Malaysia decreased to 5284 with 52 number of death. Even though, it showed a decreasing trend in 2016, the number of cases were still quite high and worrying.

In 2014, Selangor was the state that reported the highest number of Leptospirosis cases in Malaysia with 1832 cases. While in 2015, Kelantan reported the highest number of cases as much as 1270 and Selangor was reported as a state with second highest cases in Malaysia which was 879 cases. In half a year of 2016, there was 14 outbreaks of Leptospirosis disease in Malaysia and nearly half of the outbreaks happened in Selangor with 2200 people have been infected (9).

Ministry Of Health Malaysia (4) reported that male has higher risk of getting Leptospirosis infection compared to female with 5056 (65%) cases among male and 2750 (35%) among female in 2014. In Malaysia, people with age range from 25-60 years old contributed to the highest number of cases in 2014 with 4098 (52%) cases. Leptospirosis also known as occupational disease and most cases reported were among agricultural workers, sewerage workers, livestock handlers, pet shop workers and military personnel (10). Based on the statistic provided by MOH Malaysia, the distribution of area of Leptospirosis outbreak in 2015 were mostly in residential area (43%) followed by recreational area (22%). In Malaysia, most of the outbreaks happen were related to recreational activities (11). The infection occurs through direct contact with urine, blood and tissue from infected animals or indirect contact with contaminated environment during recreational activities (12).

Typically, Leptospirosis has been an ignored disease and enhancing the awareness is necessary to identify disease burden in a society (13). Plus, individual knowledge of Leptospirosis and health behavior plays an important role in the disease prevention and control, and also in enhancing occupational health and safety (14). However, most of death cases due to Leptospirosis were because of lack of knowledge about the disease such as signs and symptoms which lead to late diagnosis and treatment.

The finding from several of previous studies indicate that there was lacked of knowledge and awareness on the significance of symptoms and negative social attitudes among the respondents which obviously affect the practice to control and prevent from Leptospirosis disease. Therefore, due to high number of Leptospirosis cases in Malaysia and other causes stated, this study need to be conducted. Besides, the study on KAP among young generation such as university student are still lacking. Therefore, it is important to educate current and young generation who will be involved in this field in the future

In order to address this issue, study of KAP among ENVOCH, Nursing and Veterinary Medicine students should be done. This is because these groups of people will be the next generation who involve directly or indirectly in communicable diseases control and management. To our knowledge, Veterinary Medicine

should be the group of students which able to have knowledge and describe as well the leptospirosis symptoms, modes of transmission or preventive actions of Leptospirosis disease compare to ENVOCH and Nursing students. The main factor are, they are more exposed to the animals in the lecture and training session that make them to know more on the disease as well.

MATERIALS AND METHODS

Study Design

A cross sectional study is conducted in this research. This study is used to assess the KAP associated with Leptospirosis among final year students of selected programmes in UPM.

The three programmes which are ENVOCH, Nursing and Veterinary Medicine were selected in this study because these programmes are related with environment, human and animal health. As environment, human and animal health practitioners in the future, they should have good KAP on the zoonotic diseases like Leptospirosis.

Study Location

The location of the research was conducted in UPM. It was selected because of high cases of Leptospirosis in Selangor in 2014 and 2015. Furthermore, UPM is the only university in Malaysia which has all three programmes that involved in this study which are ENVOCH, Nursing and Veterinary Medicine.

Study Sampling

The sampling population was among final year students of ENVOCH, Nursing and Veterinary Medicine programmes in UPM. The name list of the final year students were obtained from Academic Division, Faculty of Medicine and Health Sciences and Faculty of Veterinary Medicine, UPM. There were 57 students of ENVOCH, 22 students of Nursing and 91 students of Veterinary Medicine. Thus, the total sample sizes were 170 students.

Sampling Method

The first method was purposive sampling where the three programmes were purposively selected to be involved due to several criteria that related with Leptospirosis. Then, universal sampling was used which means all final year students of the three programmes were involved in this study.

Study Instrumentation (Questionnaire)

The level of KAP on Leptospirosis among respondents was evaluated by using self-administered questionnaire. The questionnaire comprised of four sections:

- i. Section A consists of socio-demographic characteristics of the respondents (age, gender and race).
- ii. Section B consist of general questions on Leptospirosis
- iii. Section C consist of 3 subsections:

- Knowledge about Leptospirosis
- Attitude towards Leptospirosis
- Practice on Leptospirosis

iv. Section D consists of question on suggestion recommended by respondents for information dissemination and also prevention and control measure of Leptospirosis in Malaysia.

The questionnaire was modified from other research by (12) according to the suitability of this research. The questionnaire then was distributed to the respondents and required them to fill the information as mentioned above.

To be ensured the reliability and consistency of questionnaire and either they could understand the questions well, a pre-test was conducted among 10% of students from different course who had similar characteristics with the sample subject. The value of Cronbach alpha obtained from the pilot study was 0.796 which covered for all sections. Thus, the questionnaires were considered acceptable and reliable.

Data Collection Procedure

All of the respondents were gathered in a place at different time. The respondents were briefly explained about the purpose of research before distributing the questionnaire. Their personal information and responses were kept confidential. They were required to fill in the consent form and were given self-administered questionnaire to be answered within 20-30 minutes and collected at the end of survey.

Data Analysis

After the questionnaires were collected, each item was coded and analyzed by using the Statistical Package for Social Sciences (SPSS) version 22.0. The assumption of normality for significance level was ($p > 0.05$). The normality test showed that $p < 0.05$, thus the data was not normally distributed.

RESULTS

In this study, 139 out of 170 respondents (81.76% response rate) which were among final year students of ENVOCH (n=57), Nursing (n=22) and Veterinary Medicine (n=60) were involved to assess their knowledge, attitude and practice on Leptospirosis. However, only 60 out of 91 students of final year of Veterinary Medicine involved in this study (65.93% response rate).

Socio-Demographic Characteristics

Most of the students from all three programmes had an age from 23 to 24 years old where ENVOCH (84.2%), Nursing (90.9%) and Veterinary Medicine (68.3%). Besides, majority of the respondents from all programmes were female which are ENVOCH (73.7%), Nursing (100%) and Veterinary Medicine (81.7%). Furthermore, most of the respondents were among Malay students

which were ENVOCH (93%), Nursing (81.8%) and Veterinary Medicine (56.7%).

Knowledge about Leptospirosis Disease

There were 20 questions being asked to determine the respondents' knowledge on Leptospirosis. The respondents got 1 point for each correct answer and 0 score for wrong answer. The overall score was then converted in term of score level and was classified into three levels which are low, moderate and high. The range of scores was between 0 to 20 points. A mean score for knowledge which is 13.43 and standard deviation of 2.71 was used to classify the subjects into three groups (15) namely high level (more than 16), moderate level : (11 to 16) and low level (less than 11).

Majority of the respondents from ENVOCH, Nursing and Veterinary Medicine had moderate knowledge level which was 41 (71.9%), 14 (63.6%) and 46 (76.7%) respectively.

Even though the veterinarians graduate with enough knowledge, many of them had low awareness and understanding to discover, recognize, prevent and control the zoonotic diseases like Leptospirosis (16). In addition, previous study showed that shortage of knowledge was clear among medical health students on the epidemic zoonoses, mode of transmission and epidemiology (17). Therefore, moderate level in the knowledge of Leptospirosis had almost similar result with the study by Kakkara et al. (17). In addition, without knowing and realizing the risk factors of the disease, we cannot expect people to aware about the disease and it is nearly impossible for them to be enthusiastic to practice good preventive measures (18). Plus, incorrect belief regarding the disease also indicates that people had huge misconceptions about Leptospirosis and they can be confused it with other diseases that more familiar to them like Dengue (18).

Attitude towards Leptospirosis Disease

To explore the attitude towards Leptospirosis among respondents, there were 15 questions being asked on the opinion either agree or not with the statements for attitude on this disease. The scoring method was used to classify the attitude level. The score was 5 for strongly agree answer, 4 for agree answer, 3 for not sure, 2 for disagree and 1 for strongly disagree answer. The score obtained was sum up and classified into three levels which were high, moderate and low attitude level. A mean score of 62.09 and standard deviation of 7.02 was used to classify the subjects into three levels (15) namely high level (more than 69), moderate level (56 to 69) and low level (less than 56).

Most of the respondents from ENVOCH, Nursing and Veterinary Medicine had moderate attitude towards Leptospirosis which were 42 (73.7%), 18 (81.8%) and 40 (66.7%) respectively. Meanwhile, 5 (8.8%) of ENVOCH

students, 3 (13.6%) of Nursing students and 10 (16.7%) of Veterinary Medicine students had high attitude level.

Practice towards Leptospirosis Disease

For practice towards Leptospirosis, there were 15 questions being asked to the respondents to know their practice to prevent and control the disease. The respondents were asked about the frequency to practice each of the statement provided in the questionnaire. 1 point was given for never option answer, 2 point for seldom answer, 3 for some time answer, 4 for often answer and 5 point for always option answer. The obtained practice score was converted in term of score level and classified into three levels which were high, moderate and low practice level. A mean score of 64.32 and standard deviation of 7.70 were used to classify the subjects into three levels (15) namely high level (more than 72), moderate level (57 to 72) and low level (less than 57).

Majority of the respondents for all three programmes had moderate practiced which were 41 (71.9%), 17 (77.3%) and 44 (73.3%). The success of a programme is depend on the level of practiced of an individual. The higher the practiced level, the greater the possibility for the success to be achieved (19). According to a health belief model, a person's perception about the disease and the probability to adopt positive attitude and practice was depend on four critical parameters which are perceived severity of a disease, perceived tendency to get the disease, perceived advantages of good attitude and practice and finally perceived barriers that might prevent an individual to commit positive transformation (20). Thus, it can be that students were not in these situations that lead them to have a good practice level to prevent and control the spread of Leptospirosis.

Association between Socio-Demographic Data with KAP towards Leptospirosis Disease

The association between age, gender and race with final year students' KAP towards Leptospirosis was analyzed using Chi-square test. There was no association between age and gender with the students' knowledge. The p-value for age and gender with the knowledge level was more than 0.05, thus indicating that there was no significant association between age and gender with knowledge of respondents. However, race shows a significant association with the knowledge level. The Chi-square test obtained was 17.509 and the p-value was less than 0.05 which was 0.008. Thus, there was an association between race and level of knowledge among final year students.

Previous study emphasized that there was influence of ethnicity on the distribution of Leptospirosis in Malaysia (21). Thus, it showed that races has an association with the knowledge of Leptospirosis. Besides, one of the previous study showed that knowledge of Leptospirosis seems to be related with the education level, but geographical

location of residence also does have more effect to the knowledge level (22). Students who live in a residence that have high Leptospirosis cases that can be due to flood disaster, may have higher knowledge compared to others. However, both previous educational level and residence area information was not included in the questionnaire of this study.

There was no association between age and race with the students' attitude level of all three programmes. However, there was a significant association between gender and attitude level. The Chi-square test obtained was 13.735 and the p-value was 0.001 which less than 0.05. Therefore, there was an association between gender and attitude level. Socio-demographic characteristics have been known as independent factors for Leptospirosis transmission and thus may give effect to an individual preventive and control health behavior (23).

There were no association between age, gender and race with the practice level towards Leptospirosis among respondents. The p-value for all selected variables was more than 0.05. Thus, it indicates that there was no significant association between socio-demographic variables and level of practice of students.

Previous study showed that gender had a significant association with the Leptospirosis prevention practice which was contrasting with the result of study (14). This study mentioned that male respondents were less likely compared to female to involve in the prevention and control practices of Leptospirosis. Thus, Leptospirosis was less prevalent among female than male due to their engagement in less risky behavior (24). Meanwhile, the prior study also mentioned that age was not significantly associated with the practice towards prevention and control of this disease which support the result of this study (14).

Association between Knowledge and Attitude with Practice towards Leptospirosis Disease

To analyze the association between knowledge and attitude on practiced to prevent and control the Leptospirosis, Chi-square test was used. The data obtained was tabulated in Table I and II.

Based on Table I, about 77 (55.4%) students had moderate knowledge and moderate practiced on Leptospirosis. Meanwhile, only 5 (3.6%) students had high level of knowledge with good practiced and 4 (2.9%) students had low knowledge level with low level of practiced. The Chi-square test obtained was 5.834 and the p-value was 0.212 which is more than 0.05. Therefore, there was no association between knowledge and practice level.

Previous study have checked on the relationship between knowledge and practiced level among students and they found that the association between them were weak (17).

Table I: Association between knowledge and practice (N=139)

Variable	Practice, N (%)			X	p-value
	Low	Moderate	High		
Knowledge					
Low	4 (2.9)	17 (12.25)	3 (2.2)	5.834	0.212
Moderate	11 (7.9)	77 (55.4)	13 (9.4)		
High	1 (0.7)	8 (5.8)	5 (3.6)		

N=139, Chi-square test, *significant at $p < 0.05$

Similar to this study, there was no significant association between knowledge and practice level among the final year students. There were also some studies that support this present study which was on dengue fever, reported that there was no association between knowledge and practiced about the disease (25).

Table II showed the association between attitude and practice towards Leptospirosis. There was 77 (55.4%) students who had moderate attitude with moderate practice level and 12 (8.6%) students had moderate attitude and good practice. Meanwhile, only 8 (5.8%) students who had high attitude and high practice level. The Chi-square test gained was 18.204 and the p-value is less than 0.05 which was 0.001. Thus, there was an association between attitude and practice on Leptospirosis.

Table II: Association between attitude and practice (N=139)

Variable	Practice, N (%)			X	p-value
	Low	Moderate	High		
Attitude					
Low	5 (3.6)	15 (10.8)	1 (0.7)	18.204	0.001*
Moderate	11 (7.9)	77 (55.4)	1 2 (8.6)		
High	0 (0.0)	10 (7.2)	8 (5.8)		

N=139, Chi-square test, *significant at $p < 0.05$

There was previous study on rabies and dengue fever that reported significant association between knowledge and attitude with the prevention and control practices towards the disease (26). Thus, highly positive and good attitude among the respondents was considered as a good indication of welcoming health intervention efforts (14).

Comparison of KAP of Leptospirosis between Final Year Students of ENVOCH, Nursing and Veterinary Medicine

The comparison of KAP of Leptospirosis between final year students of ENVOCH, Nursing and Veterinary

Medicine were analyzed using Kruskal-Wallis test since the data was not normally distributed. The results were tabulated in Table III, IV and V.

Based on Table III, the p-value obtained from the test was 0.001 which was less than 0.05. Thus, there was a significant difference of knowledge level between final year students of ENVOCH, Nursing and Veterinary Medicine. Since there was a significant difference ($p < 0.05$, $p = 0.001$) existed, Mann-Whitney U test must be conducted. The results was shown in Table III.

Table III: Comparison of knowledge of Leptospirosis (N=139)

Programmes	n	Median	X ²	p-value
ENVOCH	57	13.0	23.588	0.001*
Nursing	22	12.5		
Vet Med	60	15.0		

N=139, Kruskal-Wallis test, *significant at $p < 0.05$

From Table IV, there was significant difference on the knowledge level between ENVOCH and Veterinary Medicine and also Nursing and Veterinary Medicine where the p-value was less than 0.05, (0.001) respectively. This may due to the high knowledge among Veterinary Medicine students compared to others on Leptospirosis. They are more exposed to the animals in the lecture and training session that make them to know more on the disease. Students can understand the concept and importance of the disease only when there is exposure and experience on it (27).

Table IV: Comparison of knowledge of Leptospirosis (N=139)

Programmes	n	Median	z	p-value
ENVOCH	57	13.0	-1.202	0.229
Nursing	22	12.5		
ENVOCH	57	13.0	-4.015	0.001*
Vet Med	60	15.0		
Nursing	22	12.5	-4.069	0.001*
Vet Med	60	15.0		

N=139, Mann-Whitney test, *significant at $p < 0.05$

Based on Table V, the p-value obtained from the test was 0.372 which was more than 0.05. Thus, there was no significant difference of attitude level between final year students of ENVOCH, Nursing and Veterinary Medicine. This may be due to the inability of the students to look for the advantages of the good attitude and prevention practices (12). Mann-Whitney test was not required since there was no significance difference between them.

Based on Table VI, the p-value obtained from the test was 0.581 which was more than 0.05. Thus, there was no significant difference of practice level towards

prevention and control of Leptospirosis between final year students of ENVOCH, Nursing and Veterinary Medicine and Mann-Whitney test was not required to be done. This happen may be due to the lack of practical ways to prevent and control Leptospirosis by educational campaigns with theater, pamphlets and drama that include risk factors of the disease (12).

Table V: Comparison of attitude towards Leptospirosis (N=139)

Programmes	n	Median	X ²	p-value
ENVOCH	57	62.0	1.977	0.372
Nursing	22	65.5		
Vet Med	60	63.0		

N=139, Kruskal-Wallis test, *significant at p<0.05

Table VI: Comparison of practice on Leptospirosis (N=139)

Programmes	n	Median	X ²	p-value
ENVOCH	57	63	1.086	0.581
Nursing	22	66		
Vet Med	60	66		

N=139, Kruskal-Wallis test, *significant at p<0.05

Recommendation by Respondents

Based on recommendation suggested in Section D of questionnaire, the most recommendation selected by respondents were utilized the media as medium in distributing the KAP on Leptospirosis among public. The most appropriate medium chosen by the students to disseminate the information regarding Leptospirosis disease was social media which was 109 (78.4%) followed by mass media 20 (14.4%). Meanwhile, 4 (2.9%) students had chosen printed media and website as the best medium to spread the information about Leptospirosis.

There was a relationship between broadcast media and prevention practices of Leptospirosis disease showed in previous studies, that indicated that social and mass media may contribute to the positive transformation in health-related behaviors (28).

Furthermore, based on this study, there are some improvement that should be made, majority of students gain the information about this disease from the lecture that they attained and followed by internet. Therefore, it is important to improve the learning process in the lectures and include variety of programmes and activities that require students to apply the knowledge so that they able to understand and practice what they have learnt in the lectures or activities. During lectures, all basic and important information such as causative agent, mode of transmission, sources and causes, signs and symptoms, prevention and control, and also diagnosis and treatment must be included and emphasized. This is because based on this study, most students were unable to know the causative agent of Leptospirosis which is the very basic knowledge.

Moreover, majority of students obtained the knowledge on this disease from the internet. Even in the recommendation part of the questionnaire, students suggest to spread the information via social media since it is easy to be used and more attractive and interesting. Hence, most of the university students prefer to use and get information and entertainment from the social media compared to mass and printed media. Therefore, it is more interesting and practicable to use social media to share the knowledge between lecturers and students and do activities or games in the social media like Whatsapp, Youtube, Facebook and Instagram since they are also expert in using that medium.

Somehow, there were some effective measure chosen by final year students to minimize the cases of Leptospirosis in Malaysia. Most of the students which was 84 (60.4%) suggested that by enhancing the knowledge, attitude and practice may help in preventing and controlling Leptospirosis cases in Malaysia. Meanwhile, 20 (14.4%) respondents recommended that the importance of improving the information dissemination of Leptospirosis disease to the stakeholders such as public via press and media. Surprisingly, to minimize the cases of this disease, only 12 (8.6%) of students suggested to be enhancing the role of responsibilities parties such as district health officer.

As summary, good and effective delivery strategies should involve the usage of broadcast media to disseminate the information on Leptospirosis in order to increase the KAP among public especially students, and also enhance the capacity of local government health units to organize effective and efficient health promotion activities (14). Besides, previous study showed that there was statistically significant enhancement in the knowledge and attitude after the education program (28).

DISCUSSION

Most of the respondents are found to have basic knowledge about Leptospirosis such as signs and symptoms, prevention and control, factors that lead of disease as well. However, most of them confused the leptospira virus as a causative agent, but actually Leptospirosis is caused by leptospira bacteria. Majority of student also did not know or uncertain that men have higher risk to get Leptospirosis compared to female. Several factors may be contributing to this including a lack of student's effort to get the knowledge on leptospirosis information from various sources such as related academic journals, books and proceeding in order to enrich their knowledge on that. Despite, they may could be assumed, the students only depends on lecturer notes given to them and internet sources which sometimes not valid in terms of the information.

Respondents must understood that, attitudes, practices

and knowledge are important for prevention and control programs for leptospirosis. Thus, necessary steps to enhance the knowledge among them about Leptospirosis must be taken into action. For suggestion, as environment, human and animal health practitioners in the future, they should have good KAP on the zoonotic diseases like Leptospirosis disease. Therefore, they should receive continuous education, at least strong basic knowledge on leptospirosis disease such as prevention, transmission, and high-risk public populations. With understanding the disease completely, they could suggest possible strategies to control and prevent leptospirosis.

There is also an association between race and knowledge of respondents. Meanwhile, the result showed the association between gender and attitude among students. However, there is no association between socio-demographic with practice level towards Leptospirosis but attitude showed a significant association with the practice level.

Finally, the study also showed that there is a significant difference in the knowledge level among ENVOCH and Nursing with Veterinary Medicine Students. Final year Students of Veterinary Medicine have higher knowledge compared to other programmes. Hence, the result also proved that high altitude level towards Leptospirosis is also mostly among Veterinary Medicine students. This indicates that high knowledge may lead to good attitude.

CONCLUSION

Findings from this study provide important information that, the level of knowledge, attitude and practice towards Leptospirosis was in moderate level among respondents including the Veterinary Medicine. There is need to increase knowledge among the respondents with multi approaches such as continuous education program because good knowledge of leptospirosis will lead to better attitude and practice.

This study has limitations that may affect the generalizability of the results to other communities and populations. First, study participants involved only 170 respondents with focused on three disciplines. Furthermore, only final year students were involved. Second, information bias and recall bias may be occurred due to determinant of association between variables were based on the questionnaire and depend on answers filled by the respondents. Hence, respondents may not remember and misjudge some important information related to this study.

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