Original article

Survey of knowledge, perceptions and practices regarding biosafety of medical students in the Faculty of Medicine, Chiang Mai University in Academic Year 2019

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Objectives The study was designed to identify differences and correlations among the knowledge, perceptions and practices regarding biosafety of medical students in the Faculty of Medicine, Chiang Mai University.

Methods This cross-sectional descriptive and analytical study was conducted with 321 2nd through 5th year medical students via a self-administered questionnaire survey.

Results In the area of knowledge of biosafety, the 2nd year students had more knowledge regarding disinfection with 70% alcohol and cleaning materials than 3rd and 5th year students ($p = 0.023$ and $p = 0.002$, respectively). There was a greater lack of knowledge regarding biohazard signs ($p = 0.01$ and $p = 0.001$) and biosafety levels ($p < 0.001$ and $p < 0.001$) among clinical students than among 2nd year students. As to perceptions regarding biosafety, clinical students tended to ignore risks of infection from their used ward clothes ($p = 0.008$ and $p = 0.003$), lack of hand washing ($p < 0.001$ and $p < 0.001$), and cleaning their lab coat or ward coat ($p = 0.007$ and $p = 0.013$) more than the 2nd year students. In the area of practice of biosafety, incorrect practices were more common among clinical students than 2nd year students, e.g., cleaning the lab bench after working with human pathogens ($p < 0.001$ and $p < 0.001$), bringing food and drinks into the operating area ($p < 0.001$ and $p < 0.001$), and improperly disposing of infectious-trash ($p = 0.006$ and $p = 0.007$). Spearman's rank correlation coefficient showed strong correlations among the level of agreement with statements regarding wearing shoes coverings in a biosafety level 2 laboratory ($r = 0.404$), disposing of contaminated lab gloves, gauze, and cotton ($r = 0.479$), and decontaminating accidentally spilled chemicals/specimens ($r = 0.474$), as well as the frequency of cleaning the lab bench after working ($r = 0.430$), performing microbiology activities without using aseptic techniques ($r = 0.524$), and wearing laboratory slippers inside a laboratory or ward ($r = 0.442$) with the average perception and practice scores of the 2nd to 5th year students.

Conclusions Clinical students tended to ignore some important knowledge, perceptions and practices. There were strong correlations in the average scores of statements regarding perceptions and practices. A campaign should be instituted to improve knowledge, establish correct attitudes and promote appropriate practice related to biosafety. **Chiang Mai Medical Journal 2021;60(3):303-15. doi: 10.12982/CMUMEDJ.2021.27**

Keywords: biosafety, knowledge, perception, practice, medical students

Introduction

Unsafe practices of microbiological operators can result in an outbreak of biohazardous pathogens which could endanger health care workers, the community, and the environment (1).

Unsafe practices in the laboratory, e.g., dropping culture plates, contaminated hands and mishandling of inoculum, can increase the exposure

risk (1). Unsafe practices of laboratory practitioners found in Ahmad's report include improper personal protective equipment, mouth pipetting, inappropriate syringe disposal, and using laboratory work benches without prior disinfection (2).

Kreunin, et al. reported in 2014 that the most common risk factors for laboratory accidents were a lack of perception and knowledge of laboratory safety management on the part of laboratory operators (3). According to the findings of a 2017 study by Sreedharan et al., less than half of nurses are aware of the danger when handing specimens diagnosed as infectious, resulting in uncautious practices (4).

More importantly, medical students have to handle biohazardous organisms in microbiological laboratories and wards. In an article by Chaicom, et al. published in 2013, knowledge was found to be positively correlated with attitude. Although some medical students had a high level of knowledge, their practices fell below standard and need to be improved (5).

Meyoutam, et al. stated that, "More than half of clinical laboratory workers had low level of knowledge: safety and emergency response". (6) Based on these findings, we performed a descriptive, analytical cross-sectional study to assess the level of and correlations among knowledge, perceptions and practices of biosafety among 2nd to 5th year medical students in the Faculty of Medicine, Chiang Mai University. Differences between the different years of study of the medical students were also identified. We hypothesized that more senior medical students tend to lose some knowledge of and to fail to implement practices related to biosafety, thus some significant differences between pre-clinical and clinical medical students in terms of knowledge, perception and practice were expected.

Methods

The present study of the knowledge, perceptions and behavior regarding biosafety among medical students in the Faculty of Medicine, Chiang Mai University, was conducted using a cross-sectional survey with a self-administered questionnaire via Google Form.

Among 794 medical students, 321 students were recruited according to the Krejcie-Morgan calculation to achieve a 95% confidence interval [CI]. All student volunteers were requested to answer the questionnaire.

This survey was conducted with 2nd and 3rd year medical students who had been studying at the Faculty of Medicine, Chiang Mai University and 4th and 5th year students who had been practicing at Maharaj Nakorn Chiang Mai Hospital during the 2019 academic year.

Data collection

The survey was conducted between October and November 2019 using a self-administered questionnaire distributed via Google Form. Ethical approval for the study was given by the Ethics Committee, Faculty of Medicine, Chiang Mai University (certificate of approval no. COM-2562-06695). Verbal informed consent of the participants was received before distributing the questionnaire. To help ensure validity, the questionnaire was tested by 3 professors and the reliability was analyzed with 15 subjects who were not recruited into the study. The results revealed a Cronbach's alpha coefficient of 0.964 which is greater than 0.6, indicating that questionnaire had a good index of trust.

The closed-ended questionnaire consisted of 3 parts as shown in Table 1 (parts II-IV) with 9 items in each part. The first part was the socio-demographic section information including sex, year of medical school in 2019, accidents in the laboratory and frequency of operating in laboratory or ward, were collected from respondents using both nominal and ordinal scale measurement (Table 1, part I).

The second part was designed to assess general knowledge associated with biosafety, including universal precautions, laboratory equipment, and waste disposal. Answers were in either nominal or ordinal scale. Each item had three options: 'Yes', 'No' and 'Not sure'. Participants who responded to the statements correctly scored one point, whereas incorrect responses and 'Not sure' scored zero

Table 1. Questionnaire regarding knowledges, perceptions, and practices of medical students in the Faculty of Medicine, Chiang Mai University during the Academic Year 2019

Part I General sociodemographic data

Please check ✓ the box or mark the blanks which best reflect your situations

1. Gender
   - ☐ Male
   - ☐ Female
2. In academic year 2019, in what class were you studying?
   - ☐ 2nd year student
   - ☐ 3rd year student
   - ☐ 4st year student
   - ☐ 5st year student
3. Have you ever attended a training about biosafety?
   - ☐ Have attended
   - ☐ Have not attended
4. How many times a week did you work in the biosafety laboratory or the infectious wards in the last month?
   - ☐ Never
   - ☐ 1-2
   - ☐ 3
   - ☐ 4-5
   - ☐ 6-7
5. Have you ever had an accident while working in the biosafety laboratory or in the infectious wards, e.g., cutting yourself with a sharp object?
   - ☐ Yes
   - ☐ No

Part II. General knowledges related to biosafety

Please check ✓ the box or mark the blanks which best reflect your knowledge about the statement

Item	Statement	Knowledge answer		
		Yes	No	Not sure
Control of infection according to principles of universal precaution				
1	Hand washing with soap is effective in eliminating infection in the laboratory.			
2	Pathogens can contaminate lab coats and can grow and spread to other areas in daily life.			
3	Drug-resistant pathogens can survive on lab benches or work tables in wards before they are cleaned with alcohol.			
4	Covershoes should be worn while in the laboratory or the operating ward.			
5	Absorbent materials such as paper towels with disinfectants should be used to clean a contaminated lab bench.			
General practices regarding operating rooms with biosafety level 2				
6	A biohazard sign means that there is currently radiation in the room.			
7	Microbiology laboratories and wards at the Faculty of Medicine, Chiang Mai University are classified as a biosafety level 2 areas.			
8	If the air conditioner in the microbiology laboratory or infectious ward is not operating, you can open a window.			
Infectious waste management				
9	Used syringes are classified as general waste.			

Part III. Perceptions regarding biosafety

Please check ✓ the box or mark the blanks which best reflect your perception about the statement.

Item	Statement	Perception				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Control of infection according to principles of universal precaution						
1	Hands should be washed after removing operating gloves.					
2	Laboratory coats are more biologically contaminated than ward coats.					
3	Items placed on a lab bench in a microbiological labora-tory or infectious ward can be contaminated.					
4	Wearing covering boots is allowed in biosafety level 2 laboratory					
5	If pathogens are accidentally spilled on a lab bench, decontamination with 70% alcohol should be performed.					
General practices regarding to operating rooms of biosafety level 2						
6	If you see the "Biohazard" sign anywhere, it means that food and drink should not be brought into that area.					
7	Operators using a microbiology laboratory do not need to be trained regarding biosafety.					
8	Hand washing sinks should to be installed in a labora-tory or ward.					
Infectious waste management						
9	It is not necessary to dispose of contaminated lab gloves, gauze and cotton in a bin with a lid.					

Part IV. Practices related to biosafety

Please check ✓ the box or mark the blanks which best reflect your practices.

Item	Sentences	Frequency of practice				
		Always	Often	Sometimes	Infrequently	Never
Control of infection according to principles of universal precaution						
1	I wash my hands before leaving the laboratory or ward.					
2	I wash a used lab coat or ward coat and let it dry in the sun.					
3	I put a telephone or lecture sheet on the lab bench of microbiology room or infectious ward.					
4	Do you have worn laboratory slippers?					
5	Do you clean the laboratory table after working with human pathogens?					
General practices regarding an operating room with biosafety level 2						
6	I bring food or drinks into the laboratory or ward.					
7	I have taken a non- medical third party into a micro-biological laboratory or infectious ward.					
8	Do you have performed microbiology practice?					
Infectious waste management						
9	I have disposed of contaminated lab gloves, gauze and cotton in a red bag contained in a waste bin.					

points. Answers were classified into 3 levels: good (7.00-9.00 points), moderate (5.00-6.99 points), and poor (0.00-4.99 points).

Perception of biosafety, including universal precautions, laboratory equipment, and waste disposal were assessed in the third part. The statements were divided into two aspects: positive and negative perceptions. Responses were on a 5 level interval scales, i.e., 'strongly agree', 'agree', 'neutral', 'disagree' and 'strongly disagree'. Each response was scored from five points to one point for positive perceptions and from one to five points for negative perceptions. Finally, the mean scores were calculated and classified into 3 levels: good (3.50-5.00 points), moderate (2.50-3.49 points), and poor (1.00-2.49 points).

The last part covered respondents' biosafety practices including universal precautions, laboratory equipment, and waste disposal where each item contained a five level interval scale from 'always' to 'never' which was scored from five points to one point for positive practices and the opposite for negative practices. Mean scores were summarized into 3 levels: good (3.50-5.00 points), moderate (2.50-3.49 points), and poor (1.00-2.49 points).

Data analysis

Data were analyzed using IBM SPSS Statistics Base. Socio-demographic data is presented as frequency, percentage and standard deviation. In order to investigate the differences and correlations of statistical values for knowledge, perception and behaviour among 2nd to 5th year medical students, Analysis of Variance (One-way ANOVA) and Pearson correlation was used.

Results
Socio-demographic characteristics

Three hundred and twenty-two 2nd to 5th year medical students at Chiang Mai University were recruited into this study of whom 167 (52.02%) were male. Most clinical students (61.11%) had worked in the ward 6-7 times per week, whereas 56.14% of the pre-clinical students had worked in the laboratory 1-2 times per week. Moreover, 241 (75.08%) of the respondents had never had an accident in a laboratory or ward. Other socio-demographic characteristics are shown in Table 2.

For the negative knowledge statement, "Drug-resistant pathogens can survive on a lab bench or working table in a ward before cleaning with alcohol", the average knowledge score of 2nd year students was significantly lower than that of the 3rd year students ($p = 0.023$) as shown in Fig. 1a. This statement evaluated inaccuracies of the knowledge in the students as drug-resistant pathogens are in fact killed by cleaning with 70% alcohol. In

Table 2. Socio-demographic data

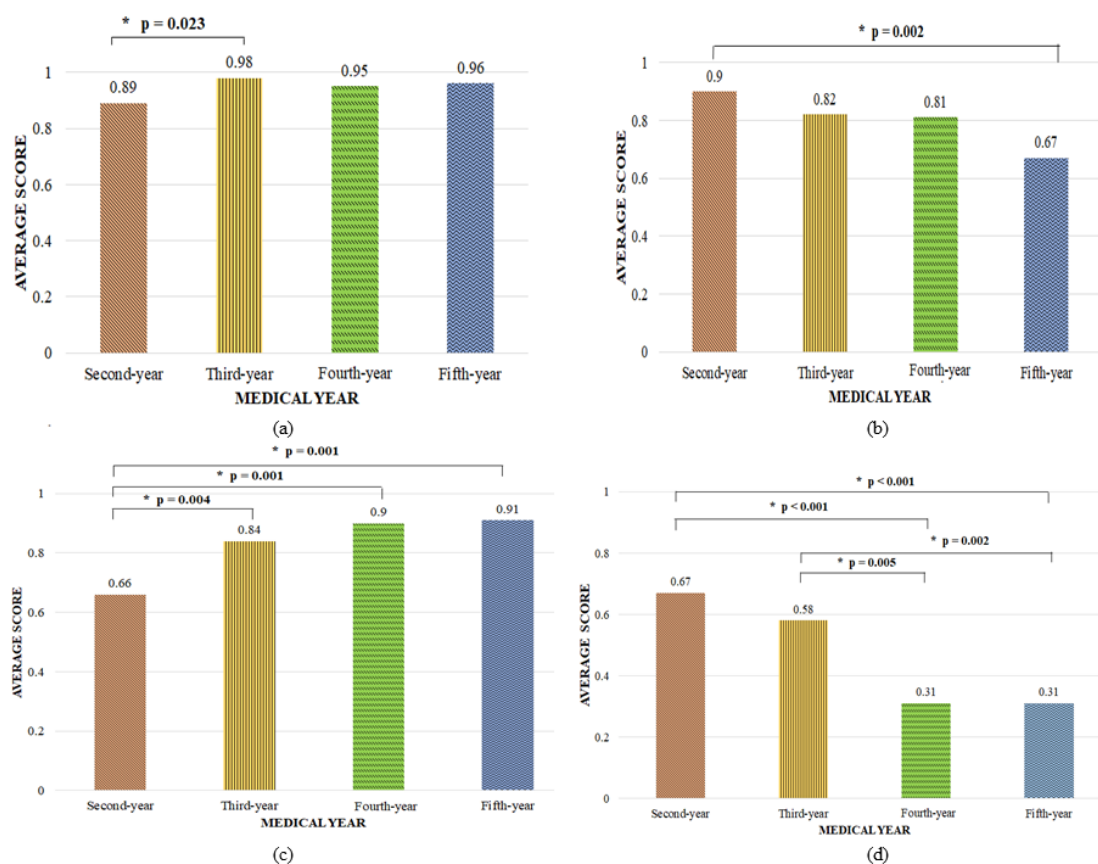|	Year of medical students in 2019				
	2nd year (n=94)	3rd year (n=114)	4th year (n=59)	5th year (n=54)	Total (n=321)
Sex					
Male	54 (57.45)	41 (35.96)	35 (59.32)	37 (68.52)	167 (52.02)
Female	40 (42.55)	73 (64.04)	24 (40.68)	17 (31.48)	154 (47.98)
Frequency of operating in laboratory or ward (times/week)					
6-7	1 (1.06)	1 (0.88)	32 (54.24)	33 (61.11)	67 (20.87)
4-5	8 (8.51)	3 (2.63)	12 (20.34)	11 (20.37)	34 (10.59)
3	18 (19.15)	12 (10.53)	5 (8.47)	5 (9.26)	40 (12.46)
1-2	33 (35.11)	64 (56.14)	8 (13.56)	5 (9.26)	110 (34.27)
Never	34 (36.17)	34 (29.82)	2 (3.39)	0	70 (21.81)
Accidents in laboratory					
At least once	14 (14.89)	45 (39.47)	6 (10.17)	15 (27.78)	80 (24.92)
Never	80 (85.11)	69 (60.54)	53 (89.83)	39 (72.22)	241 (75.08)

Figure 1. (a) Average response scores for the statement, 'Drug-resistant pathogens can survive on a lab bench or work table in a ward before cleaning with alcohol'. (b) Average response score for the statement, 'Absorbent materials such as paper towels with disinfectants should be used to clean a contaminated lab bench'. (c) Average response score for the statement 'A Biohazard sign means that there is currently radiation in the room'. (d) Average response score for the statement, 'Microbiological laboratories and wards at the Faculty of Medicine, Chiang Mai University are classified as areas that must be operated according to the rules of biosafety level 2'.

fact, only alcohol concentrations of 70% or higher are effective. This suggests that 2nd year students have more knowledge regarding disinfection with 70% alcohol than 3rd year students. For the positive statement, "Absorbent materials such as paper towels with disinfectants should be used to clean the contaminated lab bench" as shown in Fig. 1b, there was a significant difference between the 2nd and 5th year students ($p = 0.002$). The 2nd year students had better knowledge about disinfection than 5th year students. Misunderstanding regarding the biohazard sign by clinical students was demonstrated by the next negative statement, "A biohazard sign means that there is currently radiation in this room" as shown in Fig.1c. There

was a significant difference between 2nd year students and other years ($p = 0.004$, $p = 0.001$, $p = 0.001$), suggesting that the 2nd year medical students had more knowledge regarding biohazard signs than other students. A significant difference was also demonstrated between 2nd year students and clinical students regarding the statement, "Microbiology laboratories and wards at the Faculty of Medicine, Chiang Mai University are classified as a biosafety level 2 areas" ($p < 0.001$) as shown in Fig. 1d. Similarly, significant differences were found between 3rd year students and clinical students for the same question ($p = 0.005$, $p = 0.002$). This suggests there was a lack of knowledge regarding biosafety level 2 among clinical students.
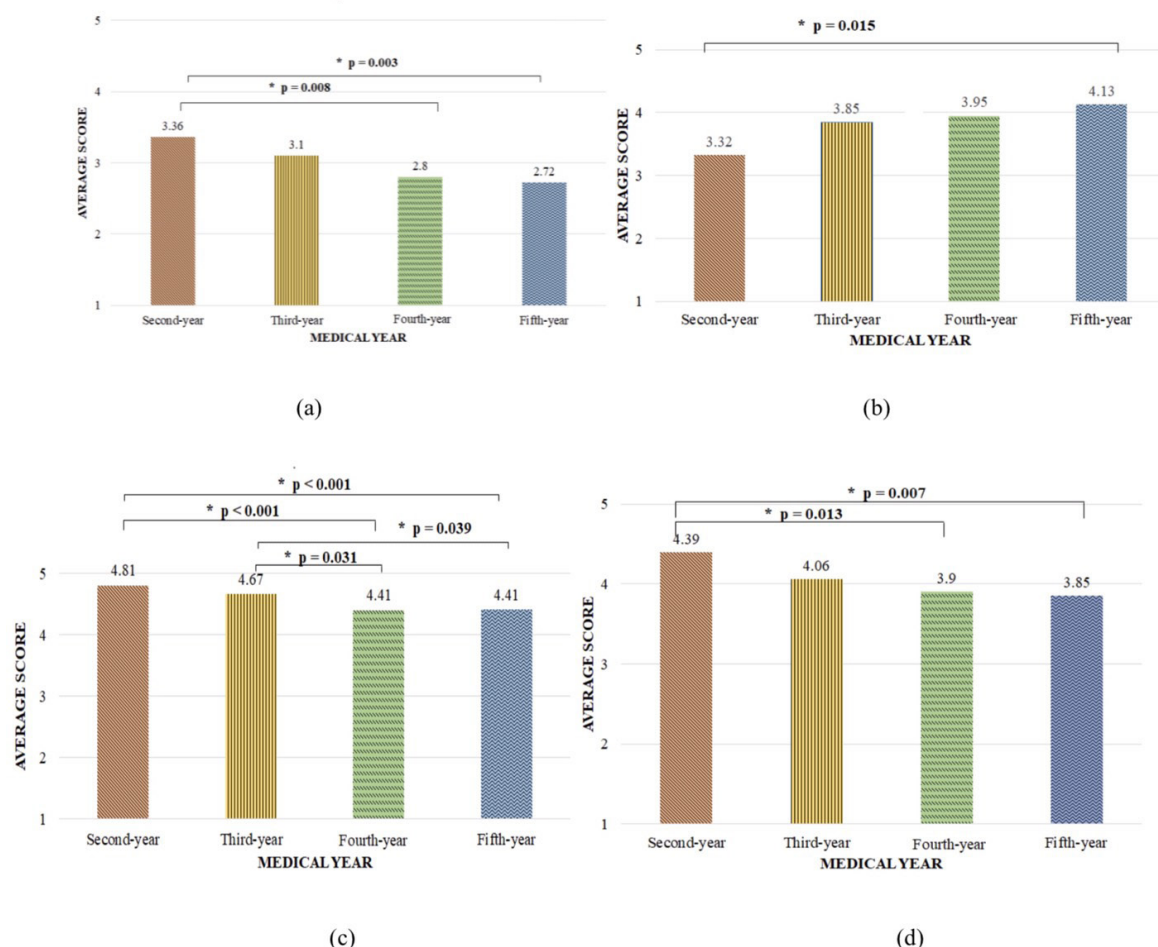
Figure 2. (a) Average response scores to the statement, 'Laboratory coats are more biologically contaminated than ward coats.' (b) Average response scores to the statement, 'It is not necessary to dispose of contaminated lab gloves, gauze and cotton in a bin with lid'. (c) Average response scores to the statement, 'I wash my hands before leaving the laboratory or ward'. (d) Average response scores to the statement, 'I wash a used lab coat or ward coat and let it dry in the sun'.

Perceptions regarding biosafety

Fig. 2a shows the significant difference between 2nd year students and 4th and 5th year students in responses to the statement, "Laboratory coats are more biologically contaminated than ward coats" ($p = 0.008$, $p = 0.003$), respectively. This suggests that clinical students tended to ignore the risk of infection from used ward clothes. Most 5th year medical students agreed with the next negative statement, "It is not necessary to dispose of contaminated lab gloves, gauze and cotton in a bin with a lid", a result significantly different from 2nd year medical students ($p = 0.015$) (Fig. 2b). This suggests that 5th year medical students should be reminded of proper disposal of contaminated objects.

Practice of biosafety

Significant differences were found between 2nd year medical students and clinical students in responses to the statement, "I wash my hands before leaving the laboratory or ward" ($p < 0.001$, < 0.001). Significant differences were also found between 3rd year medical students and clinical students for the same statement ($p = 0.031$, $p = 0.038$) as shown in Fig.2c. This suggests that clinical students wash their hands less often than pre-clinical students. Significant differences were also found in responses to the positive statement, "I wash my used lab coat or ward coat and let it dry in the sun." between 2nd year medical students and 4th and 5th year medical students ($p = 0.007$,
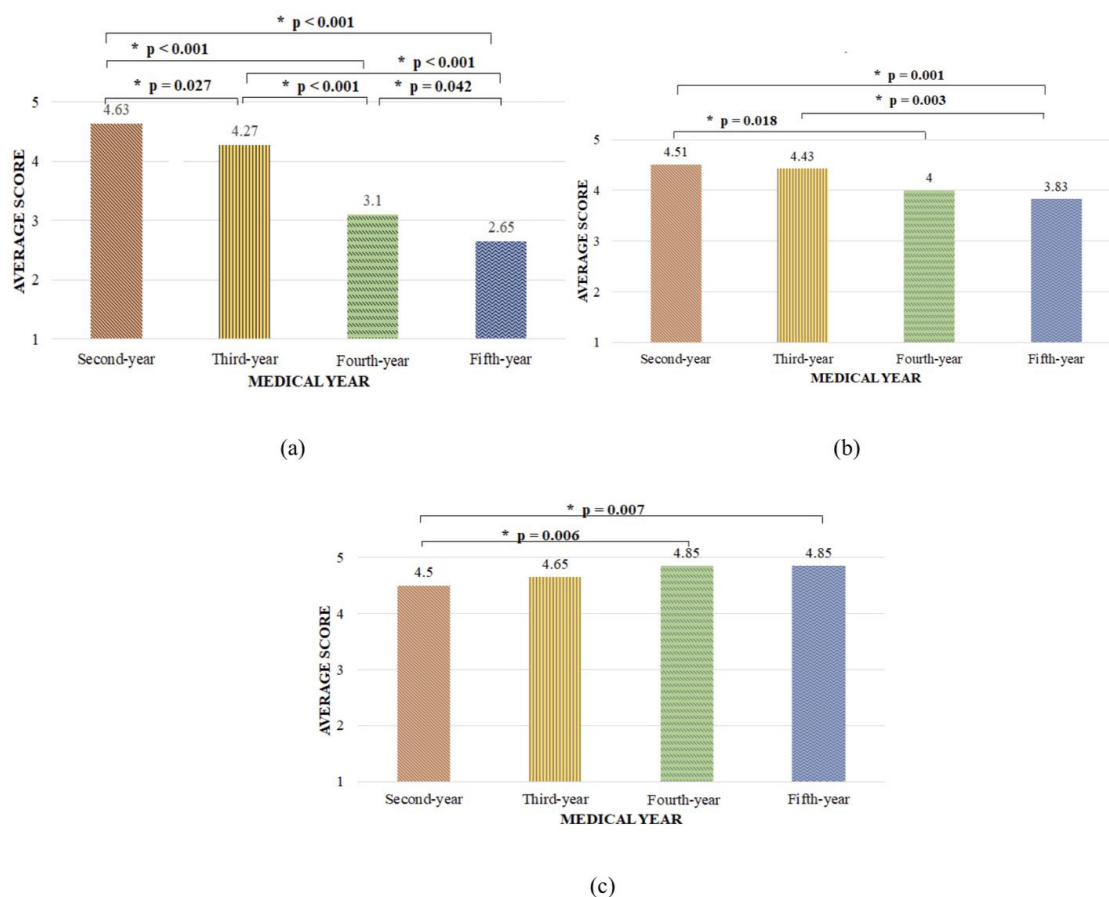
Figure 3. (a) Average response scores to the statement, 'I clean the lab bench after working with human pathogens'. (b) Average response scores to the statement, 'I have brought food or drinks into the laboratory or ward'. (c) Average response scores to the statement, 'I have disposed of contaminated lab gloves, gauze and cotton in a bin with a red bag'.

0.013) as shown in Fig. 2d. This suggests that the clinical students tended to clean their lab coat or ward coat less often than 2nd year students.

Significant differences were found between 2nd year medical students and clinical students in responses to the positive statement, "I clean the lab bench after working with human pathogens" ($p < 0.001$, <0.001) as shown in Fig. 3a. Significant differences were also found between 3rd year students and clinical students for the same statement ($p < 0.001$, < 0.001). This suggests that clinical students had inappropriate practices regarding cleaning the lab bench after working with human pathogens. For the statement, "I have brought food or drinks into the laboratory or ward", significant differences were shown between the responses of preclinical and 2nd year students and

those of other clinical students ($p = 0.018$, = 0.001). Significant differences in responses to the same question were also found between 3rd year and 5th year students ($p = 0.003$) (Fig. 3b). This suggests that clinical students tended to ignore rules against bringing food and drink into the operating area more frequently than pre-clinical students. Significant differences between preclinical students, especially 2nd year students, and clinical students in response to the statement, "I dispose of contaminated lab gloves, gauze and cotton in a red bag contained in a waste bin" ($p = 0.006$, $p = 0.007$) (Fig. 3c). This suggests that the concept of proper infectious-trash disposal should be raised among pre-clinical students.

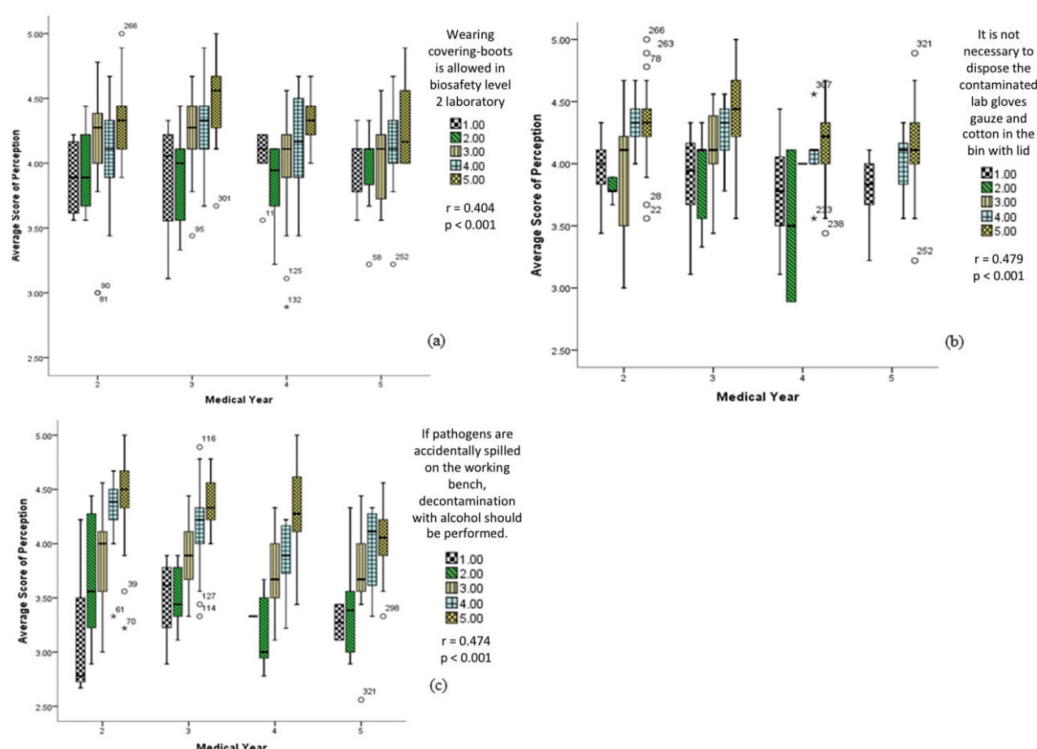The Spearman's rank correlation coefficient showed a strong correlation and significant dif-

Figure 4. (a) Correlation between the level of agreement with the statement, 'Wearing covering boots is allowed in biosafety level 2 laboratory' and average perception score. (b) Correlation between the level of agreement with the statement, 'It is not necessary to dispose of contaminated lab gloves, gauze and cotton in a bin with a lid' and average perception score. (c) Correlation between the level of agreement with the statement, 'If pathogens are accidentally spilled on a working bench, decontamination with 70% alcohol should be performed' and average perception score.

ference between 2nd to 5th year students (r = 0.404, $p < 0.001$) in the level of agreement with the statement, "Wearing shoe coverings is allowed in a biosafety level 2 laboratory" as shown in Fig. 4a. In Fig. 4b, Spearman's rank correlation coefficient showed a strong correlation and significant difference between the level of agreement with the positive statement, "It is not necessary to dispose of contaminated lab gloves, gauze and cotton in a bin with lid" and the average perception score (r = 0.479, $p < 0.001$). There was a strong correlation and significant difference between the level of agreement with the positive sentence, "If pathogens are accidentally spilled on the lab bench, decontamination with 70% alcohol should be performed" and the average perception scores of (r = 0.474, $p < 0.001$) (Fig. 4c).

Spearman's rank correlation coefficient showed a strong correlation and significant difference

between the frequency of practice for the statements, "I clean the lab bench after working with human pathogens" (Fig.5a), "I conduct microbiology activities without using aseptic techniques" (Fig.5b), and "I have worn laboratory slippers inside the laboratory or ward" (Fig.5c) with average practice scores (r = 0.430, $p < 0.001$, r = 0.524, $p <0.001$, and r = 0.442, $p < 0.001$, res-pectively).

Discussion

From the analysis of the relationship among all three aspects, knowledges and perceptions about biosafety had a weak positive correlation as did the correlation between perceptions and practices. This finding is in the same direction as in a study by Griffin (7). However, the results of the present study indicate that there were differences in biosafety principles among different students at different levels of study.
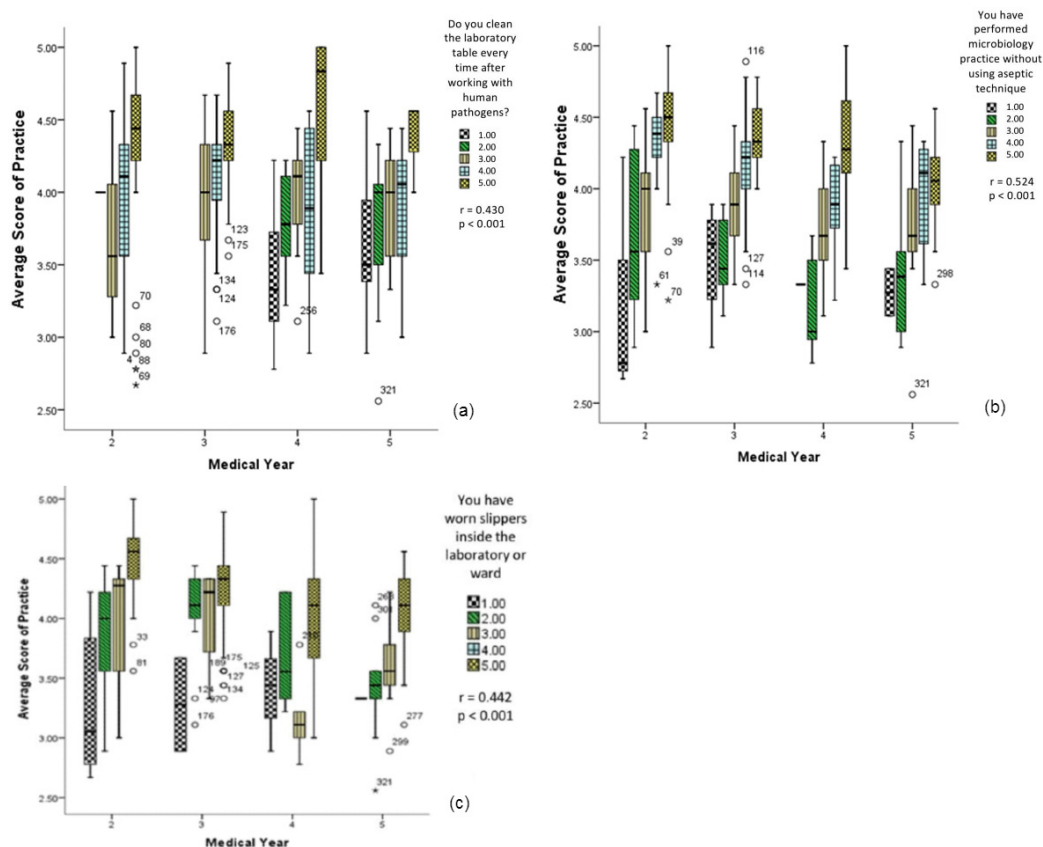
Figure 5. (a) Correlation between the frequency of the practice, 'Do you clean the laboratory table after working with human pathogens?' and average practice score. (b) Correlation between the frequency of the practice, 'You have performed microbiology practice' and average practice score. (c) Correlation between the frequency of the practice, 'I have worn laboratory slippers inside the laboratory or ward' and average practice score.

According to the analysis, the test results showed that perceptions and practices had a positive correlation ($p = 0.007$) which agrees with the finding that clinical students and 4th and 5th year medical students possess significantly lower levels of both perceptions and practices compared to pre-clinical students. This was possibly due to more time being spent in the laboratory or ward by clinical students leading to normalization of some negative attitudes. A similar result was published in a Chaicom, et al. study (5) of 4th year medical students in the Department of Internal Medicine, Khon Kaen University. This suggests that improvement of perceptions about biosafety can lead to better practices. To improve perceptions regarding biosafety, the biosafety level 2 operating guidelines and the importance of trans-

mittable pathogens should be emphasized with clinical students.

The 3rd year medical students scored highest in the knowledges section and were significantly superior to 2nd year students' scores. Supporting this statement, 3rd year students had more experience in the laboratory through the learning system according to the faculty's curriculum. All medical students have studied the courses Human Pathogens 1 and 2 and have learned about the theoretical knowledges and practical guidelines. For that reason, they should be aware of the need to protect against the spreading of pathogens from lessons on universal precautions, aseptic techniques, important transmittable pathogens, and waste management. Despite having recently studied Human Pathogens 1, a course which covers bac-

teriology and mycology, and Human Pathogens 2 which covers virology and parasitology, 2nd year students still require biosafety knowledge promotion above and beyond what is provided by the existing courses. Implementing this change may yield better performance by clinical students in the future because more knowledge leads to more accurate perceptions. It is suggested that additional knowledges regarding biosafety for medical students in these courses could be important for training about the variety of biosafety topics described above and for prevention of the transmission of pathogens. Additional required courses concerning biosafety would provide further opportunity to refresh biosafety skills at both the preclinical and clinical levels.

In order to improve all aspects of knowledges, perceptions and practices, significant items related to each of those aspects need to be periodically reviewed. Hence, topics such as survival of drug-resistant pathogens on lab benches, the meaning of biohazard signs, laboratory rules, and safety troubleshooting should be intensively provided to the 2nd year medical students before they begin to work in a microbiology laboratory. Moreover, 2nd year medical students should be informed more extensively about the dangers of contaminated objects and proper waste disposal as shown in Fig. 2b.

For clinical students, 4th and 5th year medical students, rules concerning biosafety level 2 laboratories and disinfection methods should be emphasized. Clinical students tended to ignore the risk of infection from their used ward clothes and to follow biosafety practices less closely. The risks should be emphasized in order to raise awareness of this issue. Campaigns and warning signs about universal precautions should include, as often as possible, promotion of hand washing, washing then drying lab coats properly, and cleaning the lab bench after working with human pathogens.

The average scores for perception were at a high level, so this area requires no further promotion. The frequency of following these posi-tive practices is high among all medical students. However, efforts to maintain these habits should still be applied constantly.

Clinical students frequenlty exhibit negative habits, e.g., not cleaning the lab bench after working with human pathogens and bringing food into the laboratory or ward, more frequently than do preclinical students. Clinical students need to be more concerned about these negative behaviors. This study confirms that the clinical students need to be repeatedly trained to refresh their skills in microbiology laboratories of biosafety level 2 before they practice in infectious wards.

Conclusions

Clinical students tended to have higher knowledge scores than other student groups; however, their perceptions and practices ranked last. From the 2nd to the 5th year, knowledge of microbiology and infectious disease was continuously rehearsed, but actual practices and perceptions were not included in that effort, leading to a decline in understanding over time. Important aspects of perceptions and practices should be highlighted annually with all medical student groups in order to promote safer practices.

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Conflicts of Interest

None

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การสำรวจความรู้ ความตระหนักรู้ และพฤติกรรมเกี่ยวกับความปลอดภัยทางชีวภาพของนักศึกษาคณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่ ปีการศึกษา 2562

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[1]นักศึกษาแพทยศาสตร์ชั้นปีที่ 3 คณะแพทยศาสตร์, [2]ศูนย์วิจัยทางทันตแพทยศาสตร์ คณะทันตแพทยศาสตร์, [3]ภาควิชาจุลชีววิทยา คณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่

วัตถุประสงค์ งานวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาความแตกต่าง และความสัมพันธ์ระหว่างความรู้ ความตระหนักรู้ และพฤติกรรมเกี่ยวกับความปลอดภัยทางชีวภาพของนักศึกษาคณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่

วิธีการ เป็นการสำรวจเชิงพรรณา และเปรียบเทียบแบบภาคตัดขวางในกลุ่มตัวอย่างนักศึกษาแพทย์ชั้นปีที่ 2 ถึง 5 จำนวน 321 ราย

ผลการศึกษา ผลการศึกษาพบว่านักศึกษาชั้นปีที่ 2 มีความรู้เกี่ยวกับความปลอดภัยทางชีวภาพถึงการกำจัดเชื้อด้วย 70% แอลกอฮอล์ และการทำความสะอาดสูงกว่านักศึกษาชั้นปีที่ 3 และ 5 (p = 0.023 และ p = 0.002 ตามลำดับ) พบการขาดความรู้อย่างมีนัยสำคัญเกี่ยวกับสัญลักษณ์ชีวอันตราย (p = 0.01 และ p = 0.001) และระดับความปลอดภัยทางชีวภาพ (p < 0.001 และ p < 0.001) ในนักศึกษาชั้นคลินิก 2 ชั้นปีเมื่อเทียบกับความรู้ของนักศึกษาชั้นปีที่ 2 ในด้านการตระหนักรู้พบว่านักศึกษาชั้นคลินิกทั้ง 2 ชั้นปีไม่ตระหนักถึงความเสี่ยงในการติดเชื้อจากชุดแต่งกายในหอผู้ป่วย (p = 0.008 และ p = 0.003) การล้างมือ (p < 0.001 และ p < 0.001) และการทำความสะอาดเสื้อกาวน์ (p = 0.007 และ p = 0.013) มากกว่านักศึกษาชั้นปีที่ 2 ในด้านการปฏิบัติพบว่าการปฏิบัติที่ไม่ถูกต้องพบได้อย่างมีนัยสำคัญในนักศึกษาชั้นคลินิกทั้ง 2 ชั้นปีเมื่อเทียบกับนักศึกษาชั้นปีที่ 2 ทั้งในเรื่องการไม่ทำความสะอาดโต๊ะภายหลังการทำงานกับเชื้อก่อโรค (p < 0.001 และ p < 0.001) การนำอาหารและเครื่องดื่มเข้ามาในบริเวณที่ปฏิบัติงาน (p < 0.001 และ p < 0.001) และการไม่ทิ้งขยะติดเชื้อให้ถูกชนิดของถังขยะ (p = 0.006 และ p = 0.007)

เมื่อพิจารณาค่าสัมประสิทธิ์ความสัมพันธ์ลำดับสเปียร์แมนพบความสัมพันธ์อย่างสูงถึงคะแนนเฉลี่ยของการตระหนักรู้กับประเด็นการสวมรองเท้าในห้องปฏิบัติการระดับ 2 (r = 0.404) การกำจัดสำลี ผ้าก๊อซ และถุงมือปนเปื้อนเชื้อ (r = 0.479) และการกำจัดเชื้อจากอุบัติเหตุของสิ่งส่งตรวจ (r = 0.474) รวมทั้งคะแนนเฉลี่ยการปฏิบัติถึงความถี่ในการทำความสะอาดโต๊ะหลังปฏิบัติงานเสร็จ (r = 0.430) การปฏิบัติงานโดยไม่ใช้เทคนิคปราศจากเชื้อ และการสวมรองเท้าแตะในห้องปฏิบัติการ หรือหอผู้ป่วยของนักศึกษาชั้นปีที่ 2 ถึง 5

สรุป เนื่องจากนักศึกษาชั้นคลินิกไม่ได้มีการทบทวนการปฏิบัติ และการป้องกันตัวในห้องปฏิบัติการมาเป็นระยะเวลานานพอสมควร ทำให้ความให้ความสำคัญ และการปฏิบัติตัวที่ถูกต้องลดลง จึงควรมีการรณรงค์เพื่อให้เกิดความตระหนักรู้ และพฤติกรรมที่ถูกต้องให้มากขึ้น **เชียงใหม่เวชสาร 2564;60(3):303-15. doi: 10.12982/CMUMEDJ.2021.27**

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