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Research article

Knowledge, attitude, and practice of medical students on human Monkeypox in Southern Vietnam

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ABSTRACT

This study was conducted to assess the knowledge, attitudes, and practices on Human Monkeypox among medical students in Southern Vietnam. A total of 556 medical students at the Faculty of Medicine, Tra Vinh University participated and completed a structured questionnaire about knowledge-attitude-practice on Human Monkeypox. Results: The proportion of female students having good knowledge (88.9%) was higher than that of male students (69.5%), however, the difference was not significant ($p>0.05$). Meanwhile, the proportion of students having good knowledge increased from the fresh year (72.8%) to the 6th year (92.0%) ($p<0.05$). Overall, 80,8% of medical students had good knowledge and 87.6% of students had good practice. To conclude, the knowledge-attitude-practice of me dical students with Human Monkeypox was at a good level.

Keywords: Human Monkeypox, Medical student, Knowledge, Attitude, Practice.

INTRODUCTION

Human Monkeypox is an infectious disease caused by the Monkeypox virus of the genus Ortho pox virus. The disease causes symptoms similar to smallpox [4]. The first human case was detected in 1970 and the disease primarily causes an endemic in Western and Central Africa [6].

Human Monkeypox began spreading to countries around the world in May 2022. Since then, the disease has been detected in more than 100 countries. On July 23, 2022, the WHO declared an international public health emergency for the monkeypox. Although the disease's symptoms are not as severe as that of smallpox, the reported mortality rate is between 3-6%, indicating that it is still a serious global public health problem [2, 14]. With such urgency, that is important to prepare all knowledge to prevent Human Monkey pox among medical staff and medical students.

The WHO has warned that with the lessons of the COVID-19 pandemic, the lack of necessary preparations for epidemic prevention and the response would be a significant gap and seriously weaken the health systems of countries when the disease occurs in that country. Around the world, some studies have found that the knowledge of healthcare workers and medical students with Human Monkeypox is at a low level [1]. The main symptoms of the disease include fever, vesicular rash, and peripheral lymphadenopathy, which can cause serious complications leading to death.

Currently, Vietnam has not detected many cases of Human Monkeypox infection. However, the possibility that the disease is latent spreading in the community cannot be ruled out. This study was conducted to assess knowledge, attitudes, and practices on Human Monkeypox among medical students in Southern Vietnam.

MATERIALS AND METHODS

A cross-sectional survey was conducted at the Faculty of Medicine, Tra Vinh University from July to December 2022. This survey was conducted on medical students with selection criteria including 1) Students from the 1st to the 6th year of all majors (general medicine, pharmacy, nursing, general laboratory testing, public health); 2) Studying at the Faculty of Medicine- Pharmacy, Tra Vinh University; 3) The student are agreeing to participate in the study after being introduced and explained about the study. Exclusion criteria: Students did not agree to participate in the study; Students who have dropped out of Tra Vinh University. All students who were eligible for the study were invited to participate. A convenient sampling method was used as a sampling technique. The total sample size was 556 students. The study was approved by the Institutional Review Board of Tra Vinh University.

Data collection

A structured self-administered questionnaire was developed for data collection. The questionnaire included two parts: 1) Demographic characteristics; and 2) Knowledge-attitude-practices about Human Monkeypox. Demographic characteristics included: academic year, gender, age, and professionals.

There were eight questions about knowledge including symptoms of the disease, transmission routes, stages of diseases, severity, prevention, diagnostic signs, danger signs of the disease and differential diagnosis of Human Monkeypox disease from other diseases. Each correct answer scored one point while the incorrect answer was reduced by one point. The highest total score was 42 points, and participants were classified in three groups: 1) Good (≥33 points); 2) Fair (25-32 points); and 3) Poor (≤24 points).

There were six items about attitude including frequency of information updates, concern for family members, willingness to declare truthfully and isolate according to regulations, willingness to take safety measures to prevent monkeypox, information sharing accurately informing relatives and the community about monkeypox, and willingly participate in epidemic prevention. Meanwhile, for practices, there were two items including the level of hand washing and disinfecting after contact with suspected infected people/animal and the use to protective equipment when caring for sick people. Each item had three options for answer: 1) >90% of the time (5 points); 2) 50%-90% of the time (3 points); and 3) < 50% of the time (2 points). The highest total score was 10 points and there were classified into two groups: 1) Good (≥8 points); 2) Fair (6-7 points); and 3) Poor (≤5 points).

Statistical analysis

Data were managed, cleaned, and analyzed by STATA 14.0 software. Descriptive statistic analysis was performed with frequency and percentage. Chi-squared test was used for examining differences in knowledge-attitude-practices between male and female students, and among academic years. A P-value of <0.05 was used for considering statistical significance.

RESULTS AND DISCUSSION

Table 1 shows the demographic characteristics of participants. Among 556 students, most of them were female (58.1%), and studying in 3rd academic year (23.9%). The majority of them studied General medicine professionals (44.1%) and Pharmacy (36.9%).

Table 1. General information of participants (n=556)

Demographic Information		Freq. (n)	Percentage (%)
Gender	Male	233	41.9
	Female	323	58.1
Academic year	1st year	103	18.5
	2nd year	102	18.3
	3rd year	133	23.9
	4th year	83	14.9
	5th year	85	15.3
	6th year	50	9.0
Professionals	General Medicine	245	44.1
	Pharmacy	205	36.9
	Nursing	50	9.0
	Medical testing	31	5.6
	Public Health	25	4.5

Table 2 shows the knowledge of participants on Human Monkey pox. The majority of them had correct of knowledge regarding symptoms of the disease, transmission routes, stages of diseases, severity, and differential diagnosis of Human Monkey pox disease from other diseases. However, the proportion of people with correct knowledge regarding preventive measures, diagnostic signs, and danger signs of the diseases was low. Overall, 80,8% of medical students had good knowledge.

This study contributes evidence in the students' knowledge, attitudes and practices of medical with Human Monkey pox, thereby providing the basis for future interventions to improve the health system's response to epidemics.

To prevent spread of Monkey pox to others, persons with Monkey pox should isolate at home, or in hospital if needed, for the duration of the infectious period (from onset of symptoms until lesions have healed and scabs fall off). Covering lesions and wearing a medical mask when in the presence of others may help prevent spread. Using condoms during sex will help reduce the risk getting Monkey pox but will not prevent spread from skin-to-skin or mouth-to-skin contact [13].

Findings from this study suggest that the vast majority of medical students (72%) have poor knowledge about the chickenpox virus. Respondent's age, grade point average (GPA), father's education, and training received on the chickenpox virus were

significantly associated with knowledge of the chickenpox virus ($p < 0.05$). This study showed a significantly higher level of awareness about the chickenpox virus among seniors than among younger students [12]. Research was conducted in Saudi Arabia on knowledge and attitudes towards monkey pox Out of 480, only 48% of respondents had high knowledge (mean score > 14). Participants' age, marital status, area of residence, $p < 0.01$).

Table 2: shows the knowledge of participants on Human Monkey pox.

Question	Freq. (n)	Percentage (%)
Symptoms		
Fever	552	99.3
Swollen lymph nodes	489	87.9
Headache	501	90.1
Sore throat	445	80.0
Muscle pain	320	57.6
Skin rash	389	70.0
No symptoms	135	24.3
Transmission route		
Spread animals to humans	521	93.7
Direct contact with skin lesions	501	90.1
Direct contact with fluids of body	480	86.3
Sexual transmission	458	82.4
Through respiratory droplets	551	99.1
Through infected person's objects	358	64.4
Transmission from mother to child	236	42.4
Disease stages		
Incubation period	551	99.1
Febrile stage	502	90.3
Skin eruption stage	553	99.5
Recovery stage	556	100.0
Severity		
Asymptomatic	502	90.3
Mild	523	94.1
Severe	514	92.4
Preventive measures		
The avoid contact with potentially sick people/animals (including sick or dead animals in areas where monkeypox has occurred)	325	58.5
The avoid contact with objects and surfaces at risk of monkeypox virus infection such as bed linens, clothes of sick people	336	60.4
Isolation and treatment of patients at medical facilities	432	77.7
Wash the hands frequently with soap and common hand sanitizer after contact with suspected infected people/animals.	521	93.7
Use personal protective equipment when caring for sick people	532	95.7
Carry out an exposure risk assessment in accordance with regulations for appropriate remedial action	203	36.5
Eat garlic	102	18.3
Vaccination	552	99.3
Confirmed diagnosis		
Clinical symptoms	551	99.1
Epidemiological history	502	90.3
Definitive diagnostic test based on positive molecular biology results	556	100.0
Blood tests	235	42.3
Oropharyngeal fluid or blister fluid tests	321	57.7
Chest X-ray	124	22.3
Danger signs		
Decreased eyesight	125	22.5
Decreased consciousness, coma, convulsions	102	18.3
Respiratory failure	114	20.5
Bleeding, decreased urine output	132	23.7
Signs of sepsis and septic shock	110	19.8
Differential diagnosis from other diseases		
Smallpox	553	99.5
Chicken pox	452	81.3
Hand, foot and mouth	431	77.5
Herpes	445	80.0
Knowledge		
Good	449	80.8
Fair	71	12.8
Poor	36	6.5

Table 3 depicts that the proportion of female students having good knowledge (88.9%) was higher than that of male students (69.5%), however, no difference of significant ($p>0.05$).Meanwhile, the proportion of students having good knowledge increased from the fresh year (72.8%) to the 6th year (92.0%) ($p<0.05$).

Table 3: Knowledge about Human Monkeypox regarding gender and academic years (n=556)

Characteristics	Good		Fair		Poor		p-value
	n	%	n	%	n	%	
Gender							
Male	162	69.5	42	18.0	29	12.4	0.235
Female	287	88.9	29	9.0	7	2.2	
Academic year							
1st year (n1=103)	75	72.8	26	25.2	2	1.9	0.028
2nd year (n2=102)	77	75.5	17	16.7	8	7.8	
3rd year (n3=133)	105	78.9	17	12.8	11	8.3	
4th year (n4=83)	74	89.2	6	7.2	3	3.6	
5th year (n5=85)	77	90.6	5	5.9	3	3.5	
6th year (n6=50)	46	92.0	2	4.0	2	4.0	

Figure 1 illustrates that 100% of students would be ready to participate in the response team against the epidemic when called upon; share accurate information with relatives and the community about monkeypox; and be ready to take safety measures to prevent monkey pox. There were 99.7% students willing to declare truthfully and isolate according to regulations; 98.2% being worried that their family members might be infected.

Figure 1: Students' attitudes towards Human monkey pox (n=556)

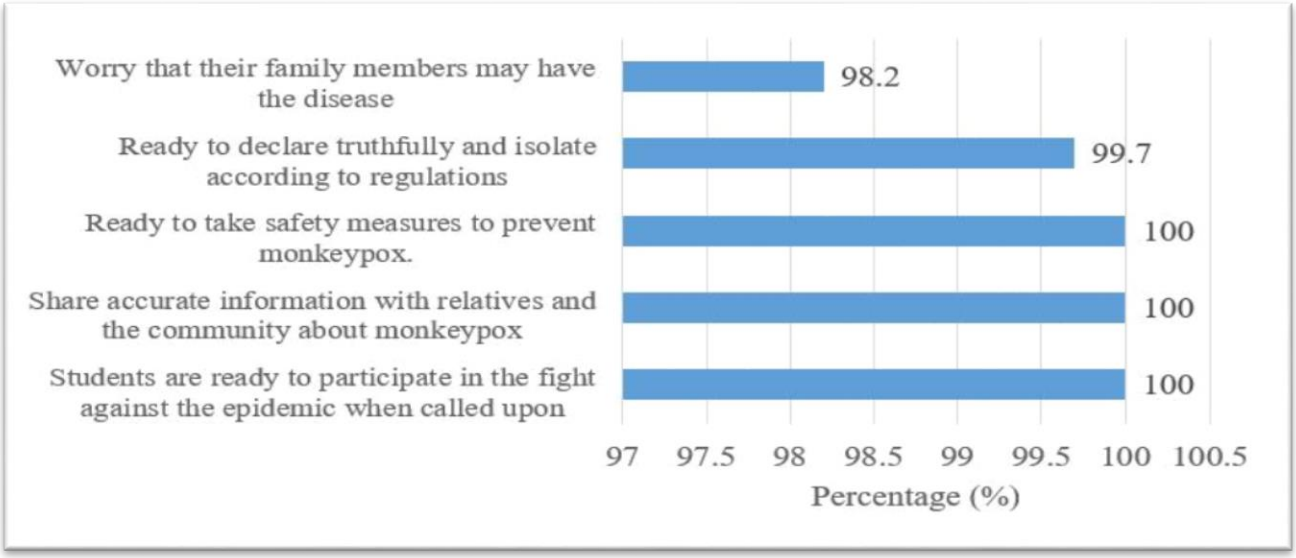

Table 4 shows that there were 98.2% of students performing regular hand sanitizer after the contact with a suspected human/animal >90% of the time, and 89.0% of students used personal protective equipment when taking care of sick people >90% of the time. Social media was the most frequently (75.0%) reported source from which participants obtained information related to chickenpox, followed by television and radio (45.6%), family or friends (15.6%) and health care providers (13.8%). We found that knowledge about chickenpox infection was somewhat poor in the Saudi population. These findings highlight the urgent need for public education about chickenpox to raise it the public before an outbreak [11]. Table 5: shows that overall, 87.6% of students had good practice. No difference was found regarding practices between male and female students (p>0.05).

Table 4. Human Monkeypox prevention practices (n=556)

Practice	>90% of time		50-90% of time		<50% of time	
	n	%	n	%	n	%
Performing regular hand sanitizer after the contact with a suspected human/animal	502	90.3	49	8.8	5	0.9
Using personal protective equipment when taking care of sick people	495	89.0	51	9.2	10	1.8

Table 5. Monkeypox prevention practices regarding gender (n=556)

Gender	Good		Fair		Poor		p
	n	%	n	%	n	%	
Male	182	78.1	29	12.4	22	9.4	0.210
Female	305	94.4	15	4.6	3	0.9	
Total	487	87.6	44	7.9	25	4.5	

The Health Professionals Perception Study of Monkeypox Symptoms Knowledge: The most significant uncertainty among respondents as represented by a mismatched understanding of the true incidence of Monkey pox globally over the past decade (IE. about 10,000 cases: 12.3%). Although some of the participants admitted that Monkey pox did not progress to uncomplicated

influenza-like illness (48.5%), the high rate of systemic complications was largely overlooked (20.9%), especially in children. children compared to adults (34.4%). Furthermore, only 28.2% of participants knew that Monkey pox -associated skin rashes were more often synchronous than asynchronous, and although 60.1% of respondents reported an effective vaccine (although not) specificity) against Monkey pox, with 51.2% admitting the availability of effective drugs, only 32.5% knowing who have been previously vaccinated with VARV still need further vaccinations. Furthermore, only 17.8% of respondents knew that smallpox had a case fatality rate between 30% and 40%, while the majority of them (72.4%) reported it correctly. The mortality rate of Monkey pox is lower (ie between 4% and 11%) [10].

Have 290 questionnaires distributed, 240 were returned (response rate = 83%) in approximately equal proportions from the faculties of Health Sciences and Pharmacy (n = 127), (n = 113) faculty. About one third (28.8%) have had all 3 injections, 19.6% have had the first injection, 11.4% have scheduled an appointment for the first injection while 40.2% have not given the injection and have not booked an appointment. Most (71%) of the HPV vaccine while 50.5% are unaware that the HPV vaccine is also available for men. Students enrolled in health-related programs were 3.2 times more aware of the benefits of vaccination, especially in preventing transmission to their sexual partners (OR 3.2, 95) % CI 1.3–3.41, p = 0.006) compared to their counterparts. There is a weak-positive correlation between vaccination knowledge and practice (r = 0.2, p = 0.001). The level of understanding about HPV and its vaccines for health-related programs (Mdn=6.5) was higher than for students in non-health-related programs (Mdn=1.5). Attitudes towards vaccination are influenced by perceived benefit versus risk of side effects, cost barriers, and influence primarily by physicians and their parents. The study was limited in that relationship status was used to estimate sexual history because direct questions were not answered in the pilot survey [9].

Research in Healthcare Professionals: We used a self-administered questionnaire distributed between July and August 2022 through snowball sampling. Survey items assessed knowledge of Monkey pox, confidence in diagnosis and management of the disease, and belief in emerging virus infection-associated conspiracies (EVIs). The sample size was 896 HCWs: nurses (n = 485, 54.1%), pharmacists (n = 154.17.2%), doctors (n = 108, 12.1%), medical technicians/supportive health professionals (MT/AHP, n= 96, 10.7%), and dentist (n = 53, 5.9%). A low level of overall knowledge of Human Monkey pox was observed for the categories of viral transmission and skin symptoms of disease, whereas physicians were more knowledgeable. About 1/5 of the sample agreed with the misconception that Human Monkey pox is exclusively for male homosexuality (n = 183, 20.4%), which is associated with lower knowledge with MT/AHP frequency higher than nurses, doctors and pharmacists. Low confidence level: confidence in the diagnosis based on diagnostic testing (n = 449, 50.1%), confidence in the ability to manage Human Monkey pox (n = 426, 47.5%), and confidence in the ability to diagnose clinical diagnosis of Human Monkey pox (n= 289, 32.3%) [8].

Research conducted at the Medical Schools of Jordan showed that: The study sample included 615 students with a mean age of 20 years and the majority were female (432, 70.2%) and medical students (n = 351). 57.1%). Out of 11 items of knowledge about chickenpox, 3 were correctly identified by more than 70% of respondents. Only 26.2% of respondents (n= 161) knew that a chickenpox vaccine was available. Age was significantly associated with better Human Monkey pox knowledge for the majority of items. Older age, women, and affiliation with non-medical schools/faculties are associated with cultivating a higher degree of conspiracy beliefs regarding emerging viral infections. Our data also indicate that a lower level of knowledge about Human Monkey pox is associated with a higher degree of trust in the conspiracy. Conclusions: The present study indicates a generally unsatisfactory level of knowledge about Human Monkey pox emerging among undergraduate students in Jordanian medical schools/faculties. Conspiracy beliefs regarding emerging viral infections are widespread and its potential adverse impact on health behavior needs to be evaluated in future studies [7].

The widespread of Human Monkey pox is becoming a significant challenge for healthcare workers around the world, particularly in countries where no cases have been recorded before. This is similar to the COVID-19 pandemic, when all knowledge and scientific evidence is lacking in the beginning phase and there are many gaps that need to be filled [3]. Vietnam is one of the most vulnerable countries to the pandemic due to its high economic and tourism openness. Therefore, without timely preparation, Vietnam could face an outbreak of disease cases and cause significant social and economic impacts [15].

The results showed that although the majority of them had correct knowledge regarding symptoms of disease, transmission routes, stages of diseases, severity, and differential diagnosis of Human Monkeypox disease from other diseases, the proportion of people having correct knowledge regarding preventive measures, diagnostic signs, and danger signs of the diseases were low. This low knowledge was associated with the academic year (students with lower academic year had lower proportion of good knowledge). This may be explained by clinical experience. In addition, knowledge about Human Monkeypox has not been taught regularly, but only

through small seminars/workshops. This makes medical students in the lower academic year have not been specifically updated on issues related to Human Monkeypox. This shows the importance of regularly implementing short-term training courses for medical students, especially those with insufficient knowledge.

While the attitude of medical students to Human Monkeypox was good as other studies, there was still a gap in preventive practice in this group. The results showed that approximately 10% of students did not perform well the basic preventive measures such as using hand sanitizer or personal protective equipment. The experience from the COVID-19 pandemic showed how vulnerable healthcare workers and medical students were to widespread pandemics [5].

Research shows the need for ongoing training programs for medical students in keeping up to date with information related to Human Monkeypox. In addition, it is necessary to have health education programs to help raise awareness of medical students with the dangers of Human Monkeypox and promote correct practice in disease prevention in this group of students. Further research and interventions are required for testing different approaches in preparing sufficient knowledge-attitude and practices on Human Monkeypox among medical students in Vietnam.

CONCLUSION

Knowledge-attitude-practice of medical students with Human Monkeypox was at a good level. However, gaps in knowledge and practice also need to be filled through continuing education programs, especially for students in lower academic years.

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