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KNOWLEDGE ABOUT MONKEYPOX OF HANOI MEDICAL UNIVERSITY STUDENTS IN 2022 AND SOME RELATED FACTORS

Trinh Thanh Tan[1], Tran Thi Yen Nhi[1,*], Do Hong Anh[1], Vu Pham Kim Chi[1], Tran Thi Bich Phuong[1], Phan Huu Vinh[1], Le Minh Dat[2], Le Xuan Hung[1]

[1]*Institute for Preventive Medicine and Public Health - Hanoi Medical University - No.1 Ton That Tung, Dong Da, Hanoi, Vietnam*
[2]*Vietnam Public Health Association - 06 Dang Van Ngu, Trung Tu, Dong Da, Hanoi, Vietnam*

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ABSTRACT

Research objectives: Describe the knowledge of monkeypox among students of Hanoi Medical University in 2022; Analysis of some factors related to knowledge of monkeypox among students of Hanoi Medical University in 2022.

Subjects and research methods: A cross-sectional descriptive study on students in 9 majors from the first to the sixth year of Hanoi Medical University.

Results: Out of 440 students, 26,4% passed, and 73,6% failed the monkeypox knowledge test. Students mainly get information about Monkey Smallpox through social networks and online information channels. Students answered "Do not know" about the monkeypox knowledge test questions with an average of 44%. There is a strong correlation between gender and field of study to medical student's knowledge about monkeypox. Regarding gender, the knowledge rate achieved in men was 4,725 times higher (95% CI: 3,01 - 7,41; p<0,001). Regarding subjects, students of Traditional Medicine, Preventive Medicine, and Nursing have knowledge rates of 3,64 times (95% CI: 1,59 - 8,35) and 5,89 times, respectively. 95% CI: 2,25 - 15,45), 5,16 times (95% CI: 2,138 - 12,450) compared to general students (p<0,05).

Conclusion: Knowledge about monkeypox among students of Hanoi Medical University participating in the survey is still deficient. Gender and discipline showed significant associations with student's knowledge levels. The above results raise the urgency of improving knowledge about monkeypox in aluminum subjects.

Keywords: Monkeypox, knowledge, medical students.

*Corressponding author
Email address: yennhi100702@gmail.com
Phone number: (+84) 963 312 699
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1. INTRODUCTION

Monkeypox is a zoonotic disease caused by the monkeypox virus. From May 2022 to the present, the world has recorded cases in 12 countries in Europe and has not identified a link with the previous endemic area. With the disease situation increasing continuously in both instances and territories, on July 23, 2022, the World Health Organization (WHO) declared a public health emergency of monkeypox [1]. On October 11, 2022, Vietnam officially recorded the second case of monkeypox in Ho Chi Minh City [2]. As a result, monkeypox is on the verge of becoming an epidemic in our country because its rapid spread does not exclude any region of the world, including Asia. Vietnam is promoting tourism to help the economy recover from the effects of COVID-19. In addition, current data on the protective efficacy of the new ordinary smallpox or monkeypox vaccines in the prevention of disease in clinical practice and the community are minimal [3].

According to the US CDC, the mortality rate of monkeypox is less than 1%, but it is necessary to raise awareness of epidemic prevention in the community [4]. A WHO report points to a significant challenge in preventing a recurrence of monkeypox outbreaks as a lack of knowledge [5]. According to the research results of Ammar Abdulrahman Jairoun on 558 students of Al Ain University in Saudi Arabia: only 127 people (22,8%) have good knowledge about monkeypox [6]. In another study in Saudi Arabia by author Najim Z. Alshahrani with 314 people surveyed, the majority of medical students (72%) had inadequate knowledge about monkeypox [7]. In endemic countries, the percentage of students aware of the monkeypox epidemic is generally low. In particular, medical students must have the knowledge and the ability to respond to and prevent emerging diseases in the future. However, there are few studies on this issue among medical students in Vietnam. Therefore, we conducted a study on the topic: **"Knowledge of monkeypox among students of Hanoi Medical University in 2022 and some related factors"** with the goal of :

1. Description of knowledge about monkeypox among students of Hanoi Medical University in 2022.

2. Analysis of some factors related to knowledge about monkeypox among students of Hanoi Medical University in 2022.

2. METHOD

2.1. Subjects of the study: Students of Hanoi Medical University in 2022.

Selection criteria: Students of the regular training system from Y1 to Y6.

Exclusion criteria:

Students with physical and mental health problems or receiving medical treatment at the time of the survey.

Students are absent (dropped out, reserved,...).

2.2. Research Methods

Research design

Cross-sectional descriptive study.

Research time

September 2022 to December 2022.

Sample size

The study applies the formula for calculating

sample size to estimate a proportion in a population with a relative error interval

$$n = Z^2_{1-\alpha/2} \frac{p(1-p)}{(p.\varepsilon)^2} \quad (1)$$

Therein:

p = 0,28, the prediction rate of knowledge of students at Hanoi Medical University is 28% based on the results of the study "Medical student's perception of the re-emerging monkeypox virus: One Institution-based cross-sectional study from Saudi Arabia" by Najim Z. Alshahrani [7].

α = 0,05 is equivalent to a 95% confidence level

$Z^2_{(1-\alpha/2)} = 1,96$

$$n = 1,96^2 \frac{0,28(1-0,28)}{(0,28x0,15)} = 440 \text{ (sample)}$$

Thus, the sample size is **440 samples**.

Convenient sampling method:

The questionnaire was designed on REDCap software and sent to all students studying at Hanoi Medical University until the sample size was collected and stopped.

Step 1: Contact the staff of classes at Hanoi Medical University.

Step 2: Send the self - completed survey link to the subjects through the class staff.

Step 3: Proceed to collect data until the number is enough for the study.

Methods and tools for data collection

The set of questions in this study is referenced from the study of author Najim Z. Alshahrani [7]. The internal consistency of the questionnaire was calculated using Cronbach's alpha coefficient. The test results of the toolkit show that Cronbach's alpha coefficient meets the requirements for specific knowledge (Cronbach's alpha = 0,82).

The online survey questionnaire consists of two parts: part I, with six questions on sociological information of students of Hanoi Medical University (age, gender, major ...), and part II with 19 basic questions about monkeypox to describe the subject's knowledge.

2.3. Data processing and analysis methods

Data were analyzed using Stata 14 software. Descriptive statistics such as frequency and percentage were calculated to describe the sociodemographic and knowledge variables. Statistical tests and multivariable logistic regression were used to analyze knowledge - related factors. Statistical significance level alpha = 0,05 was applied.

How to calculate knowledge points: Knowledge points are calculated according to the "Pass" and "Fail" criteria. There are 19 knowledge survey questions, 1 point for correct answers and no points for incorrect or unknown answers. The maximum number of points is 19; if the score is > 50% i.e, > 10 points, the knowledge "Pass", and vice versa, the knowledge ≤ 10 is a "Fail".

2.4. Research Ethics

The study was conducted under the approval of the Department of Research Methods and Biomedical Statistics of Hanoi Medical University. Subjects participated in the study voluntarily and were explained the purpose and meaning of the study. The information collected is used within the scope of the study only.

3. RESULTS

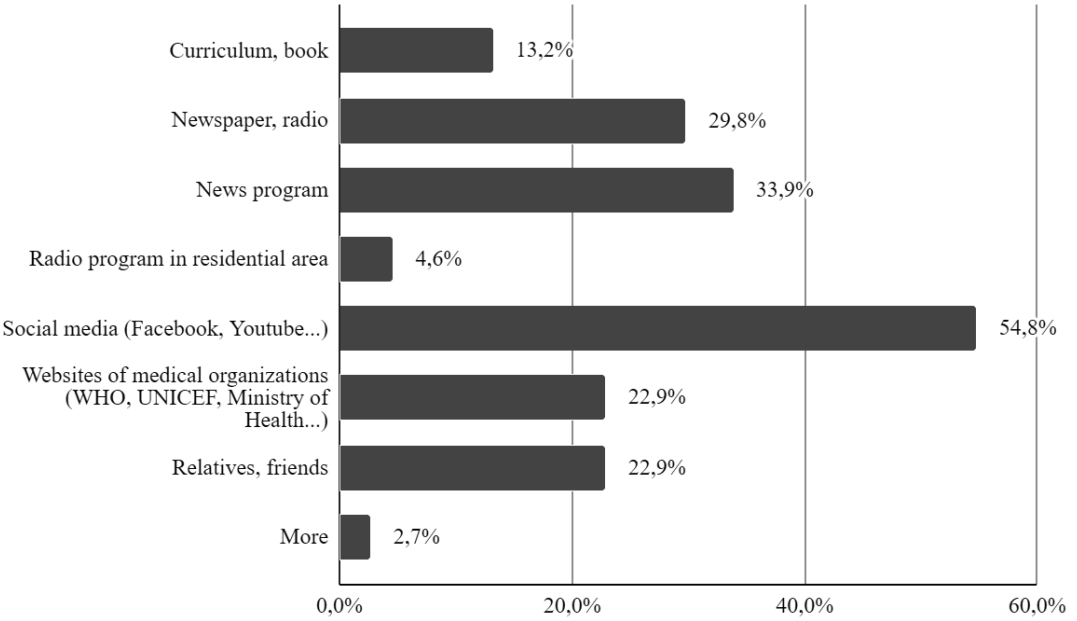
3.1. General characteristics of research subjects

Table1: General information about research subjects (n = 440)

General information	Characteristics	Quantity (n)	Rate (%)
Gender	Male	162	36,82
	Female	278	63,18
School year	Y1	59	13,41
	Y2	163	37,05
	Y3	139	31,59
	Y4	53	12,05
	Y5	18	4,09
	Y6	8	1,82
Majors	General practitioner	141	32,05
	Odontology	46	10,45
	Traditional medicine	31	7,05
	Preventive medicine	21	4,77
	Public health	17	3,86
	Medical testing techniques	36	8,18
	Nursing	26	5,91
	Nutrition	99	22,50
	Ophthalmic refraction	23	5,23

Of the subjects participating in the study, 63,18% were female, and 36,82% were male. Most are studying Y2 (37,05%), then Y3 (31,59%), Y1 (13,41%), Y4 (12,05), Y5 (4,09%), and the lowest is Y6 (1,82%). Classified by discipline, the students participating in the study were mainly in General Science at 32,05% (n = 141) and Nutrition at 22,50% (n = 99); the rest were distributed in the fields of Odonto-Stomatology 10,45% (n = 46), Traditional Medicine 7,05% (n = 31), Preventive Medicine 4,77% (n = 21), Public Health 3,86% (n = 17), Laboratory 8,18% (n = 36), Nursing 5,91% (n = 26) and Ophthalmic Refraction 5,23% (n = 23).

Figure 1. Information channels to learn about monkeypox among medical students



The graph shows that more than half of the participants learn through social networks, accounting for 54,77% (n = 241), lower than news programs with 33,86% (n = 149) and radio with 29,77% (n = 131). In addition, there are other information channels such as textbooks, paper books, radio programs of residential areas, websites of medical organizations, and from relatives and friends.

3.2. Subject's knowledge of monkeypox

Table 2: Knowledge of monkeypox among students at Hanoi Medical University (n = 440)

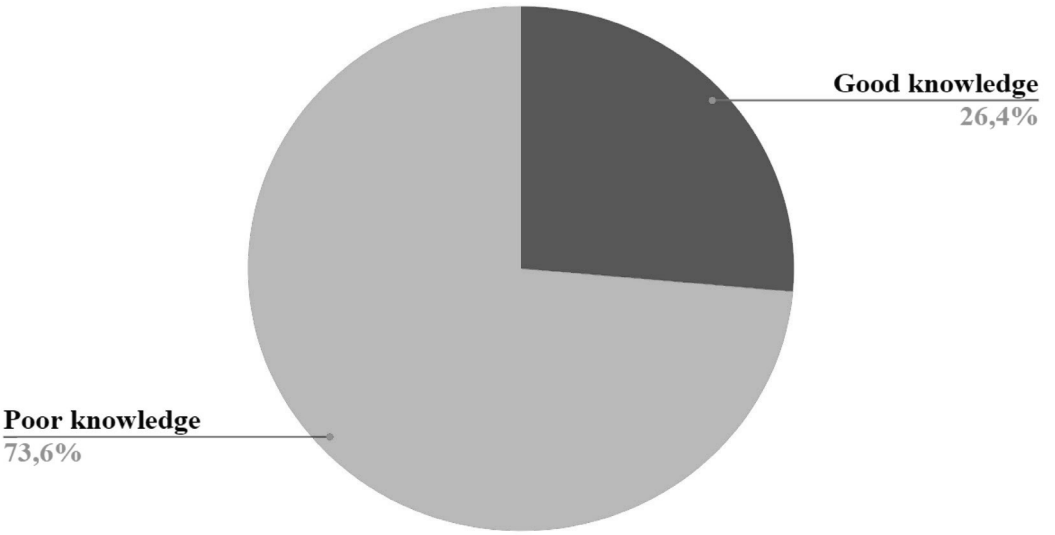
Knowledge question	Correct response	Do not know N (%)	Wrong N (%)	Correct N (%)
Currently, the region hardest hit by monkeypox virus is Africa	True	57 (17,43)	20 (6,12)	250 (76,45)
Now, monkeypox virus has become a global pandemic	False	160 (36,36)	128 (29,09)	152 (34,55)
Vietnam has a case of monkeypox	True	123 (27,95)	5 (1,14)	312 (70,91)
A vaccine against monkeypox virus was licensed at the time of this study	True	207 (47,05)	140 (31,82)	93 (21,14)
Monkeypox virus was first discovered (isolated) in 1958	True	225 (51,14)	99 (22,50)	116 (26,36)

Knowledge question	Correct response	Do not know N (%)	Wrong N (%)	Correct N (%)
Monkeypox is caused by the smallpox virus	False	282 (64,09)	117 (26,59)	41 (9,32)
Monkeypox is caused by monkeypox virus	True	171 (38,86)	65 (14,77)	204 (46,36)
Monkeypox virus can be transmitted vertically from mother to child	True	211 (47,95)	85 (19,32)	144 (32,73)
The most common method of transmission of monkeypox virus is skin contact	True	247 (56,14)	121 (27,50)	72 (16,36)
The monkeypox virus can be transmitted through blood	True	288 (65,45)	9 (2,05)	143 (32,50)
Monkeypox virus cannot be spread through food	False	197 (44,77)	210 (47,73)	33 (7,50)
Monkeypox virus cannot be spread through the air	False	250 (56,82)	48 (10,91)	142 (32,27)
Outbreak of monkeypox virus in 2022 documented to be linked to same-sex	True	211 (47,95)	171 (38,86)	58 (13,18)
The most common symptoms of the monkeypox virus are fever, rash, and swollen lymph nodes	True	127 (28,86)	5 (1,14)	308 (70,00)
Subjects at high risk of monkeypox virus infection are health workers	True	192 (43,64)	63 (14,32)	185 (42,05)
Typical incubation period for monkeypox virus (5 - 21 days)	True	211 (47,95)	91 (20,68)	138 (31,36)
The disease is often severe in adults	False	215 (48,86)	55 (12,50)	170 (38,64)
Secondary infection, bronchopneumonia, sepsis, encephalitis, and corneal infection are complications of monkeypox.	True	115 (26,14)	100 (22,73)	225 (51,14)
Monkeypox is not fatal	False	127 (28,86)	211 (47,95)	102 (23,18)

The rate of correct answers concentrated on symptoms questions, of which 70.91% (n = 312) answered the question correctly "Vietnam has had monkeypox cases" and 70% (n = 308) correctly answered the question "The most common symptoms of monkeypox virus are

fever, rash, swollen lymph nodes. Only 10,91% (n = 48) of the respondents were correct about the route of airborne transmission, and 12,50% (n = 115) of the respondents were correct about the severe complication in adults. In addition, in most of the questions, research participants responded with "Do not know" quite highly, accounting for an average of 44%.

Figure 2. Knowledge of medical students about monkeypox



The percentage of students with passing knowledge is 26,4% and the rate of students with failing knowledge is 73,6%.

3.3. Some factors related to subjects' knowledge about monkeypox

Table 3: Some factors related to students' knowledge about monkeypox (n = 440)

	Knowledge				
	Good (n, %)	**Poor (n, %)**	**OR**	**CI 95%**	**p-value**
Gender					
Male	74 (84,89)	88 (54,32)	**4,725**	**3,01 - 7,41**	**<0,001**
Female	42 (15,11)	236 (45,68)	1		
Major					
General practitioner	26 (18,44)	115 (81,56)	1		
Odontology	11 (23,91)	35 (76,09)	1,39	0,625 - 3,094	0,420
Traditional medicine	14 (45,16)	17 (54,84)	**3,642**	**1,595 - 8,316**	**0,002**

	Knowledge				
	Good (n, %)	**Poor (n, %)**	**OR**	**CI 95%**	**p-value**
Preventive medicine	12 (57,14)	9 (42,86)	**5,897**	**2,25 - 15,454**	**<0,001**
Public health	5 (29,41)	12 (70,59)	1,843	0,597 - 5,686	0,288
Medical testing techniques	7 (19,44)	29 (80,56)	1,067	0,421 - 2,702	0,890
Nursing	14 (53,85)	12 (46,15)	**5,16**	**2,138 - 12,450**	**<0,001**
Nutrition	19 (19,19)	80 (80,81)	1,05	0,545 - 2,026	0,883
Ophthalmic refraction	8 (34,78)	15 (65,22)	2,359	0,905 - 6,148	0,079
School year					
Y1	17 (18,81)	42 (71,19)	1		
Y2	40 (24,54)	123 (75,46)	0,803	0,412 - 1,565	0,520
Y3	36 (25,90)	103 (74,10)	0,864	0,438 - 1,703	0,672
Y4	17 (32,08)	36 (67,92)	1,167	0,520 - 2,612	0,708
Y5	4 (22,22)	14 (77,78)	0,705	0,203 - 2,453	0,584
Y6	2 (25,00)	6 (75,00)	0,823	0,151 - 4,493	0,823

The Results of multivariable logistic regression showed that there are some factors related to knowledge about monkeypox among students of Hanoi Medical University. Regarding gender, the rate of knowledge achieved in men is 4,725 times higher (95% CI: 3,01 - 7,41); this difference is statistically significant (p<0,05). Regarding subjects, students of Traditional Medicine, Preventive Medicine, and Nursing have knowledge rates of 3,64 times (95% CI: 1,59 - 8,35), 5,89 times (95% CI: 2,25 - 15,45), 5,16 times (95% CI: 2,138 - 12,450) compared to general students (p<0,05). Additionally, there was no statistically significant difference between the study years and student residence.

4. DISCUSSION

Research shows that most students have poor knowledge about monkeypox. This result is similar to the study of author Najim Z. Alshahrani on Medical students in Saudi Arabia, which showed that 28% of students have good knowledge and 72% have poor knowledge about monkeypox [7]. This may explain why monkeypox has only appeared in two cases in Vietnam; the infection and mortality level of monkeypox is not as high as in the COVID-19 pandemic [2]. In addition, Medicine is a specific industry with a considerable amount of study, so the time for medical students to update the news could be much better. Medical students often find information on social networking

sites or unofficial sources, leading to gaps in their knowledge of monkeypox.

Our results indicate that gender and subject area are related to the subject's knowledge. Regarding gender, men's knowledge is better than women's. This result contrasts with a study on medical students by author Ammar Abdulrahman Jairoun in Saudi Arabia, which shows that female students have better knowledge than male students [6]. This difference may be due to differences in geographical location, culture, and educational environment among countries in the region. However, our results are similar to the study on the same topic by author Sirwan Khalid Ahmed; the subject is the Iraqi population, which also sho; that men participating in the study have a higher level of knowledge than women [8]. Regarding subjects, students of Traditional Medicine, Preventive Medicine, and Nursing have knowledge rates 3,64 times, 5,89 times, and 5,16 times higher than general students, statistically significant with $p<0,05$. Due to a fact that this is a recent epidemic, students can only find information about this illness through online information sources. Additionally, medical students' general curricula do not include this topic. Because knowledge base study is more demanding than in most other disciplines, so it may impact students' comprehension of monkeypox. However, this study is not without its limitations. First, a small subset of medical students at Hanoi Medical University were included in the study, which was done on all medical students there. Secondly, there have not been studies on monkeypox to clarify the factors related to the knowledge of this target group.

5. CONCLUSION

Knowledge about monkeypox among students of Hanoi Medical University participating in the survey is still deficient. Gender and discipline showed significant associations with students' knowledge levels. The above results raise the urgency of improving knowledge about monkeypox in aluminum study subjects. This requires appropriate interventions and consideration of strengthening communication and education on prevention knowledge about monkeypox and new infectious diseases in general.

RECOMMENDATIONS

In order to improve their knowledge before a new epidemic of an increasingly complex infectious disease, Hanoi Medical University students should actively seek out relevant information about monkeypox from official and trustworthy sources. In particular, they should gain a solid understanding of the Ministry of Health's recommended individual and community preventive measures and basic knowledge about the disease's mechanism of action, symptoms, and transmission routes.

The school needs to strengthen the organization of communication activities to provide knowledge and information about risks to raise the spirit of readiness to respond to and prevent the epidemic.

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