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Original article

Awareness and preparedness of human monkeypox outbreak among university student: Time to worry or one to ignore?

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ABSTRACT

Background: The growing number of human monkeypox cases worldwide illustrates the importance of early detection, prevention, management and quick action from healthcare authorities. The WHO confirmed a hundred of Monkeypox cases worldwide and disclosed Monkdypox as a worldwide emergency situation
Objectives: To assess the knowledge about human monkeypox' source, signs/symptoms, transmission, prevention and treatment among Al Ain university students in the UAE.
Methods: This descriptive cross-sectional study aimed to assess Al Ain University students' knowledge of Human Monkeypox. A validated questionnaire was distributed to students between lectures. The respondents' knowledge of human Monkeypox was assessed by 21 questions that examined the participants' knowledge of Monkeypox as follows: 5 items examined knowledge of the source, definition, and incubation time; 2items assessed the mechanism of transmission of human Monkeypox, 7 items assessed the signs and symptoms; 7 items assessed the preventative measures; and 6 items assessed the treatment modalities. A multivariate logistic regression model was used to identify the factors influencing respondents' knowledge of human Monkeypox among university students.
Results: A total of five hundred and fifty-eight (558) students participated in the study. The average knowledge score was 70.1%, with a 95% confidence interval (CI) of 68.9 – 71.3. Of the total participants, 111 (19.9%) had poor knowledge about human Monkeypox, 320 (57.3%) had moderate knowledge, and 127 (22.8%) had good knowledge. The results of the statistical modelling showed that Old age (OR 0.681; 95% CI 1.005–1.016), female gender (OR 1.26; 95% CI 0.813 –0.961), participants from medical colleges (OR 1.22; 95% CI 1.13 –1.32) having a history of human chickenpox infection (OR 2.6; 95% CI 2.3–2.9) and receiving

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information on human Monkeypox during education (OR 1.14; 95% CI 1.05–1.2) were strong determinants for good knowledge about human Monkeypox.
Conclusion: knowledge of Monkeypox among the participants is relatively low, particularly regarding the epidemiology, symptoms and treatments. Therefore, increasing knowledge of Monkeypox will be key to enhancing the capacity to respond to human monkeypox cases and to relay pertinent data to a disease surveillance system.

In general, the choice of this topic is an interesting and up to date. The Idea (issue) under research is also a valuable. which may provide some of new contribution to the knowledge. On the other hand, if you see the list of references, it looks up to date too. The process (methodology) of achieve the work is remained to review; I think the process of methodology included the approriate steps and tools such as: sampling proceeding, developement of enstrument, techniques of data analysis, etc. but, I think results of this study can not be as generalization. due to limited kind of the sample of study which represent only student of a university and one of a country (as this point could be stated as limitations)! I am not sure if author used any app for a references part such as mendely or endnot.etc!

I wish the author (s) the best.

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Introduction

As of 13 May 2022, cases of Monkeypox from 12 Member States that are not endemic to the monkeypox virus have been reported to the World Health Organization (WHO). Epidemiological investigations to date have shown that reported cases have no travel links to endemic areas. Recently, the WHO reported hundreds of Monkeypox cases worldwide and considered Monkeypox as a worldwide emergency. Current actions focus on informing the population most at risk of infection with accurate information to stop the further spread of the monkeypox virus. As of 13:00, 21 May 2022, 92 laboratory cases have been laboratory confirmed in the Member States (Australia 1–5, Belgium 1–5, Canada 1–5, France 1–5, Germany 1–5, Nederlands 1–5, Sweden 1–5, United States 1–5, Italy 1–5, Spain 21–30, Portugal 21–30, and the United Kingdom 21–30) and 28 other suspicious cases (Belgium 1–5, Canada 11–20, France 1–5, Spain 6–10) is currently being examined. Deaths associated with Monkeypox also been reported in a few countries [1].

Until 25 May 2022, one case was reported in Austria, Slovenia, the Czech Republic, and Denmark. [2] The United Arab Emirates is the first member state of the Gulf states to report a case of Monkeypox. [3] On May 24, 2022, the Ministry of Health and Prevention (MoHAP) published the first case of Monkeypox in the UAE. The first case was discovered in a 29-year-old woman who arrived in the UAE from West Africa and was provided with the necessary assistance. [4] Three more new cases of Monkeypox were published by MoHAP on May 29, 2022. [5] The first outbreak of Monkeypox outside Africa was in the United States in 2003 and was associated with infected pets (prairie dogs) that most likely contracted the virus from down and rats imported from Ghana. The epidemic has led to more than 70 cases of Monkeypox in the United States. In September 2018, a case of smallpox was reported in travellers from Nigeria to Israel, followed in December 2019, May 2021, and May 2022 in Singapore, and in July and November 2022 in the United States. [6] The average cumulative incidence in the Democratic Republic of the Congo (DRC) in 2010 was 5.53 per 10,000 population, while in 1980 it was 0.72 and in 2006–2007 it was 14.42. [7,8] The true prevalence of Monkeypox is unknown because it does not yet exist monkeypox surveillance systems in Africa where the disease is endemic. [9] In the Gulf countries, except in the UAE, no cases of Monkeypox have been reported so far. [3].

Monkeypox virus is a *Poxviridae* family, *Chordopoxvirinae* subfamily, *and Orthopoxvirus* genus that causes monkeypox disease after primates' infection rodents, from which it can spread to humans. [10,11] Monkeypox can be transmitted to humans through close contact with infected animals or humans, or with contaminated material. Human-to-human smallpox is transmitted through close contact with respiratory droplets, lesions, body fluids, or through bedding and similar materials. [6] Symptoms and signs of smallpox include conjunctivitis, confusion, joint pain, back pain, myalgia, abdominal pain, vomiting, and/or nausea, chest pain, shortness of breath, wheezing, cough, sore throat, runny nose, red eyes, stiff neck, headache, lymphadenopathy, shivering, sweating, rash, and fever. [12] Prevention of smallpox remains a challenge in endemic areas. Vaccines and isolation can be used as preventive measures to prevent smallpox transmission from humans to humans. [13] There is currently no specific treatment recommended for smallpox. However, treatments with antiviral drugs such as Tecovirimat (TPOXX), Cidofovir (Vistide), Vaccinia Immune Globulin Intravenous (VIGIV), and Brincidofovir (Tembexa) have shown benefits. [14].

Monkeypox infection in humans was first discovered in 1970 in the Democratic Republic of Congo in a young child, 12 years after the monkeypox virus in monkeys in Statens Serum Institute, Copenhagen, Denmark. Although historically limited to the Congo Basin and West Africa, new epidemics in the United States and Sudan have led to new research that highlighted environmental factors that contributed to the geographical spread of the monkeypox virus. Previous research has dealt with detecting symptoms and signs of the disease, diagnosis, reservoirs of the virus, transmission between people, vaccination, environmental factors, etc. Globalization has led to an increased risk that the virus is transmitted from human to human and that the virus occurs in regions where it is not endemic. Future research is focused on the development of diagnostic tests, antiviral treatments, and vaccines that will protect people from the monkeypox virus. [15,16]. To measure the magnitude of Human Monkeypox infection is to evaluate the knowledge and reawareness regaring disease prevention and treatment measures Current study aims to assess the knowledge about human monkeypox' source, signs/symptoms, transmission, prevention and treatment among university students in the UAE.

Methods and materials

Research design and setting

This descriptive cross-sectional community-based study aimed to assess Al Ain University students' knowledge of the source of Monkeypox and its symptoms, transmission, prevention, and management in the United Arab Emirates. The data was collected between May 15 and May 28, 2022.

Study participants

The target population for this study consisted of undergraduate students in medically and nomadically linked faculties, national or non-national, aged 18 or above. Participants under the age of 18 and those who declined the opportunity to participate were not included.

Pilot study

The pilot study commenced at Al Ain University on May 13, 2022. The' pilot study results were used to establish the sample size required for the main study and assess the test's validity and reliability. The 25 participants completed the questionnaire satisfactorily and without obvious difficulty by May 14, 2022.

Sample size and sampling procedure

A pilot study was used to determine the sample size for this survey. The questionnaire was distributed to 30 students at Al Ain University, and 25 students responded, representing an 83.3% response rate. The sample size was determined by asking, "Have you heard about human monkeypox?" According to the pilot survey results, around 55% of participants answered yes to this question. The alpha level was chosen at 5%, resulting in a confidence interval of 95%. The 95% confidence interval's precision (D) was set at 5%; the 95% CI would have a maximum width of 10%. Based on these assumptions, a sample size of 635 was deemed necessary, with non-response rates of around 60%.

Questionnaire administration

Before the examination, a pre-designed and organized questionnaire was delivered to students between lectures (at the end of their classes) to ensure the examination did not influence their responses. Students who agreed to participate in the study were asked to sign a consent form before completing the questionnaire. The survey was written in both English and Arabic. Participants received no advantages or incentives for completing the questionnaires, and participation was entirely voluntary.

Research instrument development

The respondents' knowledge of human Monkeypox was assessed in the second section, which consisted of 21 questions that examined the participants' knowledge of Monkeypox.

Study questionnaires were developed from several studies [8,9,18] . The initial knowledge questionnaire consisted of 34 questions to assess the knowledge of human Monkeypox among students. Only 21 questions were recommended and used in the pilot study. The questionnaires were sent to several academic professors and clinical doctors for their feedback and to verify the content and relevance of questionnare.

A pilot questionnaire was performed with a small group of 25 pupils to identify any minor issues and ensure their reliability. The questionnaire's quantitative content validity was further confirmed by comparing it to Lawshe's content validity [19]**.** The content validity ratio (CVR) for all of the items was 0.78. Items with a CVR of 0.78 or higher were deemed satisfactory per Lawshe's method [19]**,** whereas items with a CVR of 0.78 or lower are normally omitted from the study instrument. The mean of all the items used in the final research instrument was subsequently used to calculate a content validity index (CVI). The final CVI of the questionnaire used in the current investigation was 0.878. As a result, the items were found to be above the required level [20]**.** Internal consistency was 'considered while determining the instrument's reliability, and it was found to be reliable and valid. Cronbach's alpha was satisfactory (0.751).

Research instrument sections

The questionnaire was divided into two sections:

The respondents' demographic information was collected in the first section, which included gender, age, major, study level, history of human chickenpox, and source of knowledge of human Monkeypox.

The respondents' knowledge of human Monkeypox was assessed in the second section, which consisted of 21 questions that examined the participants' knowledge of Monkeypox as follows: Five items examined knowledge of the source, definition, and incubation time; two items assessed the mechanism of transmission of human Monkeypox, seven items assessed the signs and symptoms; seven items assessed the preventative measures; and six items assessed the treatment modalities. The participants were asked to respond to all 21 questions with one of three potential responses: "Yes," "No," or "I don't know.".

Questionnaire evaluation

The respondents were allocated a score of "1" for accurate answers and "0" for incorrect responses on the 21 items assessing their knowledge about human Monkeypox. These scores were then added together for each participant to produce a number between 0 and 21. This grade was then used to determine a percentage between 0% and 100%. Percentages was calculated as the number of correct questions answered by the participant divided by 21 and then multiplied by 100.

The aim of this was to ascertain how much the respondents knew about the source of human Monkeypox, its signs and symptoms, and its transmission, prevention, and treatment.

Bloom's cut-off criteria for evaluating UAE university students' general knowledge of human Monkeypox were updated and changed [21–25]**.**

Holistic knowledge was characterized according to Bloom's cut-off point as "good" if the participant scored between 80% and 100%, "moderate" if the score was between 60% and 79%, and "poor" if the score was below 60%. Accordingly, participants' overall knowledge of human Monkeypox as good for a score between 17 and 21 points, moderate for a score between 16.5 and 13 points, and poor for a score of fewer than 13 points.

Ethical considerations

The study protocol was approved by Al Ain University's Institutional Ethical Review Committee. They were briefed on the goal of the survey before data collection and were advised that the completion and submission of the questionnaire were contingent on their approval. All participants signed the informed consent. The identity of the participants was not recorded, and confidentiality was ensured.

Statistical analysis

SPSS Version 26 was used to analyze the gathered data. The continuous normally distributed quantitative variables were summarized as a mean standard deviation (SD), while the categorical quantitative variables were summarized as frequencies (provided in percentages). Unpaired student t-tests, one-way ANOVA, and non-parametric variations were used to analyze the variations between the groups' quantitative variables. A multivariate logistic regression model was used to identify the factors influencing respondents'

Table 1
number and percentages of the questions on demographics (n = 558).

Demographic	Groups	Frequency	Percentage
Age	31.13 ± 6	–	–
Gender	Male	208	37.3%
	Female	350	62.7%
Nationality (experience recode)	African	61	10.9%
	Arabic	243	43.5%
	Asian	30	5.4%
	Emirati	161	28.9%
	Western	63	11.3%
Major (pharmacy type)	Medical colleges	245	43.9%
	Non-medical colleges	313	56.1%
Study levels (DHA license)	First years	340	60.9%
	Last years	218	39.1%
History of human chickenpox	Yes	84	15.1%
	No	474	84.9%
Had you ever received information of human Monkeypox during education (leared about EBP)	Yes	383	68.6%
	No	175	31.4%
Source of information about human Monkeypox	Social media	360	64.5%
	TV	152	27.4%
	Awareness campaigns	19	3.4%
	Family/Friends	27	4.8%

knowledge of human Monkeypox. The level of statistical significance was set at $p < 0.05$.

Results

Demographic characteristics of the study participants

Table 1 presents the demographics of the study participants. Five hundred fifty-eight (558) students participated in the study. Of the total, 37.3% (n = 208) were male and 62.7% (n = 350) were female. The average age of the respondents was 31.13 ± 6 years. The nationalities reported were 61 (10.9%) African, 243 (43.5%) Arab, 30 (5.4%) Asian, 161 (28.9%) Emirati and 63 (11.3%) Western. Students from medical colleges constituted 43.9% (n = 245) of the study population and 56.1% (n = 313) were from non-medical colleges. Among the participants, 340 (60.9%) were first years students and 218 (39.1%) were last year's students. Of the 558 total participants, 84 (15.1%) reported history of human chickenpox infection and 68.6% (n = 383) of them had received information on human Monkeypox during education. The source of information about human Monkeypox was as following social medial (64.5%), TV (27.4%), awareness campaigns (3.4%) and family/friends (4.8%).

Assessment of knowledge about human monkeypox' source, signs/symptoms, transmission, prevention and treatment

The average knowledge score was 70.1% with a 95% confidence interval (CI) of 68.9 – 71.3. Of the total participants, 111 (19.9%) had poor knowledge about human Monkeypox, 320 (57.3%) had moderate knowledge and 127 (22.8%) had good knowledge.

The results of each question related to knowledge about human monkeypox' source, signs/symptoms, transmission, prevention and treatment are shown in Table 2**.**

Table 3 displays the knowledge score stratified by demographics. Better knowledge score about human monkeypox source, signs/symptoms, transmission, prevention and treatment were observed among female participants (P = 0.004), participants from medical colleges (P < 0.001), last year's students (P = 0.036), participants who had history of human chickenpox infection (P < 0.001) and those who had received information on human Monkeypox during education (P = 0.005).

Table 4 displays the results of multivariate logistic regression analyses for the demographic factors that influence the knowledge about human Monkeypox. Accordingly, Old age (OR 0.681; 95% CI 1.005–1.016), female gender (OR 1.26; 95% CI 0.813 –0.961), participants from medical colleges (OR 1.22; 95% CI 1.13 –1.32) having history of human chickenpox infection (OR 2.6; 95% CI 2.3–2.9) and receiving information on human Monkeypox during education (OR 1.14; 95% CI 1.05–1.2) were strong determinants for good knowledge about human monkeypox source, Signs/symptoms, transmission, prevention and treatment.

Discussion

The dissemination of information regarding precautionary measures against the spread of the monkeypox virus is limited, with selected tabloids only providing delayed and lacklustre reports on the epidemic [26]**.** 15.1% (84) of the 558 total participants reported a history of human chickenpox infection and 68.6% of them had received information on human Monkeypox during education. The source of information about human Monkeypox was as follows social medial (64.5%), TV (27.4%), awareness campaigns (3.4%) and family/friends (4.8%).

Old age, female gender, participants from medical colleges, having a history of human chickenpox infection and receiving information on human Monkeypox during education were strong determinants for good knowledge about the source, signs/symptoms, transmission, prevention and treatment of human Monkeypox. This can be plausibly explained by the media coverage of the proliferation of Monkeypox across West Africa over the past decade and the current outbreak in Nigeria and parts of Europe, indicating that it is no longer an uncommon viral zoonotic disease that is endemic in remote areas of Central and West Africa, near tropical rainforests. Its potential to advance both regionally and globally remains a key concern [27,28]. However, it was anticipated that the younger generation is comparably stronger determinants, given that they are more familiar with the internet and thus better access to information on Monkeypox that is documented on the internet. Nonetheless, the influence of old age can be attributed to a history of human chickenpox infection.

Better knowledge scores about human monkeypox source, signs/symptoms, transmission, prevention and treatment were observed among female participants, participants from medical colleges, final year students, participants with a history of human chickenpox infection and those who had garnered information on human Monkeypox in the course of their education. The re-emergence of monkey pox globally has prompted the need for news media to prioritize risk communication advocacy for zoonotic diseases by means of non stop daily updates. This is expected to improve the public's knowledge and awareness regarding Monkeypox. This possibly explains the higher knowledge scores for educated participants, given their access to accurate and detailed information regarding huan monkeypox virus. This is similar with a contemporary study. One of the challenges to preventing Monkeypox is a lack of knowledge, especially among healthcare workers [17]. A two-step logistic regression analysis performed by Harapan et al.to assess the predictors of knowledge of Monkeypox among 432 general practitioners (GPs) in Indonesia reported that GPs who graduated from universities sited in Java (i.e a larger city), younger GPs, and those who are working in community health centers seem to be more knowledgeable about Monkeypox than those graduating from universities outside Java, who are older and who work for private health facilities. This implies that the influence of age is further dependent on the respondent's occupation.Several studies have been recently published on media reporting of health issues in different regions of

Table 2
knowledge items about human monkeypox' source, Signs/symptoms, transmission, prevention and treatment.

Knowledge items	Correct response	Correct answer		Incorrect answer	
		F	%	F	%
1. Monkeypox is a viral disease infection	Yes	493	88.4	65	11.6
2. Monkeypox is a bacterial disease infection	No	421	75.4	137	24.6
3. Monkeypox occurs in primarily in tropical rainforest areas of Africa and is occasionally exported to other region	Yes	509	91.2	49	8.8
4. Monkeypox and smallpox have similar signs and symptoms	Yes	483	86.6	75	13.4
5. The interval from infection to onset of symptoms is usually from 6 to 13 days but can range from 5 to 21 days	Yes	160	28.7	398	71.3
6. Monkeypox is easily transmitted animal-to-human, through direct contact with the blood, bodily fluid, cutaneous or mucosal lesions of infected animal or eating insufficiently cooked meat from an infected animal	Yes	480	86.0	78	14.0
7. Monkeypox is easily transmitted human -to-human through close contact with respiratory secretions, skin lesions of the infected person, or contaminated objectives	Yes	531	95.2	27	4.8
8. Flu-like syndrome is one of the early signs or symptoms of human Monkeypox	Yes	503	90.1	55	9.9
9. Skin rashes usually begins within 1–3 days of fever are one of the signs or symptoms of human Monkeypox	Yes	486	87.1	72	12.9
10. Papules on the skin are one of the signs or symptoms of human Monkeypox	Yes	442	79.2	116	20.8
11. Vesicles on the skin are one of the signs or symptoms of human Monkeypox	Yes	496	88.9	62	11.1
12. Pustules on the skin are one of the signs or symptoms of human Monkeypox	Yes	474	84.9	84	15.1
13. Lymphadenopathy (swollen lymph nodes) is one clinical sign or symptom that could be used to differentiate monkeypox and smallpox cases	Yes	489	87.6	69	12.4
14. Fever, Exhaustion, Back and muscle ache and Intense headache are the signs or symptoms of human Monkeypox	Yes	531	95.2	27	4.8
15. Frequent hands washing for at least 20 s with soap and water or alcohol based hand sanitizers is essential to prevent further COVID-19 transmission	Yes	399	71.5	159	28.5
16. Avoiding contact with wild animals (alive or dead) essential to prevent further COVID-19 transmission	Yes	455	81.5	103	18.5
17. Monkeypox could be prevented by Cooking meat properly	Yes	363	65.1	195	34.9
18. Avoiding contact with any objectives that have been in contact with sick animal can prevent spread of disease	Yes	307	55.0	251	45.0
19. Avoiding contact with any person that has a rash can prevent spread of disease	Yes	369	66.1	189	33.9
20. Avoiding contact with any objective that has been in contact with sick person can prevent spread of disease	Yes	373	66.8	185	33.2
21. Reporting symptoms of Monkeypox to local health authorities is important to prevent further disease transmission	Yes	558	100.0	160	28.7
22. Monkeypox usually a self-limited diseases with the symptoms lasting from 2 to 4 weeks	Yes	146	26.2	412	73.8
23. Symptomatic supportive care is to be considered in the management of Monkeypox disease	Yes	237	42.5	321	57.5
24. One management option for monkeypox patients who are symptomatic is to use paracetamol	Yes	348	62.4	210	37.6
25. Antibiotics are effective in COVID-19 treatment	No	243	43.5	315	56.5
26. Monkeypox can be treated with the available antiviral medications	No	160	28.7	398	71.3
27. There is no treatment for COVID-19 until now	Yes	173	31.0	385	69.0

Abbreviations: F, frequency; %, Percentage

Table 3
Participants' knowledge towards human Monkeypox according to demographics.

	Human Monkeypox knowledge score				
Demographic Variables	**N**	**Mean ± SD**		**Median**	**P- value**
Gender					
Male	208	18.32	4.25	19	**0.004***
Female	350	19.29	3.62	20	
Nationality					0.360
African	61	18.21	4.01	19	
Arabic	243	18.80	4.27	20	
Asian	30	19.23	3.20	20	
Emirati	161	19.34	3.67	20	
Western	63	18.90	2.93	19	
Major					
Medical colleges	245	19.72	3.79	20	**<0.001***
Non-medical colleges	313	18.30	3.86	19	
Study level					
First years	340	18.65	4.16	19	**0.036***
Last years	218	19.36	3.39	20	
History of human chickenpox					**<0.001***
Yes	84	22.86	2.98	23	
No	474	18.23	3.61	19	
Had you ever received information of human Monkeypox during education					
Yes	383	19.24	3.91	20	**0.005***
No	175	18.24	3.76	19	

Notes: P-values less than 0.05 were considered statistically significant, P-values obtained from the Kruskal Wallis and Mann Whitney U tests

Table 4
multivariate analysis of factors associated with the good knowledge about human Monkeypox.

Factors	Human monkeypox knowledge (Good knowledge= 80–100%)			
	OR	95% CI		P-value
Age	1.010	1.005	1.016	**0.001**
Gender (Ref. Male)				
Female	1.257	1.168	1.353	0.015
Nationality (Ref. African)				
Arabic	0.832	0.641	1.068	0.143
Asian	1.042	0.871	1.242	0.653
Emirati	0.976	0.853	1.116	0.711
Western	0.982	0.752	1.295	0.916
Major (Ref non-medical colleges)				
Medical colleges	1.221	1.133	1.317	**<0.001**
Study level (Ref. Final years)				
First years	0.966	0.896	1.041	0.365
History of human chickenpox (Ref. No)				
Yes	2.605	2.308	2.940	**<0.001**
Received information of human Monkeypox (Ref. No)				
Yes	1.141	1.056	1.232	**0.002**

Notes: P-values less than 0.05 were considered statistically significant, **Abbreviations**: OR, odds ratio; CI, confidence interval.

the world and Nigeria abound as regards monkeypox epidemiology and resurgence. For instance, Odoemela et al., [29] Akpor and Clever [30]; Okanume [31] and Wogu et al., [32] investigated the histology, clinical presentation, diagnosis, treatment and prevention of monkey pox, however there is a dearth of research as regards the attention-cycle and the dimension of risk communication messages in the course of monkey pox outbreaks. The majority data available on Monkeypox are derived from individual case or outbreak reports, and from sporadic passive surveillance, none of which paints a precise general picture. Petersen et al. (2019) reported that the existing key gaps in monkeypox knowledge, the varying epidemiologic and clinical manifestations, and the multifaceted factors involved in monkeypox spread argue the necessity to reinforce outbreak vigilance efforts [33]. There remains a pressing demand to develop public health and surveillance capabilities, particularly in endemic areas, to direct proper surveillance, data collation, prevention, awareness, and response actions to the spread of Monkeypox and other budding re-emerging infections with high possibility of epidemic. Enhancing the awareness and preparedness of public health and supporting proactive surveillance activities with priority research will require harmonized, locally coordinated, multifaceted endeavours modified to conform to capacity improvement and training.

A crucial aspect of monkeypox prevention involves raising awareness and encouraging less risky behaviours in locations of recently recorded cases as well as endemic areas [34]. Communicating the risks associated with the disease and the need for behaviour change require particular interest with anthropological approaches and community engagement as critical components [33]. WHO (2017) thus asserted that advocacy is needed to mobilize human, technical and financial resources to develop an all-inclusive and wide-ranging monkeypox programme within the Integrated Disease Surveillance and Response system (IDSR) and One Health disease control systems.

Ben-Enukora et al., (2020) reported that despite the resurgence of epidemiological infections the human population grows, global travels rise, and deep-rooted socio-cultural practices remain unconstrained [26]. This might impede the proactive response to proactive planning towards surveillance, control, and eradicating periodic outbreaks of diseases as they re-emerge. Nonetheless, this study has some constraints. Hence the results should be construed with caution. First, the number of samples analyzed in this study was small, and there is the potential for selection bias for geographical as UAE is neither an endemic zone nor has reported high incident rates. The research finding does not reflect the UAE population's knowledge because it only focuses on university students. Nevertheless, research assumes that knowledge among the population can be further lower, and an urgent intervention should be followed up to increase people's knowledge and awareness, especially in the current emergency.

Conclusion

In general, knowledge of Monkeypox among the participants is relatively low, particularly as regards the epidemiology, symptoms and treatments. Therefore, increasing knowledge of Monkeypox will be key to enhancing the capacity to respond to human monkeypox cases and to relay pertinent data to a disease surveillance system. Nonetheless, this study has some constraints. Hence the results should be construed with caution. First, the number of samples analyzed in this study was small, and there is the potential for selection bias for geographical as UAE is neither an endemic zone nor has reported high incident rates.

Ethics approval and consent to participate

The study protocol was approved by Al Ain University's Institutional Ethical Review Committee. They were briefed on the goal of the survey prior to data collection and were also advised that the completion and submission of the questionnaire were contingent on their approval. All participants signed the informed consent. The identity of the participants was not recorded, and confidentiality was ensured.

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Authors' contributions

AAJ, SSA and NMA conceptualized the project. NH and SS contributed in the methodology development. MS, FD, SS and NGA contributed to data collection. AAJ and FD contributed to data analysis and interpretation. OJ, NGA and AASJ investigation and write the discussion. The final manuscript has been developed, written, and agreed by all authors. All Authors read and approved the final manuscript.

Consent for publication

All authors are agreed for publication of this manuscript in journal of community Health.

Availability of data and materials

All data will be provided upon request.

Declaration of Competing Interest

All authors declare that they have no conflict of interest.

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