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The Mpox Disease: Awareness and Apprehensions among the Medical Undergraduates and Nursing Staff

Shariq Ahmed[1], Md. Mobasshir Hassan[2], Fatima Khan[1]*, Asfia Sultan[1] and Mohammad Salman Shah[3]

[1]Department of Microbiology, Jawaharlal Nehru Medical College & Hospital, Aligarh Muslim University, Uttar Pradesh, India.
[2]Jawaharlal Nehru Medical College & Hospital, Aligarh Muslim University, Uttar Pradesh, India.
[3]Department of Community Medicine, Jawaharlal Nehru Medical College & Hospital, Aligarh Muslim University, Uttar Pradesh, India.

Abstract

Human monkeypox (now termed as the "Mpox") was considered a geographically isolated disease until recently, but the current spread of the disease over 110 locations around the world has created an environment of fear. This study was thus conducted to evaluate the knowledge and apprehensions about the ongoing outbreak of Monkeypox among the medical students and nursing staff who can be a vital source of dissemination of knowledge to the general population. A semi-structured, self-administered questionnaire, was used in this cross-sectional offline study. The study population comprised Medical undergraduate students and nursing staff of a medical college situated in northern India. A total of 340 participants took part in the study comprising 302(88.8%) medical undergraduates and 38(11.1%) nursing staff. Overall, the knowledge of medical students and nursing staff was unsatisfactory. When the questionnaire data were analyzed only 17.05% of the participants had good knowledge, 20.58% had moderate knowledge and 65.78% had poor knowledge. Overall knowledge about the human monkeypox virus and disease was underwhelming. Medical students and nursing staff can be a vital source of dissemination of knowledge to the general population. In this era of emerging threats; to fill the knowledge gaps of the health care professionals' strategies like continuing medical education, webinars, seminars, and workshops primarily focussing on better clinical, prevention, and control practices should be conducted frequently.

Keywords: Mpox, Monkeypox Virus, Smallpox, Knowledge, Outbreak, Apprehension

***Correspondence:** fatimasalmanshah@gmail.com

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INTRODUCTION

Poxviridae have always been significant in human history. One of the scariest of Pox viruses which affected humans was smallpox with a high fatality rate of 3 out of 10. Those who survived usually had scars, which were sometimes severe. Although there are other pox viruses which affect humans but they cause mild illnesses or are limited to hosts other than humans. Recently, Monkeypox (now termed as the "Mpox") which is primarily a disease of monkeys and other small mammals (like rope and sun squirrels, giant-pouched rats, African dormice) emerged in regions where it was not known before. After recovering from the COVID-19 pandemic, the emergence of Monkeypox was considered a new threat. The swift spread of the disease has caused an alarming situation globally with no certain answers about the severity of illness it may be causing and for the extent of spread.[1,2]

The Monkeypox virus belongs to the family poxviridae, subfamily Chordopoxvirinae, genus Orthopoxvirus and is an enveloped double-stranded DNA virus3. Although it belongs to the same family as smallpox, the disease. Like other pox viruses, MPXV is brick-shaped, with approximately 200-250 nm size, and is surrounded by a lipoprotein envelope.[3-6]

The virus was identified in 1958, accidentally in monkeys from lesions of a pox-like disease, and the disease acquired the term monkeypox. In 1970, the first human case of monkeypox was reported from the Democratic Republic of the Congo.[3] Human cases are common in Central and West Africa, with a fatality rate of 5-10%.[3,4] First outbreak outside Africa was reported in 2003, in the United States, with no case of human-to-human transmission.[7,8] In contrast, an outbreak during the same time in the Republic of Congo where human transmission was noted.[9] Discrete reports of outbreaks with no significant mortality had been reported in African Countries since then.[10] However, since May 2022, many non-endemic states in European countries, the United States, Australia, Asia, and the Middle East reported monkeypox cases which raised the alarm.[11]

In India, first confirmed case was reported on 14, July 2022 from Kerela. India was the tenth country to report a monkeypox case in Asia and the first in South Asia. India reported five cases form Kerala and six from Delhi making a total of eleven confirmed cases of monkeypox.

Recent experiences of the general population and of the healthcare workers during the COVID-19 pandemic and the lineage of monkeypox to smallpox raised many concerns and fear of a pandemic with severe mortality or morbidity. This study was thus conducted to evaluate the knowledge and apprehensions about the ongoing outbreak of Monkey pox among the medical students and nursing staff who can be a vital source of dissemination of knowledge to the general population.

MATERIALS AND METHODS

Study design

This cross sectional offline study was done to evaluate the knowledge and assess the apprehension for monkeypox during an outgoing outbreak among the medical undergraduates and the nursing staff at a tertiary care and teaching institution of North India. A semi structured, self administered questionnaire, was used to access the knowledge and apprehension about the monkeypox disease. The questionnaire was validated by face validity and a pilot study on 10% of the sample size. Identity of the respondents was not revealed and confidentiality was maintained throughout the entire process. Ethical clearance was obtained from the Institutional Ethical Committee, JNMCH, AMU.

Participants

The study population comprised of Medical undergraduate students (MBBS students from different phase of their study) and nursing staff of a medical college situated in northern India. A total of 38 responses were recorded from nursing staff and the remaining 302 from MBBS students.

Questionnaire

The questionnaire consisted of 22 questions assessing the knowledge regarding epidemiology, clinical manifestations, management and prevention. These questions consisted of two types of questions i) single correct answer ii) multiple correct answer; for questions that

had single correct answer, 1 point was given for a correct response and 0 was given for a wrong response. In multiple correct answer type questions, 2 points were given for all correct responses, 1 point for partially correct response and 0 points were given when all responses were wrong. Using the Bloom's cut off point, a score between of 0 and 18 was given the category of Low knowledge, score between 19-24 was considered moderate knowledge and a score above 24 was considered high knowledge. Three questions included were for assessing the apprehension and attitude of the participants. Two of these questions were supposed to be rated on on a 5-point Likert scale. Questionnaire was given to the consenting participants in person and 25 minutes were provided to complete it. The mean time for completing the questionnaire was 14 minutes.

Statistical analysis

Data were analysed using MedCalc developed by MedCalc Software (acacialaan 22, 8400 ostend, Belgium). Data were presented as frequency (percentage). [https://www.medcalc.org/calc/diagnostic_test.php]

RESULTS

A total of 340 participants took part in the study comprising 302(88.8%) medical undergraduates and 38(11.1%) nursing staff. Overall, the knowledge of medical students and nursing staff was unsatisfactory; with MBBS students scoring slightly better than the nursing staff. Gross deficiencies in knowledge were seen in some areas like the majority of the participants missed respiratory droplets as a mode of transmission; 45% of the missed lymphadenopathy as the clinical feature of the disease; 40.08% mentioned one skin lesion and one serum sample as the recommended sample to collect in monkeypox; 80.5% considered quarantine of contacts as infection prevention and control measure; 73.2% answered shaking of linen well before washing to remove all viruses when handling used bed linen from monkeypox patient as correct option; 35.2% thought that monkeypox patient is infectious till it feels well. (Table 1)

When the questionnaire data were analyzed only 17.05% of the participants had good knowledge, 20.58% had moderate knowledge and 65.78% had poor knowledge. (Table 2)(Figure 1)

One of the factors which were assessed among the respondents was the apprehension and attitude towards monkeypox disease. 17.5% and 63.52% of respondents very unconcerned and unconcerned about getting monkeypox. Similarly, only 20% and 10% of them believed that its very likely and likely for monkeypox outbreak to become as severe as COVID-19 pandemic. However, majority (84.7%) felt that we are not prepared to tackle monkeypox outbreak. (Figure 2).

DISCUSSION

Emerging and re-emerging pathogens have periodically caused epidemics and pandemics around the globe. The occurrence of these epidemics and pandemics has increased in frequency in recent times. Migrations of population, easy connectivity even to remote areas of the world, and frequent air travel may be responsible for such a phenomenon. As COVID-19 pandemic has shown us, the general population, healthcare workers, and the administration all have to face several challenges during such periods. Each new outbreak, epidemic, or pandemic brings new fear and new anxiety. Lack of knowledge and awareness and an indifferent attitude can further worsen the problem. The monkeypox scare just as the COVID-19 pandemic was diminishing in severity has questioned our preparedness for such occurrences. Healthcare workers are the best personnel to disseminate such knowledge about the disease in the community.

Assessment of the knowledge and apprehensions about the disease among the budding physicians and their supporting staff (nursing) will help us establish the basis of the measures to be taken to make aware the healthcare personnel and even the general population. In the present study medical undergraduates from different phases of their course and nursing staff answered a questionnaire regarding the monkeypox disease. It was seen that only 17.05% of the participants had good knowledge, whereas 20.58% and 62.35% we're having moderate knowledge and poor knowledge. Medical undergraduates were slightly better than

Table 1. Questionnaire with responses and results

No.	Question	Options	Response	Percentage (%)	Response	Percentage (%)	MBBS	Percentage (%)	Nursing	Percentage (%)
1.	Monkeypox in humans is	an infection with a virus circulating in all wildlife around the world	167	49.11	167	49.11	157	51.98	10	26.31
		an infection with a virus circulating in wildlife in Central and West Africa	112	32.94	112	32.94	97	32.11	15	39.47
		an infection with bacteria circulating in wildlife in Central and West Africa	23	6.76	23	6.76	10	3.31	13	34.21
		none of the above	38	11.17	38	11.17				
2.	Monkeypox is a zoonosis, which means a disease which can spread	from humans to animals	38	11.17	38	11.17	29	9.6	9	23.68
		among animals in zoos	0	0	0	0	0	0	0	0
		from animals to humans	302	88.82	302	88.82	273	90.39	29	76.31
3.	Monkeypox can be transmitted by: (select all that apply)	body fluids	267	78.52	ac237	69.7	231	76.49	6	15.78
		lesion material	288	84.7	pc 103	30.29	71	23.5	32	84.21
		respiratory droplets	103	30.29						
		contaminated materials and surfaces	298	87.64						
4.	What are the main environmental and social factors for monkeypox emergence:	civil unrest and poverty; climate change; expanding mosquito populations; cessation of smallpox vaccination;	14	4.11	14	4.11	5	1.65	9	23.68
		deforestation; climate change; civil unrest and poverty; cessation of smallpox vaccination;	174	51.17	174	51.17	158	52.31	16	42.1
		cessation of smallpox vaccination; climate change; expanding mosquito populations; overcrowding.	152	44.7	152	44.7	139	46.02	13	34.21

Table 1. Cont...

No.	Question	Options	Response	Percentage (%)	Response	Percentage (%)	MBBS	Percentage (%)	Nursing	Percentage (%)
5.	Which animals were reported to transmit monkeypox to humans (select all that apply)	Bats	52	15.29	ac 149	43.82	142	47.01	7	18.42
		Monkeys	265	77.94	pc 162	47.64	144	47.68	18	47.36
		Rodents	212	62.35	aw 29	8.52	16	5.29	13	34.21
		Poultry	69	20.29						
6.	One Health is an approach to developing policies, programmes, legislation, and research for the human-animal-environment interface in which different sectors work together to achieve better public health outcomes									
		TRUE	289	85	289	85	268	88.74	21	55.26
		FALSE	51	15	51	15	34	11.25	17	44.73
7.	Monkeypox is characterized by: (select all that apply)	Fever	247	72.64	ac 148	43.52	134	44.37	14	36.84
		Cough	148	43.52	pc 192	56.47	168	55.62	24	63.15
		Rash	192	56.47						
		Swollen lymph nodes	187	55						
8.	How long is the incubation period for human monkeypox?	5 to 13 days	84	24.7	84	24.7	72		12	31.57
		3 to 7 days	37	10.88	37	10.88	30	pc 219(64.41)	7	18.42
		5 to 21 days	158	46.47	158	46.47	148	aw 121(35.58)	10	26.31
		6 to 13 days	61	17.94	61	17.94	52		9	23.68
9.	The rash in monkeypox progresses as follows	macule, vesicle, papule, pustule, crust	33	9.7	33	9.7	20	6.62	13	34.21
		papule, macule, vesicle, pustule, crust	20	5.88	20	5.88	6	1.98	14	36.84
		macule, papule, vesicle, pustule, crust	287	84.41	287	84.41	276	91.39	11	28.94
10.	The known complications of monkeypox include? (select all that apply)	secondary bacterial infection	245	72	ac 118	34.7	115	38.07	3	7.89
		bleeding	202	59.41	pc 222	65.25	187	61.92	35	92.11
		bronchopneumonia	198	58.23						
		blindness	178	52.35						

Table 1. Cont...

No.	Question	Options	Response	Percentage (%)	Response	Percentage (%)	MBBS	Percentage (%)	Nursing	Percentage (%)
11.	Among the following statements, tick those which are correct:	monkeypox and chickenpox both present with a rash on palms and soles	268	78.82	ac 139	40.88	137	45.36	2	5.26
		lymphadenopathy is generally present in monkeypox	199	58.52	pc 187	55	164	54.3	23	60.52
		Monkeypox rash lesions evolve through the stages of development at the same time	213	62.64	aw 14	4.11	1	0.33	13	34.21
		monkeypox rash is usually denser on the extremities than on the trunk	187	55						
12.	The best diagnostic specimen to collect for laboratory confirmation of monkeypox is:	tonsillar or nasopharyngeal swabs	33	9.7	33	9.7	7	2.31	5	13.15
		sputum	20	5.88	20	5.88	4	1.32	2	5.26
		skin lesions	287	84.41	287	84.41	285	94.37	24	63.15
		serum	10	2.94	10	2.94	3	0.9	7	18.42
13.	For laboratory confirmation of monkeypox, it is recommended to collect	a single nasopharyngeal swab	79	23.23	79	23.23	61	20.19	18	47.36
		at least two skin lesion samples from different sites of the body	114	33.52	114	33.52	110	36.42	4	10.52
		one skin lesion sample and one serum sample	139	40.88	139	40.88	126	41.72	13	34.21
		there is no need to collect samples as the clinical picture is sufficient	8	2.35	8	2.35	5	1.65	3	7.89
14.	Infection prevention and control precautions for monkeypox include (select all that apply)	use of personal protective equipment (PPE) when caring for patients	257	75.58	ac 68	20	47	15.56	21	55.26
		isolation of patients	269	79.11	pc 235	69.11	222	73.5	13	34.21
		quarantine of contacts	274	80.58	aw 37	10.88	33	10.92	4	10.52
		hand hygiene practices	215	63.23						
		keeping at least one metre distance	206	60.58						

Table 1. Cont...

No.	Question	Options	Response	Percentage (%)	Response	Percentage (%)	MBBS	Percentage (%)	Nursing	Percentage (%)
15.	What personal protective equipment must be worn when caring for a patient with suspected or confirmed monkeypox or collecting specimens?									
		gown, gloves	14	4.11	14	4.11	11	3.64	3	7.89
		gown, gloves, surgical mask	47	13.82	47	13.82	31	10.26	16	42.1
		gown, gloves, surgical mask, goggles	279	82.05	279	82.05	260	86.09	19	50
		none of the above	0	0	0	0	0	0	0	0
16.	The following are possible long-term sequelae of monkeypox (select all that apply	blindness	288	84.7	ac 138	40.58	132	43.7	6	15.78
		paralysis	231	67.94	pc 117	34.41	102	33.77	15	39.47
		scarring	309	90.88	aw 85	25	68	22.51	17	44.73
		loss of skin pigmentation	214	62.94						
17.	When handling used bed linen from monkeypox patients we should? (select all that apply)									
		shake it well before washing to remove all virus particles	249	73.23	ac 118	34.7	98	32.45	20	52.63
		store in a leak proof bag	304	89.41	pc 219	64.41	202	66.88	17	44.73
		wash separately and at high temperature	268	78.82	aw 3	0.8	2	0.66	1	2.63
		wear a medical mask and gloves and a clean gown to protect yourself	254	74.7						
18.	How should you care for an extensive monkeypox rash?	cover it with a wet towel	0	0	0	0	0	0	0	0
		use cloxacillin or amoxicillin	45	13.23	45	13.23	29	9.6	16	42.1
		keep it dry and clean; use antibiotics if needed for secondary infection	295	86.76	295	86.76	273	90.39	22	57.89
19.	How long is a monkeypox patient infectious?	until antibodies in the blood can be detected	48	14.11	48	14.11	40	13.24	8	21.05
		until the crusts fall off and new skin has formed	172	50.58	172	50.58	152	50.33	20	52.63
		until the person feels well	120	35.29	120	35.29	110	36.42	10	26.31

Table 1. Cont...

No.	Question	Options	Response (%)	Percentage	Response (%)	Percentage	MBBS (%)	Percentage	Nursing (%)	Percentage
20.	First case of monkeypox was detected in India in which State?	Kerala	257	75.58	257	75.58	241	79.8	16	42.1
		Delhi	35	10.29	35	10.29	32	10.59	3	7.89
		Uttar Pradesh	18	5.29	18	5.29	16	5.29	2	5.26
		Maharashtra	30	8.82	30	8.82	13	4.3	17	44.73
21.	How apprehensive are you of getting monkeypox?	1 (very unconcerned)	58	17.05	58	17.05	50	16.55	8	21.05
		2 (unconcerned)	216	63.52	216	63.52	212	70.19	4	10.52
		3 (neutral)	31	9.11	31	9.11	19	6.29	12	31.57
		4 (concerned)	9	2.64	9	2.64	4	1.32	5	13.15
		5 (very concerned)	26	7.64	26	7.64	17	5.62	9	23.68
22.	Do you feel we are prepared to tackle monkeypox virus outbreak?	Yes	52	15.29	52	15.29	48	15.89	4	10.52
		No	288	84.7	288	84.7	254	84.1	34	89.47
23	Can monkeypox outbreak become as severe as COVID-19?	1 (very unlikely)	67	19.7	67	19.7	50	16.55	17	44.73
		2 (unlikely)	53	15.58	53	15.58	50	16.55	3	7.89
		3 (Neutral)	118	34.7	118	34.7	110	36.42	8	21.05
		4 (likely)	34	10	34	10	29	9.6	5	13.15
		5 (very likely)	68	20	68	20	63	20.86	5	13.15
24.	Antibiotics are required in the management of mild monkeypox infection?	Yes	141	41.47	141	41.47	120	39.73	21	55.26
		No	199	58.52	199	58.52	182	60.26	17	44.73
25.	Antivirals are required in the management of mild monkeypox infection?	Yes	183	53.82	183	53.82	168	55.62	15	39.47
		No	157	46.17	157	46.17	134	44.37	23	60.52

*ac= all correct, pc= partially correct, aw= all wrong

nursing staff. Similar studies conducted around the world also showed a gap in the knowledge of healthcare professionals and the general population. Harapan et al from Indonesia depicted that only 10.0% of general practitioners had good knowledge (80% Cut-off) which increased to 36.5% when the cut-off was lowered to 70%.[12] Ricco et al noted a considerable knowledge gap among Italian physicians.[13] Bates et al reported only 48.9% of clinicians from Ohio, USA answered the knowledge questions correctly.[14] Studies conducted among the general population in Saudi Arabia 52%[15] and university students of UAE 19.9%[16] also had poor knowledge of the disease.

India is not endemic to Monkeypox or rather say there was no reported case of monkeypox before the recent outbreak. Therefore, for the healthcare professionals of India, this is a relatively new disease to encounter. Study and research of such uncommon diseases in the country may lack as compared to common/ endemic diseases or diseases having global occurrence may be the reason for inadequate knowledge of the participants.

Zoonotic disease means it can spread from animals to humans; Monkeypox caused by Monkeypox virus, an Orthopoxvirus belongs to this category,[17] and in the present study 88.8% of the respondents had good awareness of it being a zoonosis. However, only 33.94% of the participants could say that Monkeypox is an infection with virus circulating in the wildlife in Central and West Africa.[18] Several factors have been speculated to be the underlying social and environmental factors for the increased frequency of monkeypox outbreaks namely increased susceptibility to monkeypox infection following the cessation of smallpox vaccination, poor countries affected by social unrest leading to dietary changes as consumption of animals as a protein source which are potential

Table 2. Knowledge levels of participants

Level of Knowledge	Score	Total n (%age)	Medical undergraduates n (%age)	Nursing staff n (%age)
Poor	0-18	212(62.35)	187(61.92)	25(65.78)
Moderate	19-24	70(20.58)	59(19.53)	11(28.94)
Good	>24	58(17.05)	56(18.54)	2(5.26)

n = total responses; %= percentage

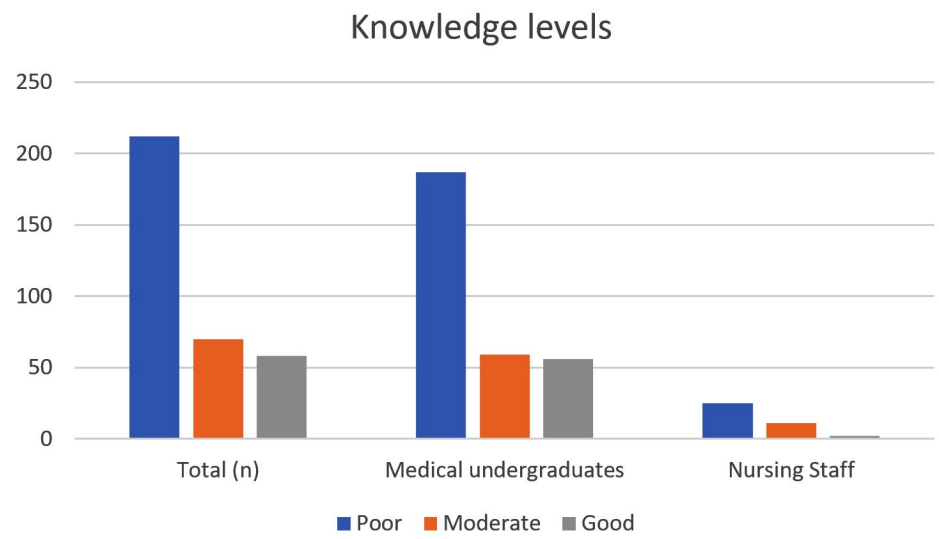

Figure 1. Knowledge level of participants

MPXV reservoirs, deforestation, easy air travel and increased population density.[19] Expanding mosquito population does not affect monkeypox spread as it is not a vector borne disease, however 48.83% of the participants believed it to be as one of the factors facilitating the spread. According

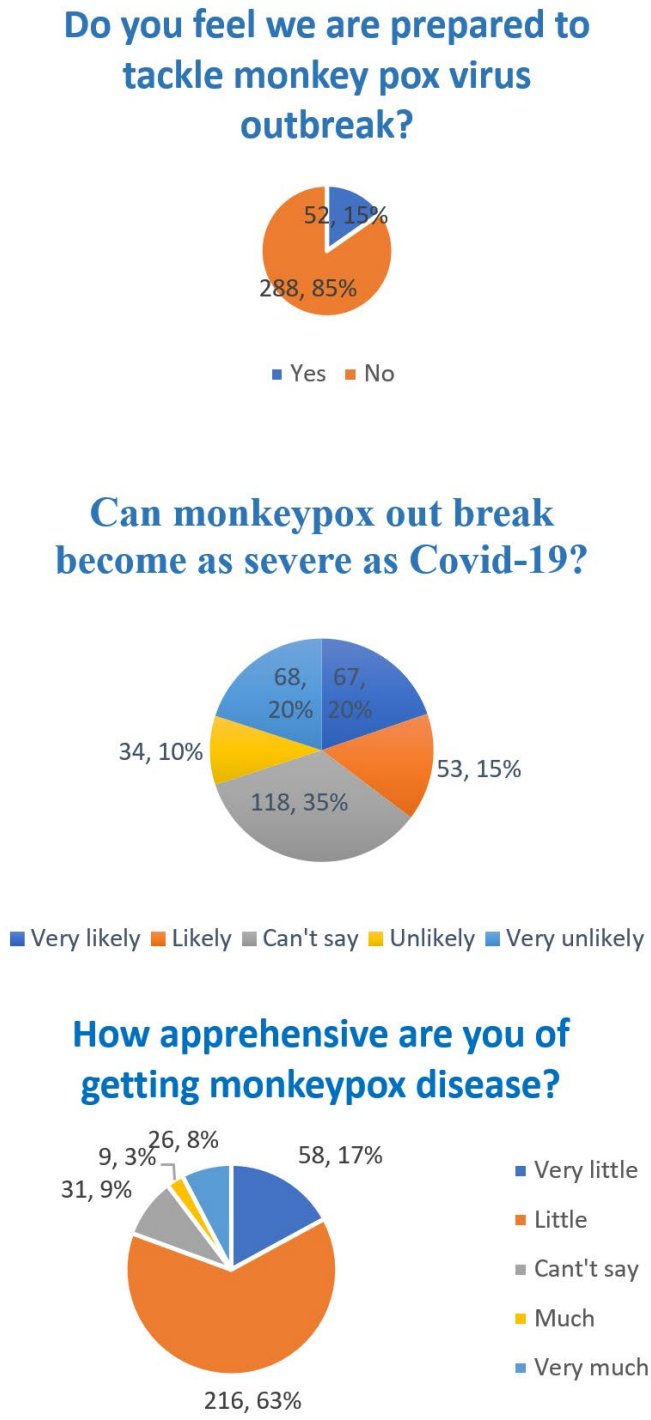

Figure 2. Participants response to questions regarding the attitude and apprehension towards monkeypox disease

to CDC, although animal reservoir is unknown, small mammals (e.g. rope and sun squirrels, giant-pouched rats, African dormice) are thought to maintain the virus in the environments of West and Central Africa and despite its name Monkeys are not the main reservoir.[20] Only 8.52% of the current study participants were unaware of monkeys and rodents being the reservoir.

As of 23 Nov 2022 CDC has reported a total of 80,850 cases in 110 location around the word20. A 35 year old man who arrived in Kerala from Middle East was the first case reported from India and the WHO South-East Asia Region.[21] Majority (75.58%) of the study participants were aware of the fact. Mode of transmission broadly classified as 1. Animal to human transmission/ primary transmission- contact with blood/body fluids, contact with cutaneous/mucosal lesions, bites and scratches, cooking and consumption of infected animals; 2. Human to human transmission/ secondary transmission- Direct contact with cutaneous lesions, close contact with recently contaminated object or surfaces, close contact, respiratory droplets.[22] Majority (69.7%) of the participants knew the modes of transmission while 30.29 % had some doubt in one or the other documented mode of transmission.

WHO says that the incubation period (interval from infection to onset of symptoms) of monkeypox is usually from 6 to 13 days but can range from 5 to 21 days which 64.41% of the participants correctly answered.[23] The course of infection in monkeypox traverse two phases; first being the invasion period (day 1 to day 5) and second by skin eruption period. Invasive period is characterised by fever, headache, chills, myalgia, sore throat and lymphadenopathy. One distinguishing feature of monkeypox is lymphadenopathy usually occurring 1-3 days after the onset of fever that differentiates it from chickenpox, smallpox and measles. The skin eruptions are usually seen from 1-3 days of fever which go through macular, papular, vesicular, and pustular phases.[19] In the present study quite low percentage (43.52%) identified all the common sign and symptoms, however most (84.41%) of them were able to tell the correct sequence of progression of rash through different phases. 34.7% of participants correctly identified the majority of commonly occurring complications of monkeypox can include secondary infections, bronchopneumonia, sepsis, encephalitis, and infection of the cornea with ensuing loss of vision.[23] Recommended specimen are skin lesion materials like exudates, lesion crusts or swabs from lesion surface[20] and a staggering 90.89% of the respondents knew the fact but lacked in knowledge that two swabs from each lesion, preferably from different locations on the body or from lesions that differ in appearance needs to be collected as only 33.52% answered that correctly.[20] It was seen that awareness was lacking in knowing the infectivity period of a case of monkeypox which is until the crusts fall off and new skin has formed.[20] Participants had a good knowledge of the personal protective equipment to be used when caring for a patient with suspected or confirmed monkeypox or collecting specimens. CDC recommends Gown, Gloves, Eye protection (i.e., goggles or a face shield that covers the front and sides of the face), NIOSH-approved particulate respirator equipped with N95 filters or higher to be worn when entering the patients room.[20] However, proper knowledge in infection prevention and control precautions for monkeypox were lacking quite significantly.

When questions regarding attitude and apprehension towards monkeypox was asked majority were unconcerned (63.52%) or very unconcerned (17.05%) about getting monkeypox disease. The reason could be that very few cases (17) of monkeypox has been reported till now with only one death[20] which is very less as compared to COVID-19 cases. But the opinion was divided on the question whether Monkeypox outbreak can become as severe as COVID-19 pandemic with neither agreed nor disagreed getting the highest percentage (34.7%). However, a very high percentage agreed that we are still not prepared to tackle monkeypox virus.

Healthcare workers are expected have good knowledge as tend to be involved in publications, read scientific publications, and equip themselves with better knowledge and skills it was found in cases of non-endemic diseases like monkeypox there can be lacunae in the knowledge. Raising awareness, encouraging less risky behaviour and communicating the risk associated with the disease throughout the country particularly areas of high international air travel and areas where recently cases have

been recorded is a crucial aspect in controlling or preventing monkeypox spread. Non endemic countries like India should be prepared for outbreaks from exotic pathogens and should device proper surveillance channels and data collection. Enhancing the awareness of health-care workers and even general public should be the first step in preparing for such outbreaks. Knowledge of health care professionals can be amplified by conducting regular seminars, webinars, CMEs on priority basis when such outbreaks are suspected to occur in the country. A multifaceted proactive approach is thus required to fill the gaps in the knowledge of a particular disease which is of utmost importance to fight and control such outbreaks.

The research study has some limitations like being a single centre study and small sample size it soes not reflects the knowledge of whole of India. However, we included budding physicians i.e. medical undergraduates and also nursing staff that play an important role in sample collection, isolation and patient care in India.

CONCLUSION

Overall knowledge about the human monkeypox virus and disease was underwhelming among the medical students and nursing staff. They can be a vital source of dissemination of knowledge to the general population. In this era of emerging threats, to fill the knowledge gaps of the health care professionals' strategies like continuing medical education, webinars, seminars, and workshops primarily focussing on better clinical, prevention and control practices should be conducted frequently. More emphasis should be paid on non-endemic, emerging and remerging diseases in the medical and its allied sciences curriculum so that they are prepared to tackle these outbreaks, epidemics and pandemics. Similarly, awareness through outreach programmes, electronic and print media should be spread to enhance the knowledge and reduce the apprehensions of the general population.

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None.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORS' CONTRIBUTION

FK, MMH conceptualized the study. MMH, SA performed data curation. FK, SA, MMS applied methodology. SA investigated the study. MMH performed software analysis. FK, SA, AS wrote the manuscript. AS reviewed and edited the manuscript. MSS performed supervision. All authors read and approved the final manuscript for publication.

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DATA AVAILABILITY

All datasets generated or analyzed during this study are included in the manuscript.

ETHICS STATEMENT

This article does not contain any studies with human participants or animals performed by any of the authors.

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