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Nursing Students' Perception of Monkey Pox Virus at the Technical Health Institute of Imbaba

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Abstract

Background: Monkeypox is a rare disease caused by infection with the monkeypox virus. Although monkeypox existed and declined in the past, its re-emergence is simultaneous with the rise in cases recently. **Aim**: This study aimed to assess the nursing students' perception of monkeypox virus at the technical health institute of Imbaba. **Design:** A descriptive research design was applied in this study. **Sample:** Purposive sample included 154 nursing students **Setting:** Technical Health Institute at Imbaba. **Tool**: One tool included four parts, **1st part:** Socio-demographic data of nursing students, **2nd part:** Nursing students' knowledge regarding monkeypox, **3rdpart:** Nursing students' practice regarding monkey pox, **4th part:** Nursing students' attitudes regarding monkeypox. **Results**: 20 % of nursing students had good total knowledge level about monkeypox, 45 % of the studied nursing students had a satisfactory total reported practices regarding monkeypox, and 30 % of the studied nursing students had positive total attitude level toward monkeypox. **Conclusion:** Half of the studied nursing student had poor knowledge of total knowledge about monkeypox. Shows that, less than half of the studied nursing student had satisfactory level in total students' practice. Three quarters of nursing students had negative total attitude regarding monkeypox. While, there was highly statistically significant relation between relation between nursing students' total knowledge, total reported practices and socio demographic data. **Recommendation:** Applying educational programs for nursing students to improve knowledge, reported practice and attitude toward monkey pox.

Key words: *Monkey Pox Virus, Nursing Students' Perception and Technical Health Institute of Imbaba*

Introduction

Monkeypox (MPX) is a viral zoonotic illness caused by the MPX virus, a species of the ortho poxvirus genus. MPX virus was discovered in Copenhagen Denmark in 1958 MPX was regarded as an African disease with sporadic cases reported throughout Africa until 2003, when the first case of MPX was reported in the United States (US) among rats. From rats, the virus was transmitted to dogs and subsequently to humans. From 2017 to 2018, a large MPX outbreak was reported in Nigeria and five infected cases of MPX were reported in the United Kingdom, Israel, and Singapore in students with travel history in Nigeria (***Ahmed et al., 2023***).

The World Health Organization (WHO) subsequently declared the recent MPX outbreak a public health emergency on 23 July 2022. More than 87,000 positive cases, along with 130 deaths, have been reported due to the MPX outbreak in 111 countries as of 27 April 2023. To date, most of the deaths due to MPX were reported in the American region followed by the African region (***Lin et al., 2022***).

Many signs and symptoms, typically appearing within 5 to 21 days after infection. The symptoms can vary in severity from mild to severe as fever, fatigue, headache, muscle aches and pains, swollen lymph nodes, skin rash, lesions

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in mucous membranes, and conjunctivitis. Monkeypox can be transmitted from one person to another through direct or indirect contact, the virus can also spread from pregnant women to the fetus through the placenta and from an infected parent to a child (***Rizk et al., 2022).***

Complications associated with MPX include vision loss; pneumonia, dehydration, encephalitis, secondary infections, permanent scarring, eye complications and headache in order to prevent and manage the disease, those who are infected must be rapidly diagnosed and isolated. Several vaccines have already been developed e.g., JYNNEOS vaccine, ACAM 2000 vaccine and antiviral drugs e.g., cidofovir and tecovirimat can used to treat the disease the increasing number of human MPX cases at this time necessitated the importance of prevention, early detection, and rapid reporting, as well as quick and effective management from healthcare workers (***Aynalem et al., 2024).***

Nursing students have a crucial role in educating the community about MPX prevention, transmission, and treatment. can raise awareness and promote healthy practices to limit the disease's spread, Accurate identification and monitoring of contacts can facilitate early intervention and prevent further transmission and Health Promotion. Nursing students should be trained to recognize Diagnosis and isolation practices, and early detection of the clinical signs and symptoms of MPX and prevention of further spread (***Masood et al., 2023).***

Assessing nursing student's perception of emerging viral infections might be useful for determining their readiness as future health providers and willingness to assist during infectious disease outbreaks. In addition, understanding health-seeking behavior, particularly the propensity to adhere to preventative measures, could be affected by the relationship between lack of knowledge and attitude toward conspiracy ideas. Attitudes that are based on substantial quantities of knowledge are more lasting, consequential, and effective behavior predictors than attitudes that are based on little or erroneous knowledge (***Yodsuban et al., 2023).***

Graduate nurses' students of nowadays are increasingly exposed to complex healthcare environments that require the skills to effectively think and reason to provide quality student care. To adequately prepare nursing students for practice in these environments, the ability to think has been included as a learning outcome in curriculum and accreditation standards published by leading nursing education organizations dispositions toward have been portrayed as the unswerving internal inclination to problem solving and decision making achieved by thinking (***Ghazy et al., 2023***).

Taking into account the current global MPX outbreak, the role of Health Care Workers (HCWs) and nursing students in terms of their future role, is pivotal for the effectiveness of any treatment and prevention strategy. Community Health Nurse (CHN) play an important role in developing effective and targeted strategies for the prevention of infectious diseases through educating and influencing the population. Moreover, student is key in raising awareness on the ways of infection transmission in addition to treating MPX -positive students (**Dighriri et al., 2022**).

Nurses are often involved in surveillance efforts to monitor for outbreaks of infectious diseases like monkeypox and responsible for collecting data on suspected cases, conducting assessments, and reporting findings to public health authorities. CHNs are responsible for accurately reporting suspected or confirmed cases of monkeypox to relevant health authorities. Collect data on cases, including demographic information, symptoms, and potential sources of exposure, which is vital for understanding the spread of the disease and implementing control measures (**Miraglia et al., 2023**)

Significance of the study:

Between May and July 2022, more than 18,000 monkey pox cases were identified in over 75 countries. Nevertheless, unequal distribution of the disease was observed with 70% of the cases being confirmed in the European region and 25% in the region of the Americas. As of 9 August 2022, the total number of reported cases reached 31,425 in 82 countries that have not historically reported MPX, with 375 cases in seven endemic countries. By 31 August 2022, the total number of confirmed monkey pox cases approached 50,000 in 99 countries/territories worldwide (***Sallam et al., 2022***).

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Thirty-eight monkey pox cases have been confirmed in seven Arab countries of the Middle East and North Africa (United Arab Emirates 16, Saudi Arabia 8, Lebanon 6, Morocco 3, Qatar 3, Sudan 2, Egypt 4 cases). The number of students of technical institutes 5151and we need to provide give information for them bout MPX, how it spreads, transmission and protection from infection to improve performance in dealing with infectious diseases (***Ibrahim et al., 2022).***

Community health nurses learn nursing students how to reduce complications of MPX, provide nutritional support, check vital signs, and observe for complications to reduce the risk of contact with others. Steps for self-protection include avoiding skin to skin or face to face contact with anyone who has symptoms, practicing safer sex, keeping hand hygiene procedure with water and soap or alcohol- based ***(Lin et al., 2022).***

Aim of the Study

This study aimed to assess the nursing students' perception of monkey pox virus at the technical health institute of Imbaba through the following objectives:

1-Assessing the nursing students' knowledge regarding monkey pox virus

2-Appraiseing the nursing students' practices regarding monkey pox virus.

3- Assessing the nursing students' attitudes regarding monkey pox virus.

Research questions:

1-What are the nursing students' knowledge regarding monkey pox virus?
2-What are the nursing students' practices regarding monkey pox virus?
3-What are the nursing students' attitudes regarding monkey pox virus?
4-Is there relation between nursing students' total knowledge، total practices and socio demographic data?

Research Design:

A descriptive research design was used to conduct the study at Technical Health Institute, Imbaba which affiliated to Ministry of health and population.

Type of Sample: A purposive sample included 154 nursing students at first- year at Technical Health institute.

Setting:

The study was carried out at Technical Health Institute in Imbaba which affiliated to Ministry of Health and Population.

Sample size:

The total number of students at the Technical Health Institute of Imbaba were (250) students. The study sample include (154) students in academic year 2021-2022.

Where; N = total population154 Students

n = sample size

E = level of precision = 0.05

$$N = \frac{250}{1+ 250(0.0025)} = 154 \text{ Students}$$

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Based on the above formula the number of studied samples was 154 Students Year 2022-2023

Tool: A structured interviewing sheet: was used in the study, it's developed by investigators after reviewing the national and international related literature and contains four parts:

Part (I): Socio-demographic data of nursing students consisted of 7 items as age, sex, marital status, classroom, …. etc.

Part (II): Nursing student's knowledge regarding monkey pox virus, it consisted of 15 closed end questions as: heard of MPX before, MPX widespread in Egypt, MPX a viral infection, MPX is a bacterial disease, MPX is transmitted by, symptoms of the MPX, …etc.

Scoring system:

Each statement was assigned score according to nursing students' response were: complete correct was scored 2 grades. Incomplete correct was scored 1 grade and incorrect or don't know was scored 0. Total score were 30 grades from 15 questions. The total score each item summed up and then converted into percent score **as the following:**

- Good knowledge (≥ 75%) = ≥ 23 grades, was considered high score.
- Average knowledge (50 - < 75%) = 15 - < 23 grades, was considered moderate score.
- Poor knowledge (< 50 %) = < 15 grades, was considered poor.

Part (III): Nursing student's reported practices regarding monkey pox virus included 19 closed end questions as: washing hands, personal protective mugger when dealing with the student, put a distance between them and others to avoid contacting infectious diseases, use sterilized for hands constantly when dealing, do not shake hands with others, wearing a mask in crowded places, …. etc.

Scoring system:

Each statement was assigned score according to nursing students' response were "Done", "Not Done", and were scored 2, and 1. (done 2, not done 1), respectively. Total score were 38 grades for 19 items. The scores of items summed up and then converted into percentage score **as the following:**

- (> 60) was considered satisfactory = ≥ 23 grades.
- (≤ 60) was considered unsatisfactory = ≥ 23 grades.

Part (IV): Nursing student's attitudes regarding monkey pox virus included 39 closed end questions as: do you feel that wearing a medical mask is important for prevention-do you think that close contact with wild animals leads to infection with the MPX virus,1believe that the spread of smallpox is due to climate change, …etc.

Scoring system: the total score of nurses 39 questions nursing student's attitude regarding monkey pox virus classified into two levels: The answers scored as 2 points for agree answer, 1 point for not specified answer and zero point to disagree answer. The total score of nursing student's 78 points for attitude about monkey pox virus classified into two levels:

- **Negative attitude ≥ 60 % (≥ 47 points).**
- **Positive attitude < 60 % (< 47 points).**

Tool validity and Reliability:

Content validity:

The developed tool was formulated and submitted to five experts in Community Health Nursing staff in Helwan University to assess the content validity and review the relevance of the tool for clarity, relevance, comprehensiveness, understanding and applicability.

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Tool Reliability:

Reliability of the tools was tested to determine the extent to which the questionnaire items are related to each other. To assess reliability, the study tools interview questionnaires were tested by pilot subjects for calculating Cronbach's Alpha which was 0.815 for nursing students' knowledge regarding MPX 0.809 for nursing students practices towards MPX and attitudes regarding monkey Pox 0.836

Ethical considerations:

An official permission to conduct the proposed study was obtained from the Scientific Research Ethics Committee, Faculty of Nursing Helwan University. Participation in the study was voluntary and subjects were given complete full information about the study and their role before signing the informed consent and that they had the right to refuse to participate. The ethical considerations included explaining the purpose and nature of the study, stating the possibility to withdraw at any time, confidentiality of the information where it was not be accessed by any other party without taking permission of the participants. Ethics, values, culture and beliefs was respected.

II. Operational Item:

The operational item included Preparatory phase, pilot study and field work.

Preparatory phase:

It was included reviewing of past, current, national and international related literature and theoretical knowledge of various aspects of the study using books, articles, internet, periodicals and magazines to develop tools for data collection.

Pilot study:

The questionnaire was pre-tested by 10% equal 16 nursing students before the actual work began to test the clarity of the tools and to estimate the time required to fill the questionnaire after obtaining permission from the manager of the Technical Health Institute of Imbaba. No modifications done, so the nursing students of the pilot study were included in the studied sample

Field work:

- Written approval letter to carry out this study was obtained from Dean of Faculty of Nursing, Helwan University and was directed to manager of Technical Health Institute in Imbaba. Including the aim of the study to obtain permission after establishing a trustful relationship. Students interviewed by the investigators to explain the study purpose.
- Study was collected through face to face or during their lectures. Data was collected 3 days per week (Tuesday, Wednesday and Thursday) from 9 am-1pm of academic year (2022-2023) within 3 months until the needed sample completed. The actual field work started from beginning March till the end of May 2023 for the data collection.
- The questionnaire took 15-20 minutes to fill in. Students were assured that the information collected would be recorded confidentially and it would be used only for the purpose of the study.
- The investigators taken 6 nurse students every two days each week consists about 24 nurse students per month, total number of nurse students = 154 nurses.

III- Administrative Item:

Approval to carry out this study was obtained from the dean of the faculty of nursing at Helwan University and director of the Technical Health Institute of Imbaba. This letter included a permission to collect the necessary data and explain the purpose and nature of the study.

IV- Statistical Item

The collected data from the studied sample was revised, coded and entered using personal computer (PC). Computerized data entry and statistically analyzed using SPSS program (Statistical Package for Social Science) version 24.

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Data were presented using descriptive statistics in the form of frequencies and relative percentages. Chi square test (X2) was used to calculate difference between qualitative variables through this equation:

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

Where:

Σ=sum O= observed value E= expected P=.0

Degrees of Significance of the results were:

- Non-Significant (NS) if $p > 0.05$.
-Significant (S) if $p < 0.05$.
-High Significant (HS) if $p < 0.01$.

Results

Table (1): Number and Percentage Distribution of the Studied Nursing Student according to Socio-Demographic Characteristics (N=154)

Item	No.	%
Less than 18 years	**6**	**3.90**
18 - 20 years	**148**	**96.10**
Mean ± SD	**19.4 ± 5.8 years**	
Gender		
Male	**95**	**61.69**
Female	**59**	**35.71**
Marital status		
Single	**149**	**96.75**
Married	**5**	**3.25**
Classroom		
Fourth year	**150**	**97.40**
Fifth year	**4**	**2.60**
Do you work while studying?		
Yes	**50**	**32.47**
No	**104**	**67.53**
Mother's occupation		
Work Not work	**30**	**19.48**
	124	**80.52**
Father's occupation		
Work	**136**	**88.31**
Not work	**18**	**11.69**

Table (1): Shows that, the mean age of studied nursing student was 19.4 ± 5.8 years & 61.69 % of studied nursing student was male. Also, **96.75 %**of the studied nursing student had single in marital status. Moreover **97.40 %** of the studied nursing student were in fourth year and 67.53 % of the studied nursing student didn't work while study, 80.52 % of the studied nursing student where mothers don't work and 88.31 % of the studied nursing student were father's work.

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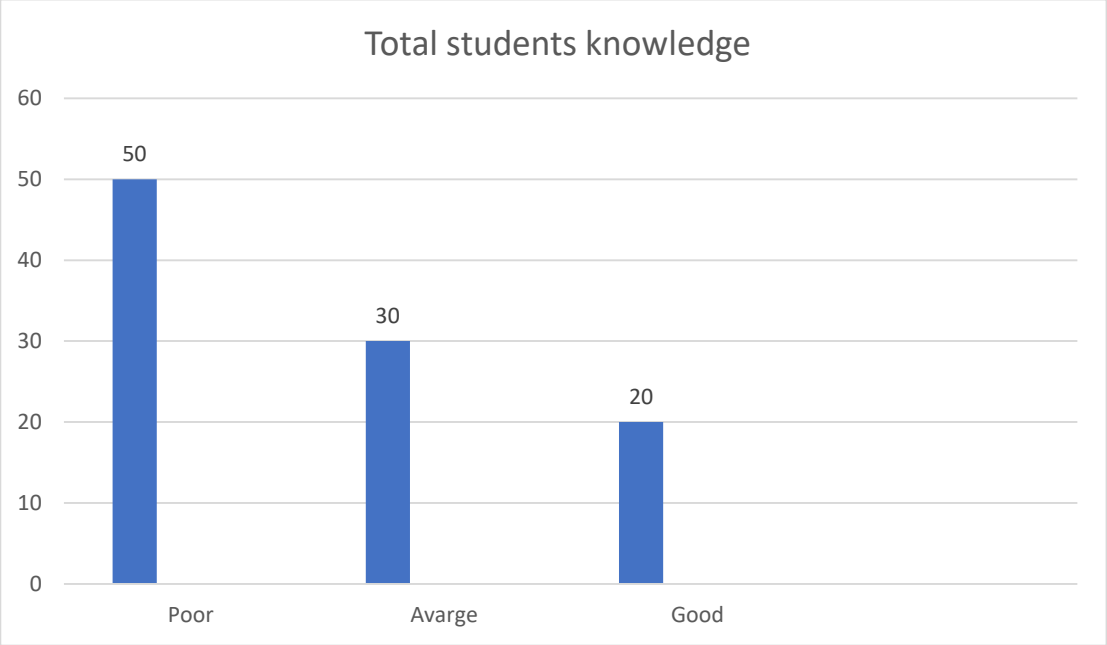

Figure (1): Percentage Distribution of the Studied Nursing Students' Total Knowledge Regarding Monkey Pox Virus (N= 154).

Fig (1): Shows that, 50 % of the studied nursing student had poor knowledge about monkey pox virus. Also, 30 % of the studied nursing student had average knowledge about monkey pox virus. While, 20 % of the studied nursing student had good knowledge about monkey pox virus.

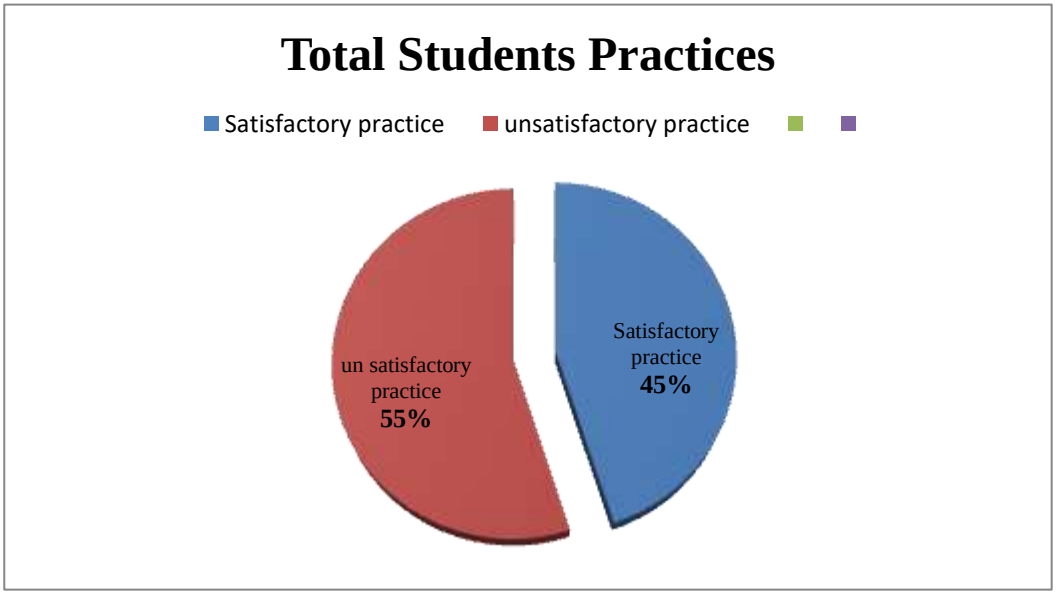

Figure (2): Percentage Distribution of the Studied Nursing Student's Total Practices Regarding Monkey Pox Virus (N=154).

Fig (2): Shows that, 45 % of the studied nursing student had a satisfactory level in total students' practice. While 55 % of them had unsatisfactory total students' practice

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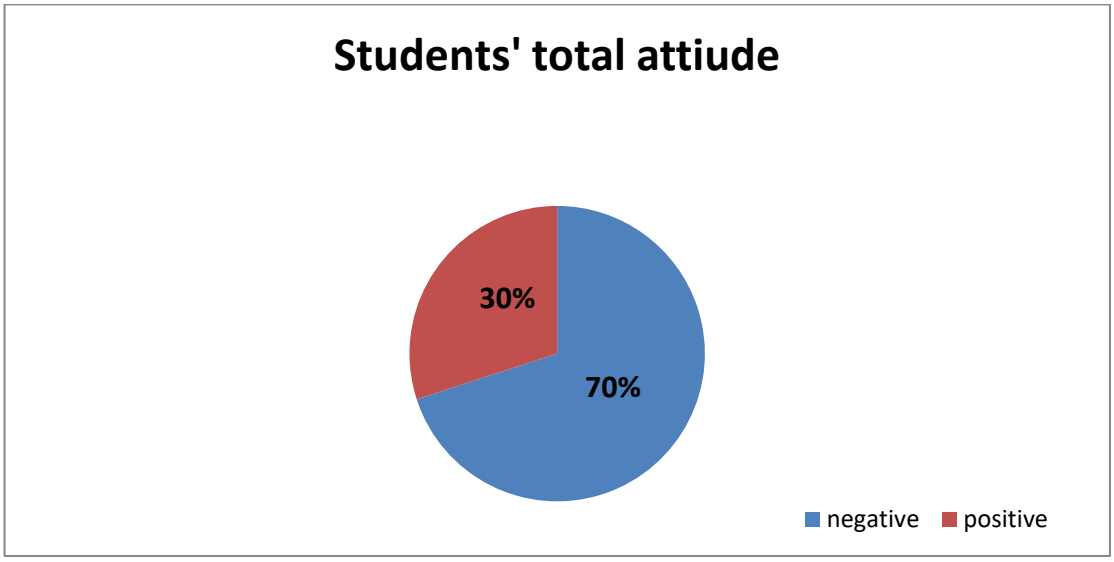

Figure (3): Percentage Distribution of the Studied Nursing Student's Total Attitude Regarding Monkey Pox Virus (N=154).

Fig (3): Shows that, 30 % of the studied nursing student had positive total attitude about monkey Pox Virus. While 70 % of them had negative total attitude.

Table (2): Relation between Studied Nursing Student's Sociodemographic Characteristics and their Total Knowledge (N=154).

Socio-demographic characteristic	Poor N=78		Average N= 46		Good N=30		X^2	P – value
	N	%	N	%	N	%		
Students Age / year								
Less than 18 years	4	5.1	1	2.2	1	3.3	11.391	.030*
18 - 20 years	74	94.9	45	97.8	29	96.7		
Gender								
Male	65	83.3	20	43.5	10	30.0	19.558	.001**
Female	13	16.7	26	56.5	20	70.0		
Marital Status								
Single	73	93.6	46	100.0	30	100.0	24.239	.000**
Married	5	6.4	0	0.0	0	0.0		
Classroom								
Fourth year	74	94.9	46	100.0	30	100.0	18.274	.000**
Fifth year	4	5.1	0	0.0	0	0.0		
Place of residence								
Urban	73	93.6	45	97.8	30	100.0	20.199	.000**
Rural	5	6.4	1	2.2	0	0.0		

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Do you work while studying?								
Yes	**35**	**44.9**	**10**	**21.7**	**5**	**16.7**	**21.177**	**.000****
No	**43**	**55.1**	**36**	**78.3**	**25**	**83.3**		
Mother's occupation								
Work	**22**	**28.2**	**4**	**8.7**	**4**	**13.3**	**18.199**	**.000****
Not work	**56**	**71.8**	**42**	**91.3**	**26**	**86.7**		
Father's occupation								
Work	**66**	**84.6**	**40**	**87.0**	**30**	**100.0**	**22.239**	**.000****
Not work	**12**	**15.4**	**6**	**13.0**	**0**	**0.0**		

Table (2): Shows that, there was highly statistically significant relation between studied nursing student's age, gender, place of resident, mother's occupation, fathers' occupation and their total knowledge, where (P = < .0001).

Table (3): Relation between Studied Sample's Sociodemographic Characteristics and their Total Practice (N=154).

Socio-demographic characteristics	**Satisfactory N= 69**		**Unsatisfactory N=85**		**X^2**	**P – value**
	No.	**%**	**No.**	**%**		
Students Age / year						
Less than 18 years	**1**	**1.4**	**5**	**5.9**	**12.322**	**.050***
18 - 20 years	**68**	**98.6**	**80**	**94.1**		
Gender						
Male	**25**	**36.2**	**70**	**82.4**	**14.522**	**.001****
Female	**44**	**63.8**	**15**	**17.6**		
Marital Status						
Single	**69**	**100.0**	**80**	**94.1**	**21.001**	**.000****
Married	**0**	**0.0**	**5**	**5.9**		
Classroom						
Fourth year	**69**	**100.0**	**81**	**95.3**	**17.211**	**.000****
Fifth year	**0**	**0.0**	**4**	**4.7**		
Place of residence						
Urban	**69**	**100.0**	**79**	**92.9**	**22.001**	**.000****
Rural	**0**	**0.0**	**6**	**7.1**		
Do you work while studying?						
Yes	**25**	**36.2**	**25**	**29.4**	**24.445**	**.000****
No	**44**	**63.8**	**60**	**70.6**		
Mother's occupation						
Work	**10**	**14.5**	**20**	**30.8**	**17.101**	**.000****
Not work	**59**	**85.5**	**65**	**69.2**		
Father's occupation						
Work	**61**	**88.4**	**75**	**88.2**	**15.210**	**.000****
Not work	**8**	**11.6**	**10**	**11.8**		

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Table (3): Shows that, there was highly statistically significant relation between studied nursing student's age, gender, place of resident, mother's occupation, fathers' occupation and their total practice, where (P = < .0001).

Table (4): Relation between Studied Nursing Student's Sociodemographic Characteristics and their Total Attitude (N=154).

Socio-demographic characteristics	Positive N=46		Negative N=108		X^2	P – value
	No.	%	No.	%		
Students Age / year						
Less than 18 years	2	4.3	4	3.7	16.300	.050*
18 - 20 years	44	95.7	104	96.3		
Gender						
Male	30	65.2	65	60.2	16.552	.001**
Female	16	34.8	43	38.8		
Marital Status						
Single	45	97.8	104	96.3	19.022	.000**
Married	1	2.2	4	3.7		
Classroom						
Fourth year	45	97.8	105	97.2	16.330	.000**
Fifth year	1	2.2	3	2.8		
Place of residence						
Urban	44	95.7	104	96.3	18.021	.000**
Rural	2	4.3	4	3.7		
Do you work while studying?						
Yes	26	58.2	24	22.2	19.445	.000**
No	20	43.8	84	77.8		
Mother's occupation						
Work	14	30.4	18	16.7	21.191	.000**
Not work	32	69.6	90	83.3		
Father's occupation						
Work	38	82.6	98	90.7	17.272	.000**
Not work	8	17.4	10	9.3		

Table (4): Shows that, there was highly statistically significant relation between studied nursing student's age, gender, place of resident, mother's occupation, fathers' occupation and their total attitude, where (P = < .0001).

DISCUSSION

After nearly three years of global health and economic impact caused by the COVID-19 pandemic, it is necessary to broaden our focus and consider the potential impact of other infectious diseases such as MPX. Health systems must be adequately prepared to respond to potential outbreaks of smallpox, in order to effectively prevent and control its spread. The researchers stressed that early detection of cases is crucial in reducing the severity of co-infection and controlling the spread of both diseases, especially among at-risk populations. This similarity in the clinical

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presentation of both viruses highlights the need for continued monitoring and research. To understand the potential risks and impacts of smallpox, especially in areas where the virus is circulating and among vulnerable populations. It is necessary to develop effective treatment strategies for patients in order to prevent severe outcomes and control the spread of these diseases ***(Martinez-Fernandez et al.,2023).***

The resurgence of the human MPX virus requires particularly strong cooperation from the government and front-line health care workers. Using government resources and strengthening the surveillance system, health professionals play a responsible role including case detection, immunization and clinical case management while providing maximum health services. Health professionals need to advance and must have sufficient understanding of the disease to properly identify, diagnose and manage cases. This study aimed to evaluate levels of knowledge, raise awareness, and attitudes toward MPX among nursing students at the Health Technical Institute in Imbaba ***(Imran et al.,2023).***

Regarding age of nursing students, the current study result showed that approximately most of the sample of nursing students‟ age was between 18-20 years where mean ± SD was 19.4 ± 5.8 years for academic years. This result was agreed with **Sallam et al., (2022)** in Jordanian (n=615) who studied "Knowledge of human MPX and its relation to conspiracy beliefs among students in Jordanian health schools and showed that70% of the studied sample their age was 20 years. From the investigators point of view this might be due to the sample of the study was in the in the first year of the institute.

Regarding gender and marital status, the current study revealed that nearly more than two-thirds of the sample of nursing students were male and majority were single, respectively. These results were in agreement with the findings of **Lounis et al., (2023)** in Bangladesh Africa (n=223) who studied "Assessment of knowledge, awareness and attitudes regarding the re-emerging outbreak of MPX among the health professionals for frets year nursing students" as found that 61% were male and 96% of the respondents were single. From the investigators point of view, the percentage of male students this year is greater than females, and also because they are more responsive to participate.

Concerning residence of nursing students, the current study showed that more than most of the sample of them lives in urban areas. These results are conformity with results of **Alhummayani et al., (2023**) in Riyadh, Saudi Arabia, who studied "Awareness and Knowledge of the General Population About MPX Disease in Riyadh, Saudi Arabia devices" (n= 375) as they found that 98% of the respondents were living in urban areas. From investigators point of view, in urban areas, the chance to nursing students to acquire knowledge toward nursing is high because of many hospitals, clinics and Places to search for infectious diseases.

The following paragraphs answered research question number Q1: What are the nursing students' knowledge regarding Monkey Pox virus?

Regarding total knowledge about MPX the current study showed that half of the studied sample had unsatisfactory level of total knowledge about .This result agreed with a study entitled, "Knowledge and attitude towards MPX among the Lebanese population and their attitude **'' Norberg et al.,(2024)** (n=493)in Lebanese who declared that of poor knowledge was discovered among the participants .on the other hand This result disagreed with a study entitled (Knowledge and Attitude of Human MPX Viral Infection Among Healthcare Practitioners and Students in Saudi Arabia **Aljahdali et al., (2023)** .in Saudi Arabia:" (n=212) they found 96% of the respondent had satisfactory level of total knowledge about MPX. From the investigators point of view this because reemergence has been quite recent.

The following paragraphs answered research question number Q2: What are the nursing students' practice regarding monkey Pox virus?

Related to total reported practices regarding MPX the current study showed that more than half of the sample of studied sample had inadequate total reported practices level regarding MPX. This result was agreed with **Tran et al., (2021)** in Southern Vietnam, who conducted a study entitled "Knowledge, attitude, and practice of medical students on human MPX in Southern Vietnam" (n=586) who found that 60% of student had inadequate knowledge regarding

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preventive measures. From the viewpoint of the investigators Due to the novelty of the disease and the lack of information about it.

The following paragraphs answered research question number Q3: What are the nursing students' attitudes regarding monkey Pox virus?

The results of the present study demonstrated less than a third of students had positive attitude toward MPX. This result was agreed with **León-Figueroa et al., (2023)** in 15 countries through an online survey who conducted a study entitled "Knowledge and Attitude towards MPX Systematic review and meta-analysis''who founded that the findings of this study revealed that the combined prevalence of good knowledge about MPX was 33%. From the investigators point view nursing students the knowledge level is generally low and its state is attributed to the fact that MPX is uncommon in the region and is currently re-emerging, which is exactly why several countries have reported poorer knowledge among their communities.

The following paragraphs answered to research question No (4) is there relation between Nursing student's knowledge about m pox & demographic characteristics?

The current study describes that there were highly statistically significant relation regarding demographic data shows that, there was highly statistically significant relation between studied sample's age, gender, place of resident, mother's occupation, fathers' occupation and their total knowledge, where (P = < .0001.In contrast to the study titled ''Knowledge, Attitudes, and Practices Regarding MPX Surveillance – A Systematic Review and Meta-Analysis in **Shaik et al.,(2023)**in Bangladesh (n =546**)** who states that sociodemographic characteristics had no statistically significant relation knowledge levels, learning about MPX in medical. From the investigators point view there is no connection between nursing student's socio-demographic characteristics and their total knowledge level.

The current study explained that there were statistically significant relation between nursing students "socio-demographic characteristics and their total knowledge level about MPX .**Raman et al ., (2023)** In Sultan Zainal Abidin who conducted a study entitled "Knowledge and attitude of faculty of physician students regarding MPX" (n=138) revealed that there were statistically significant relation between the studied nursing students' total knowledge scores and their age, gender and the residence.

The current study showed that there were, there was highly statistically significant relation between studied sample's age, gender, place of resident, mother's occupation, fathers' occupation and their total attitude, where in This study is consistent with a study entitled ''Assessing disparities in medical students' knowledge and attitude about MPX a cross-sectional study of 27 countries across three continents'' **Ibrahim & Zaghamir, (2023**). In27 countries (n=500) revealed that there were statistically significant relation between the studied nursing students' total attitude scores and their age, gender and the residence. From the investigators point view revealed that there was statistically significant and relation between the studied nursing students' total attitude scores as they don't have background in MPX.

.Conclusion: -

In light of the current study result and answered the research questions it can be concluded that:

Half of the studied nursing student had poor knowledge of total knowledge about MPX. Shows that, less than half of the studied nursing student had satisfactory level in total students' total practice. Three quarters of nursing students had negative total attitude regarding MPX. While, there was highly statistically significant relation between relation between nursing students' total knowledge, total practices and socio demographic data.

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Recommendations

In the light of the current results, the following recommendations were suggested- :

1. Provide health education program for nursing students to improve knowledge, practices and attitude about MPX.
2. Design booklets about monkey pox to improve knowledge, practices and attitude.
3. Design posters and put in Imbaba Health institutes about MPX that would help nursing students to improve' knowledge, practice and attitude regarding MPX.
4. Encourage nursing students to attained work shop regarding MPX to exchange knowledge, practice and attitude about MPX under observation from community health nurse.

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