Egypt. J. of Nutrition and Health Vol.20 No.2 July (2025)

Monkey Pox Concerns, Perspectives, and Vaccine Acceptance amongSample of the Egyptian Public: An Online Cross-sectional Study

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Abstract

Monkey pox (Mpox) is a disease similar to smallpox but in a less severe form. WHO declared Mpox as a 'public health emergency of international concern' in August 2024. Vaccination with two doses, four weeks apart, is available for prevention. This cross-sectional study aims to evaluate Egyptian public perspectives on Mpox disease, their concerns, and their vaccine acceptance. The study participants were adult Egyptians who accepted to participate in the study recruited through non-random convenient sampling technique. The study included an anonymous online self-administered questionnaire in Arabic, constructed using complete, verified scales and distributed over social media. Seven hundred fifty-eight (758) Egyptians participated in the study. Their age ranged from 18 years to 75 years with mean and standard deviation of 37.9 ± 11.81 years. Nearly half (52.5%) of participants perceived Mpox as a serious disease. Median Knowledge score (out of 10) was 3 with interquartile range (1-5),with three-fourths of participants scored less than 5. Nearly one quarter (26%) reported their willingness to receive the Mpox vaccine, while nearly half of the participants (46.4%) hesitated to accept the vaccine. Lower levels of anxiety were scored by study participants, measured on GAD 7 anxiety scale. In conclusion, public anxiety and worry are low. Vaccination acceptance among the participants is low and further health education and communication campaigns are needed to fight misinformation and address any concerns. More research is needed to investigate factors affecting vaccine acceptance.

Keywords: Mpox, Concerns, anxiety, vaccine acceptance, Egyptian public, GAD tool

Introduction

Monkey pox (Mpox) is a disease similar to small pox. It is caused by monkey pox virus, which is an Ortho-pox virus ***(WHO, 2024).***Disease evidence has been found in animals, e.g., squirrels, diverse species of monkeys, and others. Mpox is considered a zoonotic disease, and it can also spread from human to human**(WHO,2024).** Mpox spreads through the following: direct contact with infected wild animals, through close contact (including sexual contact) with a person with Mpox, and through contact with contaminated materials ***(CDC, 2024 a).*** Mpox usually takes between a few days to three weeks for the first symptoms to appear. Symptoms include fever, constitutional manifestations and cases also can experience anal pain or bleeding. Rash appears within 1-5 days after the first symptoms. During the symptoms, cases are infectious to other persons in contact. The disease

resolves within a few weeks ***(NHS.UK, 2024).*** Mpox is detected by polymerase chain reaction (PCR), as antigen and antibody detection methods are not standard because they do not differentiate between Ortho-pox viruses ***(WHO, 2024). CDC, 2024*** **b** recommended the following for Mpox prevention: hand hygiene, avoid touching contaminated objects of Mpox-infected cases, avoid close contact with infected cases, avoid contact with wild animal in endemic areas, and vaccination. Vaccination with two doses, four weeks apart,protects from Mpox infection.However, no need for the vaccine in previously recovered cases.

The Africa Center for Disease Control and Prevention (Africa CDC) and World Health Organization (WHO), have declared Mpox as *a 'public health emergency of international concern'* in August 2024 ***(Nature News, 2024).*** Regarding concerns, fears and vaccination acceptance, a cross-sectional study which was conducted in China 2023 among university students found a relative insufficiency in Mpox knowledge, more than one third expressed concerns about the Mpox outbreak and the majority showed a positive attitude to vaccination ***(Wang et al., 2024).*** Also in a systematic review and meta-analysis study, researchers concluded that vaccination is considered as a vital policy for Mpox prevention. Increasing public awareness through designed targeted outreach and educational programs is important and could improve vaccination acceptance to avoid a similar status as what happened during theCorona Virus Disease of 2019(COVID-19) pandemic ***(Moawad et al., 2023).***
Regarding Egypt, Mpox was not declared as an epidemic. No cases were reported in Egypt***(State Information Service Egypt, 2024 and CDC, 2025).***

There is still a gap in the literature of the assessment of the knowledge and the psychological behaviours toward the Mpox illness, and whether there is a more significant worry about it as the number of recorded cases increases.
This research aimed to evaluate Egyptian public perspectives on Mpox disease, their concerns, and their vaccine acceptance after the WHO proclaimed Mpox asa public health emergency of international concern.

Volunteers and Methods

Methods

Study Design

This study is a cross-sectional study through a web-based survey. The survey was disseminated through social media platforms. Data was collected throughout the 4 months from November 2024 to February 2025.

Study population

The study participants were people living in Egypt. Inclusion criteria: Egyptians above 18 years old currently residing in Egypt who agree to participate, were eligible.

Sampling technique and size

Non-random convenient sampling technique was used. Expected frequency was set at 50%, and confidence limits were set at 5%; this resulted in sample size estimates of a minimum of 384 participants for 95% confidence level (calculated with OpenEpi, Version 3, open-source calculator). The pilot test was done on 40 participants; it was not included in the statistical analysis. Seven hundred fifty eight (758)Egyptians participated in the study.

Study tool

The study included an anonymous online self-administered questionnaire in Arabic. The questionnaire takes approximately 10 minutes. It was constructed using a complete, verified scale based on previous researches ***(Temsah et al., 2022 and Swed et al.,2023)*.** It was distributed over social media sites, such as Facebook, WhatsApp, and Telegram.

This questionnaire consists of three sections described below.

- Socio-demographic Characteristics: This section contains questions regarding the participant's socio-demographic characteristics, including age, gender, Nationality, place of residence, marital status, and chronic illness status (hypertensive, diabetes, etc.). This section also includes questions about the participants' prior exposure to COVID-19, including whether they have ever been infected with the virus, whether they took preventative measures against contracting the disease during the COVID-19 pandemicand COVID-19 vaccination history.

- Knowledge and Concerns about Mpox: It included ten multiple-choice questions on the Mpox virus that participants may answer yes, no, or not sure to gauge their level of familiarity with Mpox. The participants were asked whether they believed that Mpox was caused by a virus or bacteria, whether it could be spread from person to person, whether its symptoms were like those of smallpox, whether its rash and papules were indicative of the disease, and whether antibiotics were effective against the virus etc. Total knowledge score was calculated out of 10. Correct answer was scored 1 while incorrect or not sure were scored zero. Negative statements were reverse coded. Also, this section included questions that assess how worried people are about Mpox. In addition, this section included questions to assess the participants' willingness to obtain the Mpox vaccination.

- Generalized Anxiety Disorder (GAD) toward Mpox: This section consists of seven validated questions to assess the GAD of the participants towards the Mpox virus ***(Ruiz et al., 2011)***. In this tool, the respondents were asked to assess the frequency with which they had experienced symptoms such as worry, concern, restlessness, impatience, and dread during the previous two weeks. Values between 0 and 3 were scored to the following frequency categories: never, sometimes, often, and very frequently. The GAD7 scores were tallied and classified as minimal (0–4), mild (5–9), moderate (10–14), and severe (15–21)

Statistical analysis

Data was coded and entered using SPSS 21. Mean and SD or median and interquartile range were used for quantitative variables.While Ratio and percentage were used to describe qualitative variables. Chi square test was used to test for association between variables.Mann-Whitney U test and Kruskal-Wallis Test were used for non-parametric comparison between groups. P-values less than 0.05 were considered statistically significant.

Ethical Consideration

All questionnaires were anonymous hence,no identification data was required from the participants, and so data confidentiality was maintained throughout the process. Participation was completely voluntary. An electronic informed consent form was obtained from the participants at the start of the questionnaire. The participant has the right to withdraw by not completing the questionnaire at any point without providing any explanation.

Benefits of the study were considered as social benefits, since this research would provide insight on the proportions of anxiety with possible identification of risk factors, Therefore proposing recommendations for preventive interventions.This study has no more than minimal risk and was reviewed and approved by the research ethical committee of faculty of medicine, Cairo University (N-333-2024).

Results

The current cross-sectional study included 758 Egyptians, currently living in Egypt. Their age ranged from 18 years to 75 years, with a mean and standard deviation of 37.9 ± 11.81 years. More than half (61.9 %) of participants were females. Most of them were not in the medical sector (88.7%). Their educational levels were mostly highly educated (62.8%) or postgraduate studies (26.6%). Nearly two-thirds of them (69.3%) were married and less than one quarter were single (23.6%). Most of them were living in urban areas (94.9). Nearly four fifths (82.2%) of them don't have chronic illness. Table 1
Nearly half of them (48.7%) reported previous COVID-19 infections. Most of them (92.6%) reported their medium to always adherence to precautionary measures during COVID-19 infections. Two thirds of them (68.9%) received COVID-19 vaccine (one or more).

Table 1:

Basic criteria of the study participants (N = 758)

Variable		No.	%
Sex	Male	289	38.1
	Female	469	61.9
Education	Below university	80	10.6
	University	476	62.8
	Post-graduate studies	202	26.6
Educational sector	Medical	86	11.3
	Non-Medical	672	88.7
Marital Status	Single	179	23.6
	Married	525	69.3
	Others (Divorced, widow or don't want to say)	54	7.1
Residence	Urban	719	94.9
	Rural	39	5.1
Having chronic disease	No	623	82.2
	Yes	135	17.8
Previous COVID-19 Infection	No	389	51.3
	Yes	369	48.7
Adherence to the precautionary measures during the COVID-19 pandemic	No	10	1.3
	Little adherence	46	6.1
	Medium adherence	314	41.4
	Always adherence	388	51.2
History of receiving COVID-19 Vaccine	No	236	31.1
	Yes, one	262	34.6
	Yes, more than one	260	34.3

Nearly half (52.5%) of participants perceived Mpox as a serious and virulent disease that calls for respiratory precautions. However, more than three quarters (81.5%) of study participants were not worried about Mpox. Only 18.5 % were worried about getting infected, another global pandemic, a global quarantine, and occurrence of suspension of international flights. Table 2

Table 2:

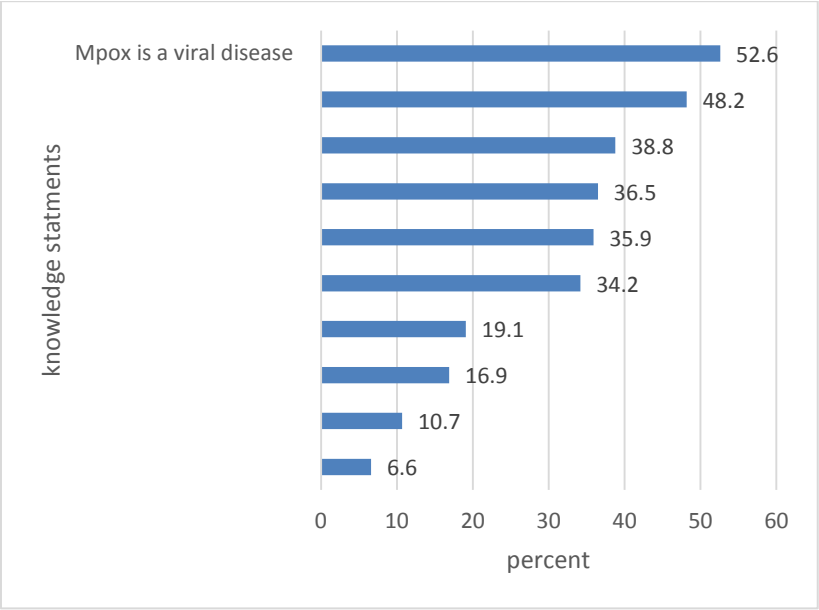
Respondents' perceptions and concerns about Mpox disease.

Variables		No.	%
Is Mpox a serious and virulent disease that calls for respiratory precautions? (N= 758)	Yes	398	52.5
	No	360	47.5
Are you Worried due to Mpox? (N= 758)	Yes	140	18.5
	No	618	81.5
Cause of your worry regarding Mpox (N= 140)*			
Worry about yourself and your family getting Mpox		140	100
Worried about another global pandemic		140	100
Worried about a global quarantine due to Mpox		140	100
Concerned about the occurrence of suspension of international flights		140	100

*More than one answer is allowed.

Regarding knowledge about Mpox, nearly half of the study participants correctly identified Mpox as a viral disease (52.6%), presented by skin rash (48.2%). Nearly one-third of participants knew that Mpox could be transmitted by respiratory droplets (38.8%) and by skin rash (36.5%). A much lower percentage knew the availability of the vaccine to prevent Mpox infection (19.1%) and correctly responded that antibiotics have no role in the treatment of Mpox cases (10.7%). Figure 1

The total knowledge score was calculated out of 10. Knowledge of study participants ranged from zero to 9 points. The median score was 3, with interquartile range (1-5), translating those three-fourths of participants scored less than 5 out of 10.



*Negative statements (correct answer no)

Figure 1:

Knowledge regarding Mpoxamong study participants (N= 758)

Regarding Mpox vaccination acceptance among study participants, nearly one quarter (26%) reported their willingness to receive Mpox vaccine, while nearly half of the participants (46.4%) hesitated to accept the vaccine. Another quarter of participants refused to get the vaccine. Figure 2

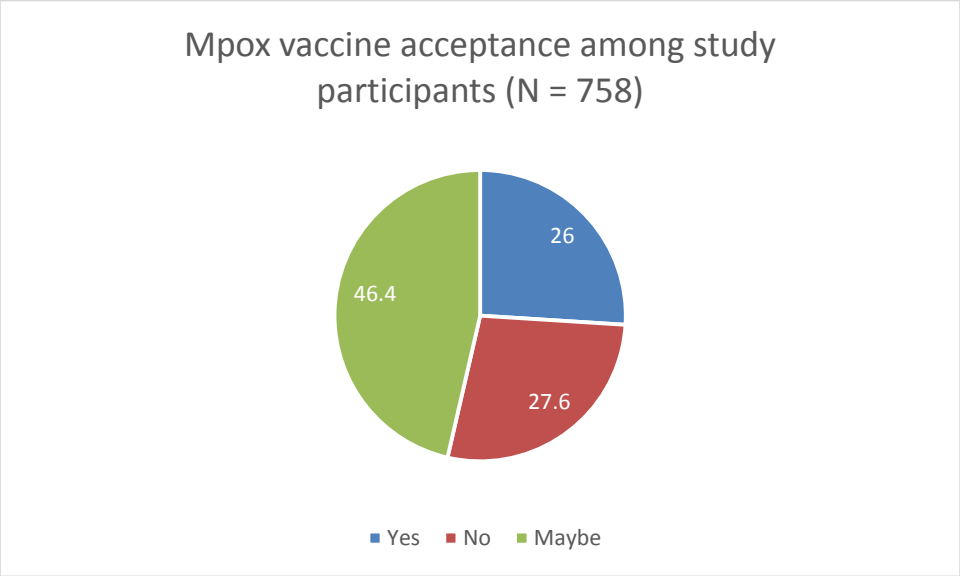


Figure 2:
Mpox vaccine acceptance among study participants (N = 758)

Lower levels of anxiety were scored by study participants, measured on GAD-7 anxiety scale. Most of the participants (96.5 %) scored minimal to mild anxiety levels. Figure 3

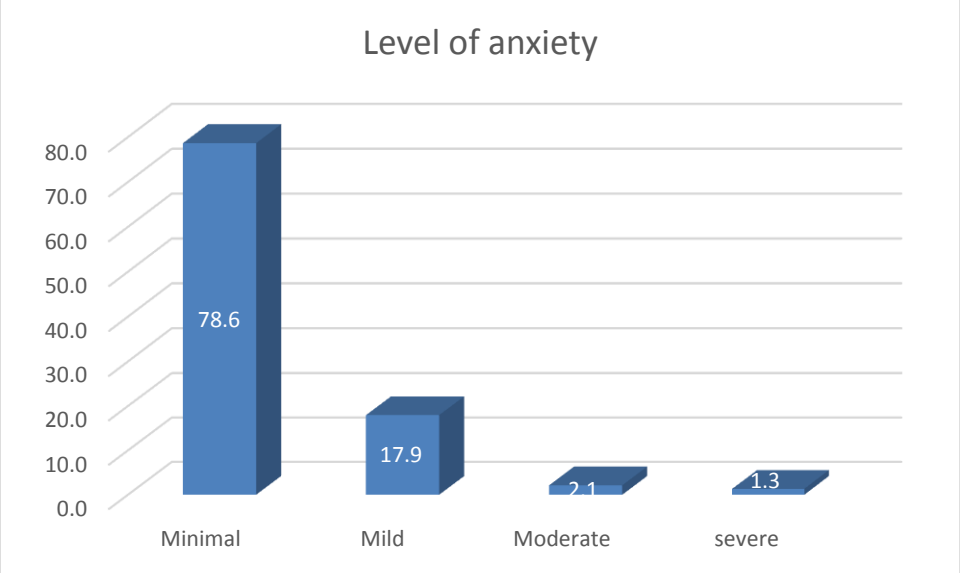


Figure 3:
Anxiety related to Mpox according to GAD scale (N= 758)

Participants who had medical education, lived in urban areas showed a statistically significant higher knowledge score. A higher knowledge score was associated with willingness to receive Mpox vaccine.

Table 3:

knowledge score in relation to basic criteria of study respondents(N= 758)

Variables		Knowledge score (out of 10)					P value
		Mean	SD	Median	Q1	Q3	
Sex	Male	2.87	2.43	3.00	0.00	5.00	0.209
	Female	3.07	2.34	3.00	1.00	5.00	
Educational level	Below university	3.35	2.19	3.50	1.00	5.00	0.199
	University	2.99	2.32	3.00	1.00	5.00	
	Postgraduate	2.88	2.58	3.00	0.00	5.00	
Educational sector	Medical	4.33	2.59	5.00	3.00	6.00	<0.001
	Non-Medical	2.82	2.29	3.00	1.00	5.00	
Marital status	Single	3.27	2.42	3.00	1.00	5.00	0.080
	Married (currently or previous)	2.91	2.36	3.00	1.00	5.00	
Residence	Urban	3.04	2.38	3.00	1.00	5.00	0.033
	Rural	2.21	2.18	2.00	.00	4.00	
Having a chronic disease	No	3.00	2.38	3.00	1.00	5.00	0.822
	Yes	2.96	2.34	3.00	1.00	4.00	
Previous COVID-19 Infection	No	2.94	2.40	3.00	1.00	5.00	0.490
	Yes	3.06	2.36	3.00	1.00	5.00	
Adherence to the precautionary measures during the COVID-19 pandemic	Low or little adherence	2.55	2.52	1.50	0.00	5.00	0.140
	Medium or always adherence	3.03	2.36	3.00	1.00	5.00	
History of receiving COVID 19 Vaccine	No	3.17	2.33	3.00	1.00	5.00	0.148
	Yes	2.91	2.39	3.00	1.00	5.00	
Do you accept receiving Mpox vaccine?	No	2.75	2.32	2.00	1.00	5.00	<0.001
	May be	2.64	2.30	3.00	0.00	4.50	
	Yes	3.89	2.35	4.00	2.00	6.00	

Being female and having lower educational levels were associated with a statistically

significant higher GAD anxiety scores. A higher anxiety score was associated with willingness to receive Mpox vaccine. Table 4

Table 4:

GAD score in relation to basic criteria of study respondents: (N= 758)

Variables		GAD score (out of 21)					P value
		Mean	SD	Median	Q1	Q3	
Sex	Male	2.68	3.26	1.00	1.00	3.00	0.012
	Female	3.05	3.15	1.00	1.00	4.00	
Educational level	Below university	3.76	3.94	2.00	1.00	6.00	0.006
	University	2.93	3.14	1.00	1.00	4.00	
	Postgraduate	2.51	2.95	1.00	1.00	3.00	
Educational sector	Medical	2.77	3.35	1.00	1.00	3.00	0.414
	Non-Medical	2.93	3.18	1.00	1.00	4.00	
Marital status	Single	3.16	3.83	1.00	1.00	5.00	0.770
	Married (currently or previous)	2.83	2.97	1.00	1.00	4.00	
Residence	Urban	2.92	3.20	1.00	1.00	4.00	0.430
	Rural	2.62	3.23	1.00	1.00	4.00	
Having a chronic disease	No	2.91	3.25	1.00	1.00	4.00	0.650
	Yes	2.90	2.96	1.00	1.00	4.00	
Previous COVID-19 Infection	No	2.93	3.33	1.00	1.00	4.00	0.567
	Yes	2.89	3.05	1.00	1.00	4.00	
Adherence to the precautionary measures during the COVID-19 pandemic	Low or little adherence	2.45	2.63	1.00	1.00	3.00	0.077
	Medium or always adherence	2.94	3.24	1.00	1.00	4.00	
History of receiving COVID-19 Vaccine	No	2.71	3.11	1.00	1.00	3.00	0.163
	Yes	3.00	3.24	1.00	1.00	4.00	
Do you accept receiving Mpox vaccine?	No	2.14	2.25	1.00	1.00	2.00	<0.001
	May be	2.99	3.50	1.00	1.00	4.00	
	Yes	3.57	3.33	2.00	1.00	6.00	

Participants who were Males, had a lower educational level, with no history of COVID-19 infection, with higher adherence to precautions during the COVID-19 pandemic, and received the COVID-19 vaccine showed a statistically significant higher willingness to receive Mpox vaccine.

Table 5

Table 5:

Percent distribution of willingness to receive Mpox vaccine in relation to basic criteria of study respondents (N= 758)

Variables		Do you accept receiving Mpox vaccine?						P value
		No		May be		Yes		
		No.	%	No.	%	No.	%	
Sex	Male	62	21.5	136	47.1	91	31.5	0.003
	Female	147	31.3	216	46.1	106	22.6	
Educational level	Below university	14	17.5	38	47.5	28	35.0	0.014
	University	128	26.9	217	45.6	131	27.5	
	Postgraduate	67	33.2	97	48.0	38	18.8	
Educational sector	Medical	21	24.4	39	45.3	26	30.2	0.593
	Non-Medical	188	28.0	313	46.6	171	25.4	
Marital status	Single	44	24.6	79	44.1	56	31.3	0.169
	Married (currently or previous)	165	28.5	273	47.2	141	24.4	
Residence	Urban	202	28.1	331	46.0	186	25.9	0.378
	Rural	7	17.9	21	53.8	11	28.2	
Having a chronic disease	No	165	26.5	295	47.4	163	26.2	0.338
	Yes	44	32.6	57	42.2	34	25.2	
Previous COVID 19 Infection	No	98	25.2	174	44.7	117	30.1	0.026
	Yes	111	30.1	178	48.2	80	21.7	
Adherence to the precautionary measures during the COVID-19 pandemic	Low or little adherence	27	48.2	16	28.6	13	23.2	<0.001
	Medium or always adherence	182	25.9	336	47.9	184	26.2	
History of receiving COVID-19 Vaccine	No	92	39.0	105	44.5	39	16.5	<0.001
	Yes	117	22.4	247	47.3	158	30.3	

Discussion

The current study assesses the perspectives of 758 Egyptians regarding Mpoxdisease; also it explores their readiness for Mpox vaccine acceptance. More than half of the participants were females, with mean age of 37.9 ± 11.81 years, most of them had a university degree, and the majority was from a non-medical field. Less than one fifth of the participants have chronic diseases, this may be explained by the younger mean age of the participants. Also, it is an online survey, not a hospital-based study. Regarding participants' perspectives and concerns, half of the group studied knew that Mpox is a viral virulent infectious disease.Less than one fifth knew the availability of the vaccine to prevent Mpox infection. Participants' knowledge score ranged from 0 to 9, and three-fourths of the studied participants scored less than five in the knowledge score. Participants, who had medical education, live in urban areas showed statistically significantly higher knowledge scores.

Similar studies performed among the general public to explore public awareness and knowledge found important results, where a study implemented in China reported that nearly half of the participants had a high level of knowledge on Mpox and its related symptoms ***(Ren et al., 2023)*.** Another study performed among the general population in Saudi Arabia in 2022 also reported that

more than half of the studied participants had a high knowledge score ***(Temsah et al., 2022)***. In addition, other studies on different age groups of population were executed for example a cross-sectional research was published in 2024 studying university students' perspective in China identified Mpox knowledge insufficiency especially regarding the presence of vaccine for Mpox ***(Wang et al.,2024).***

Factors related to socio-demographic characteristics were identified to affect the Mpox knowledge level ***(Ren et al., 2023 and Wang et al., 2024).*** Generally, socio-demographic characteristics were discussed as factors affecting individual's health literacy for example a systematic review reported that gender, residence, educational level, and employment status affect the degree of individual's health literacy ***(Saffari et al., 2025)*.**

The current study found that people are not worried about Mpox that much, only less than one-fifth were worried, and the majority had minimal to mild level anxiety on the GAD-7 anxiety scale. Being Female and having lower educational levels were associated with statistically significantly higher GAD7 anxiety score. Similar results were reported in other researches. For example, ***Ren et al., 2023*** reported that less than two fifths of the participants demonstrated a high level of worry about mpox. Also, ***Temsah et al., 2022*** found that worry levels among the public were higher from COVID-19 than Mpox while three-fourths had low to mild anxiety on GAD7 scale. Regarding factors that were positively associated with a high level of public worry,***Ren et al., 2023*** found that females, having high knowledge levels of Mpox and its related symptoms, were associated with more worry.

This low status of public worrying among our study may be explained by the following:Mpox was not declared as a pandemic; there were no strict global restrictions on movements as during COVID-19, and **the State Information Service Egypt, 2024 and CDC, 2025** reported that Egypt has zero cases and so the epidemic probability is low.Regarding Mpox vaccination acceptance, our study found that nearly one quarter reported their willingness to receive Mpox vaccine. Participants who were Males, had a lower educational level, with no history of COVID 19 infection, with higher adherence to precautions during COVID 19 pandemic, and received COVID 19 vaccine showed statistically significant higher willingness to receive Mpox vaccine. Also, higher both knowledge and anxiety scores were associated with willingness to receive Mpox vaccine.

This low percentage of vaccine willingness is controversial as a meta-analysis research, which included 61 studies (263857 participants) reported that the overall global rate of intention to vaccinate against Mpox, extracted from 51 studies, was 60.9%. The intention to vaccinate varies across regions where the Eastern Mediterranean Region being 52.0% ***(Sulaiman et al., 2024).***Also, there are other studies that found high intention or positive attitude towards Mpox vaccination among the general public ***(Swed etal.,2023, Dong et al, 2023*, *and Tranetal.,2023).*** On the other hand, there are also other studies performed among health care workers that reported low acceptance or intention to receive the vaccine ***(Louniset al.,2023, Sahinetal.,2022 and Gagneux etal.,2022).*** Previous studies also mentioned factors affecting willingness to receive Mpox vaccination, these include: previous COVID-19 vaccination ***(Peptan et al., 2022 and Lounis et al.,2023),*** age as people above 45 years old, and high educational level are associated with low agreement with vaccination ***(Temsahetal.,2022*)**.

Vaccination hesitancy is a major problem facing vaccination programs in different communities. There are a lot of factors affecting vaccine hesitancy as myths, misinformation, negative beliefs, mistrust, cost, geographical barriers, and vaccine safety concerns. Effective communication is the most vital method to decrease hesitancy and address concerns ***(WHO, 2015).***

Conclusion

Public anxiety and worry towards Mpox is minimal to mild. Vaccination acceptance among the participants is low.

Recommendation

At the policy level, Information Education and Communication (IEC) campaigns are needed to improve public awareness and fight misinformation towards Mpox. At the research level, more researchis needed to investigate factors affecting Mpoxvaccine acceptance.

Limitations

The principal limitation of this study was the use of online questionnaires as the sole method of data collection. Non random sampling technique limits the generalization of findings.

Abbreviation

CDC: Center for Disease Control and Prevention
COVID19: Corona Virus Disease of 2019
GAD: Generalized Anxiety Disorder
IEC: Information Education and Communication.
Mpox: Monkey pox
NHS.UK: National Health Service United Kingdom.
PCR: Polymerase Chain Reaction.
SPSS: Statistical Package for Social Science.
WHO: World Health Organization

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مخاوف وتصورات وتقبل لقاح جدري القرود في عينة من الجمهور المصري
دراسة مقطعية عبر الإنترنت

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الملخص العربي

جدري القرود (Mpox)هومرض مشابه للجدري ولكنه أقل حدة. أعلنت منظمة الصحة العالمية أنجدري القردة يمثل "حالة طوارئ صحية عامة تثير قلقًا دوليًا " في أغسطس 2024. يتوفر لقاح وقائي بجرعتين تفصل بينهما أربعة أسابيع .تهدف هذه الدراسة المستعرضة إلى تقييم وجها تنظر الجمهور المصري حول مرض جدري القردة ومخاوفهم وتقبلهم للقاحه. شملت الدراسة مشاركين يعيشون في مصر فوق 18 عامًا، وافقوا على المشاركة. تضمنت الدراسة استبيانًا إلكترونيًا باللغة العربية ،تم إنشاؤه باستخدام مقاييس ومعتمدة ،وتم توزيعه عبر وسائل التواصل الاجتماعي . شارك في الدراسة سبعمائة وثمانية وخمسون (758) مصريًا. تراوحت أعمارهم من 18 إلى 75 عامًا بمتوسط وانحراف معيار يقدره 37.9 ± 11.81 سنة. أدرك مايقر بمن نصف المشاركين (52.5%) أنجدري القردة مرض خطير.كان متوسط درجة المعرفة (من 10) 3،حيث سجل ثلاثة أرباع المشاركين أقل من 5.أفاد مايقر بمن ربع المشاركين (26%) عن استعدادهم لتلقي لقاح جدري القرود،بينما تردد مايقر بمن نصف المشاركين (46.4%) في قبول اللقاح.سجل المشاركون في الدراسة مستويات منخفضة من القلق وفقًا لمقياس القلق.GAD-7

الخلاصة:

قلق الجمهور ومخاوفه تجاه جدري القرود منخفضة. قبول اللقاح بين المشاركين منخفض،وهناك حاجة إلى المزيد من حملات التثقيف والتوعية الصحية لمكافحة المعلومات الخاطئة ومعالجة أي مخاوف. على المستوى البحثي،هناك حاجة إلى مزيد من الأبحاث لاستقصاء العوامل المؤثرة على قبول اللقاح.

الكلمات المفتاحية: جدري القرود، المخاوف، القلق، قبول اللقاح، الجمهورالمصري، أداة قياس القلق