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ASSESSMENT OF FAMILY AWARENESS IN SAUDI ARABIA REGARDING THE MONKEYPOX VIRUS

Fajr A. Saeedi1*, Muath A. Allubdi2, Omer F. Alnajar2, Majed A. Almutairi2, Nawaf B. Aljahdali2, Ahmed F. Albeladi2, Mohammed D. Ayoub1, Nour M. Gazzaz3, Mohannad A. Alebdi2, Fahad U. Gadi1

1Department of Pediatrics, Faculty of Medicine in Rabigh, King Abdulaziz University, Jeddah 80205, Saudi Arabia.
2Medical student, King Abdulaziz University, Rabigh, Saudi Arabia.
3Department of Pediatrics, Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia.
Correspondence: Fajr A. Saeedi; Email: fasaeedi@kau.edu.sa

Abstract
Background: Monkeypox, caused by the monkeypox virus (MPXV), is a zoonotic disease belonging to the Orthopoxvirus genus, related to the smallpox virus family. Although not typically lethal, the disease presents with symptoms such as fever, malaise, headache, back pain, and a characteristic vesiculopustular rash. Initially confined to West and Central Africa, monkeypox has now spread globally, with increased human-to-human transmission. Despite approved medications like the Modified Vaccinia Ankara-Bavarian Nordic (MVA-BN) and tecovirimat, no specific vaccine or treatment for monkeypox exists. Cross-protection from smallpox vaccination is limited in older adults, and younger populations in non-endemic areas have lower immunity. Objective: Our study was designed to assess the awareness of families regarding the monkeypox virus. Methods: This study employed a cross-sectional observational survey conducted among the general Saudi population between September 4, 2024, and October 4, 2024. Participants included Saudi families with at least one child, aged over 18 years, recruited through social media platforms. A sample size of 384 participants was determined using the Qualtrics calculator with a 95% confidence level and a 5% margin of error. Data was collected via an anonymous online questionnaire, which consisted of two sections. The first section gathered sociodemographic information, while the second section included 24 multiple-choice questions assessing participants' knowledge of the monkeypox virus. Informed consent was obtained from all respondents prior to participation. Awareness scores ranged from 0 to 45 points and were categorized into three levels: low (0-15), moderate (16-30), and high (31-45). A pilot test involving 20 individuals was conducted to evaluate the clarity and feasibility of the survey. The data was entered into Microsoft Excel and analyzed using SPSS version 20. Results: Regarding family awareness about the monkeypox virus, 90.5% out of 696 participants have heard of the virus. The internet is the primary source of information for 53.9% of respondents. Participants generally understood common symptoms but 25% were unaware of them. Regarding prevention, 83.6% recognized the need to avoid contact with infected individuals, but only 11.9% felt confident about vaccine accessibility. While 53.9% believe hygiene is effective in prevention, 25.6% are uncertain. Alarmingly, 53.0% are unaware of recent outbreaks, and 36.4% show little concern about its spread. Many (68.2%) think educational institutions should boost awareness, and 58.5% feel media coverage is insufficient. Conclusively, 49.9% of respondents have moderate awareness, while 41.1% exhibit high awareness. Only 9.1% showed low awareness. Conclusion: the study revealed a significant level of awareness concerning monkeypox among families in Saudi Arabia, with 90.5% of participants familiar with the virus. However, there remains a concerning disparity between general awareness and comprehensive understanding, as evidenced by the 25% of respondents unaware of its common symptoms and only 11.9% confident in vaccine accessibility. While a majority acknowledge the importance of preventive measures, a substantial proportion express uncertainty about hygiene effectiveness and perceive inadequate media coverage on the issue.

Keywords: Monkeypox, Awareness, Prevention, Transmission, Symptoms, Education, Family, Health, Literacy and Virus

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Introduction:

The monkeypox is brought on by the monkeypox disease virus (MPXV), a member of the Orthopoxvirus genus that is related to the smallpox virus family [1]. The symptoms of monkeypox, which are not lethal, include fever, malaise, exhaustion, headache, back pain, and skin rash. The only difference between smallpox and monkeypox is that lymphadenopathy is not present [2,3]. Additionally, the disease is distinguished from other vesiculopustular rash diseases by its vesiculopustular rash in all stages (macular, papular, vesicular, and pustular) [2,3].

The incubation period for monkeypox is 5–21 days. Its main route of transmission are bodily fluids and items contaminated with the virus, as well as contact with skin lesions and droplets [4,5]. Maternofetal transmission has been reported [6]. The symptoms go away on their own in two to three weeks [7].

There is a chance that the virus could spread via certain actions that involve a lot of human- to-human contact, such as sharing a bed or room, residing in the same residence, or sharing food or drink [5]. Although the Modified Vaccinia Ankara-Bavarian Nordic (MVA-BN) and tecovirimat medications have been approved, there is currently no vaccination or treatment for monkeypox [8]. Furthermore, for persons over 40, the cross-protection of childhood smallpox vaccinations against monkeypox is restricted. Furthermore, the immunity to monkeypox is lower in younger people from non-endemic places [9].

The monkeypox virus (MPXV), which causes the disease in humans, was initially identified in laboratory monkeys in 1958 [10]. However, a 9-month- old infant in the Democratic Republic of the Congo reported having the disease in 1970 [9]. The disease was first only seen in West Africa, but it has now spread to other parts of Africa and the United States [9]. It is primarily found in tropical areas of Western and Central Africa. The significance of MPXV in the study of viral infections was highlighted by its initial-isolation during smallpox investigations [9].

A cross-sectional research conducted in 2023 evaluated adults in Jeddah City's knowledge and awareness about monkeypox. 50.4% of participants had an exceptional degree of knowledge of the illness, according to the data. Remarkably, 92% of respondents acknowledged that monkeypox affects people of both sexes, and 91% knew that it may spread between people. However, only 38.8% correctly identified that Monkeypox is not a new infection that emerged in 2022. The study also revealed that 55.6% of participants thought the COVID-19 pandemic and monkeypox may have comparable effects on social and economic life [11].

Furthermore, the study found that younger individuals aged 26-45 years had considerably greater knowledge levels than older age groups (p-value = 0.001). Additionally, participants with higher educational attainment (postgraduate/university) had greater knowledge; 53.5% of these individuals scored highly on knowledge, compared to 33.3% of participants with lower educational attainment (p-value = 0.047) [11].

In 2022, a research tested monkeypox knowledge among university students, finding that 70.1% had moderate understanding. Only 22.8% showed strong understanding of the disease's symptoms and prevention. Notably, students from medical colleges and female students performed better on knowledge evaluations. According to the study, 68.6% of students had learned about monkeypox throughout the course of their education, mostly from social media [12]. A study conducted in 2022 in Saudi Arabia evaluated the general population's awareness about monkeypox, and the results showed that just 48% of participants had high levels of understanding. Significant correlations between knowledge and variables including age, education level, and work status were found in the investigation. 75% of respondents cited social media as their main information source, raising questions about the veracity of the data received. In addition, a lot of participants were unaware of important information regarding the disease, and there were a lot of misunderstandings regarding prevention and transmission [13]. In the Kingdom of Saudi Arabia, the first individual to be infected with the Monkeypox virus was a traveller from Europe to the Kingdom’s capital, Riyadh, during the year 2022. Although this virus goes way back to the year 1970, its existence in Saudi Arabia is quite recent. Because of the recent arrival of this virus and the fact that children are more prone to viral infections, parents' knowledge must be assessed and evaluated. Previous publications were focused either on the general population or on specific groups, neither of which concentrated on parents’ awareness [10].

Objectives: Our study was designed to assess the awareness of families regarding the monkeypox virus.

Methodology:

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Study design and Setting: The study design is a cross-sectional observational survey among the general Saudi population from 4 September 2024 to 4 October 2024

Subject: Participants, recruitment and sampling procedure: All Saudi family aged over 18 years were eligible to be included in this study.

Sample size: By using the Qualtrics calculator at confidence level 95% and margin of error 5%, the minimum sample size was found to be 384 participants.

Inclusion and Exclusion criteria: Participants included parents with at least one child regardless of gender and nationality. Participants without children or those with severe physical/mental problems were excluded.

Method for data collection, instrument: Data was gathered online using an anonymous questionnaire. There were two sections to the questionnaire: The first part included sociodemographic factors such as gender, age, education, employment, monthly income, and current location. The second part included 24 multiple-choice questions designed to measure monkeypox knowledge. Respondents had to select an answer to each question from many options.

We invited participants to complete a structured questionnaire on a specific platform Google Forms link, which we distributed via social media platforms such as WhatsApp, Facebook, and Twitter. Before beginning to fill out the replies, each respondent was asked to provide informed consent by clicking the consent statement. The respondents were given an informed consent statement that asked, "Do you agree to participate in this form?" After completing the survey, they clicked the "submit" button to send it to our data-gathering platform. To submit an acceptable response, each question has to be answered.

Scoring system: Awareness scores varied from 0 to 45 points and were classified into three levels as follows:

0 to 15 Points: Low Awareness – Participants show a low level of knowledge and awareness about monkeypox. Additional information and education are needed.

16 to 30 Points: Moderate Awareness – Participants have a moderate level of knowledge. Further information and awareness efforts are required to improve understanding.

31 to 45 Points: High Awareness – Participants demonstrate a good level of knowledge and awareness.

Pilot test: The questionnaire was given to 20 individuals to complete in order to assess its simplicity and the feasibility of the study. The data from this pilot study were not included in the final analysis.

Analyzes and entry method: The data was initially entered into a computer using Microsoft Excel (2016) for Windows. It was then transferred to the Statistical Package for the Social Sciences (SPSS),
version 20, for statistical analysis.

Results:

Table (1) displays various demographic parameters of the participants with a total number of (696). Notably, the age distribution reveals a significant concentration of participants within the 35-44 age range (32.6%), indicating a potential demographic trend toward mature engagement in the study. Gender representation is relatively balanced, with females slightly outnumbering males (51% vs. 49%), which enhances the generalizability of the findings across genders. Educational attainment is predominantly high, as evidenced by the substantial proportion of participants holding a bachelor's degree (55.2%). Employment status reflects a predominantly full-time workforce (51.3%), although the presence of students (21.8%) and retirees (9.3%) underscores the varied life stages represented. Monthly income levels show a varied economic landscape with 25% earning 15,000 SAR and above, indicating a significant proportion of individuals in higher income brackets. Additionally, the geographic concentration in the Makkah Region (76.1%) suggests the necessity to consider regional factors influencing the study outcomes.

Table (1): Sociodemographic characteristics of participants (n=696)

Parameter		No.	Percent (%)
Age	Under 18	21	3.0
	18-24	167	24.0
	25-34	88	12.6
	35-44	227	32.6

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	45-54	136	19.5
	55 and over	57	8.2
Gender	Male	341	49.0
	Female	355	51.0
Educational Level:	Less than high school	26	3.7
	High school diploma	138	19.8
	Associate's degree	70	10.1
	Bachelor's degree	384	55.2
	Master's degree	43	6.2
	Doctorate	35	5.0
Employment Status:	Full-time employed	357	51.3
	Part-time employed	16	2.3
	Student	152	21.8
	Unemployed	34	4.9
	Housewife	59	8.5
	Retired	65	9.3
	Freelance/Contractor	5	.7
	Other	8	1.1
Monthly Income Level (approximate):	Less than 2000 SAR	188	27.0
	2000-4999 SAR	71	10.2
	5000-9999 SAR	110	15.8
	10000-14999 SAR	153	22.0
	15000 SAR and above	174	25.0
Geographic Region:	Riyadh Region	23	3.3
	Makkah Region	530	76.1
	Madinah Region	31	4.5
	Eastern Province	24	3.4
	Asir Region	8	1.1
	Tabuk Region	65	9.3
	Al-Jouf Region	1	.1
	Al-Qassim Region	1	.1
	Najran Region	1	.1
	Al-Baha Region	11	1.6
	Jazan Region	1	.1

As shown in figure 1, The distribution of sources through which individuals first learned about monkeypox reveals significant trends in information dissemination. A substantial majority, 375 respondents, or approximately 49.2%, identified the internet, particularly news and medical sites, as their primary source of information. This highlights the internet's burgeoning role as a critical platform for public health awareness. In contrast, 229 individuals, equating to 29.6%, reported learning about the virus through traditional media outlets such as television and radio. Meanwhile, interpersonal channels such as friends or family accounted for 62 responses, representing 8.0% of the total. Social media platforms, surprisingly, contributed minimally, with only 8 respondents, or 1.0%, citing them as their initial source of information about monkeypox. Additionally, another 8 individuals reported learning about the topic through other means, and 14 respondents, or 1.8%, expressed uncertainty regarding where they had originally heard about it. This data underscores the predominance of the internet in health communication today.

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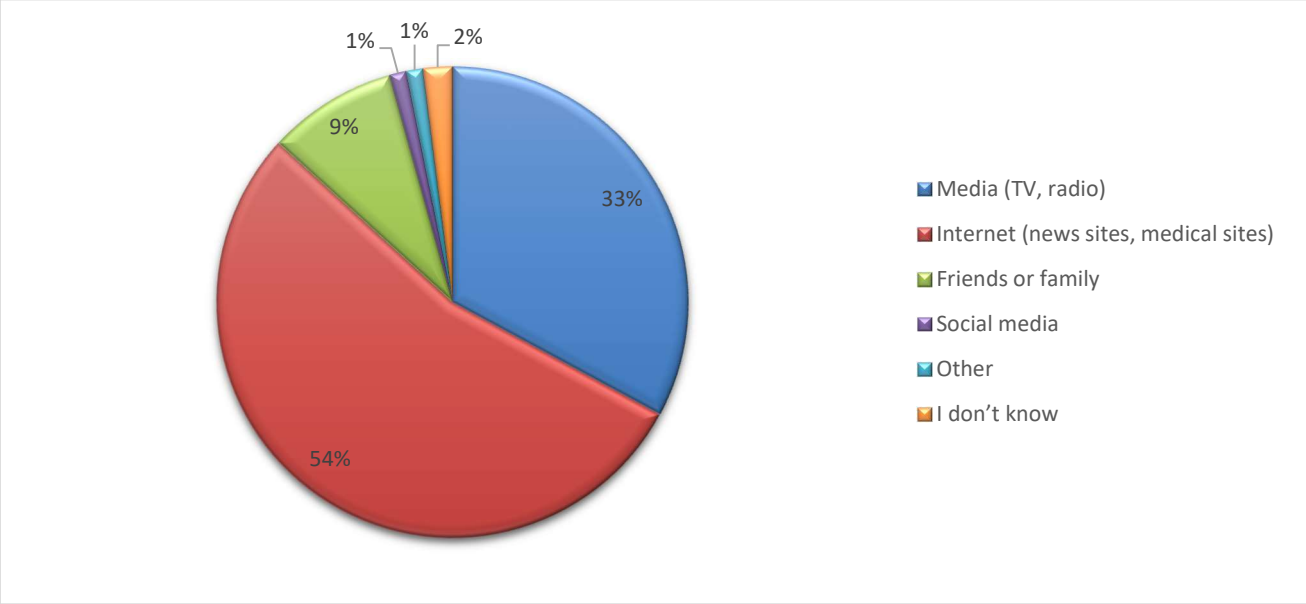
Figure (1): Source of information regarding monkeypox among participants.



As illustrated in table (2), The data presented reveals a significant level of awareness regarding monkeypox among the surveyed population in Saudi Arabia, with 90.5% reporting having heard of the virus. However, a notable disparity exists in knowledge depth, as only 6.5% classify themselves as well-informed, contrasted by 62.4% who consider themselves somewhat informed, and 31.2% who claim to lack information. The primary source of information is the internet, with 53.9% indicating news and medical sites as their first point of contact, highlighting the crucial role of digital platforms in public health communication. Participants demonstrated a generally sound understanding of common symptoms, yet 25% admitted to being unaware of them. In terms of prevention, a high percentage, 83.6%, acknowledged the importance of avoiding contact with infected individuals, yet only 11.9% were confident about vaccine accessibility.

Table (2): Parameters related to awareness in Saudi Arabia regarding the monkeypox virus (n=696).

Parameter		No.	Percent (%)
Have you heard of monkeypox?	No	66	9.5
	Yes	630	90.5
How knowledgeable are you about monkeypox?	Well-informed	45	6.5
	Somewhat informed	434	62.4
	Not informed	217	31.2
Where did you first learn about monkeypox?	Media (TV, radio)	229	32.9
	Internet (news sites, medical sites)	375	53.9
	Friends or family	62	8.9
	Social media	8	1.1
	Other	8	1.1
	I don't know	14	2.0
What are the common symptoms of monkeypox? *	Fever	363	52.1
	Rash resembling smallpox	499	71.7
	Muscle aches	165	23.7
	Headache	211	30.3
	Swollen lymph nodes	123	17.7
	Fatigue	176	25.3
	Don't know	174	25.0

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How is monkeypox primarily transmitted? *	Through direct contact with an infected person	404	58.0
	Through contact with infected animals	198	28.4
	Through the air	75	10.7
	Through contaminated food	52	7.5
	Don't know	233	33.5
What preventive measures do you think are effective against monkeypox? (Select all that apply) *	Avoiding contact with infected individuals	582	83.6
	Maintaining personal hygiene	386	55.5
	Wearing protective masks	274	39.4
	Receiving recommended vaccines	346	49.7
	Avoiding undercooked meat	152	21.8
	Other	19	2.7
Do you know if there is a vaccine for monkeypox?	Yes, and I know where to get it	83	11.9
	Yes, but I don't know where to get it	122	17.5
	No	300	43.1
	Not sure	191	27.4
What are the main treatments for monkeypox? (Select all that apply) *	Antiviral medications	303	43.5
	Supportive care	164	23.5
	Antibiotics	170	24.4
	Herbal remedies	31	4.4
	Don't know	326	46.8
What should you do if you suspect you have monkeypox?	Seek medical advice immediately	562	80.7
	Wait to see if symptoms improve	13	1.9
	Self-medicate with over-the-counter drugs	16	2.3
	Avoid contact with others	101	14.5
	Other	4	.6

*Results may overlap

The data presented in figure (2) underscores the critical importance of seeking immediate medical advice upon suspecting monkeypox, as evidenced by 562 respondents (approximately 79.4%) affirming this course of action. In contrast, a mere 13 individuals (about 1.8%) opted to wait and see if symptoms improved, while only 16 respondents (2.2%) chose to self-medicate with over-the-counter medications, indicating a potential lack of awareness regarding the seriousness of such viral infections. Moreover, 101 individuals (14.1%) recognized the necessity of avoiding contact with others, which is crucial for reducing transmission risk. The minimal response of 4 individuals (0.5%) who selected "other" suggests a limited understanding of alternative actions in such situations.

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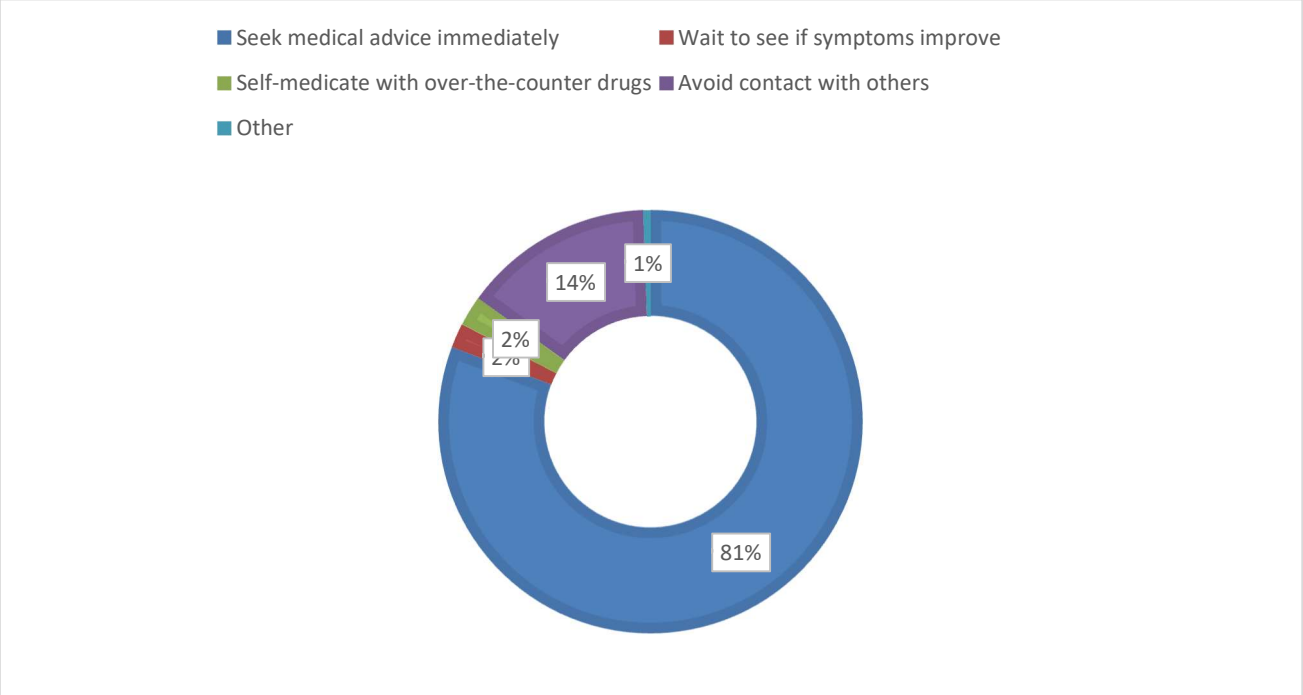
Figure (2): Illustrates attitude of participants regarding monkeypox.



The data presented in Table 3 reflects a critical examination of public awareness and perceptions regarding the monkeypox virus among a sample of 696 participants. Notably, while a majority (53.9%) believe that hygiene practices are very effective in preventing monkeypox, a significant portion remains uncertain about their efficacy, as evidenced by the 25.6% responding with "Don't know." Awareness of recent outbreaks is alarmingly low, with 53.0% indicating they have no knowledge of any occurrences. The overall concern about the virus also appears tepid, with 36.4% expressing no concern about its spread within the community. However, a considerable 68.2% of respondents assert that educational institutions should play a major role in increasing awareness, highlighting a recognized gap in knowledge dissemination. Additionally, the media's perceived coverage of monkeypox is inadequate for 58.5% of participants, indicating a demand for improved informational resources.

Table (3): participants awareness regarding the monkeypox virus and its public effect (n=696).

Parameter		No.	Percent (%)
How effective are hygiene practices in preventing monkeypox?	Very effective	375	53.9
	Somewhat effective	130	18.7
	Not effective	13	1.9
	Don't know	178	25.6
Are you aware of any recent outbreaks of monkeypox?	Yes, and I can name them	64	9.2
	Yes, but I cannot name them	149	21.4
	No	369	53.0
	Not sure	114	16.4
How often do you check for updates on infectious diseases like monkeypox?	Regularly	58	8.3
	Occasionally	219	31.5
	Rarely	258	37.1
	Never	161	23.1
What are the most reliable sources of information on monkeypox? (Select all that apply) *	Government health agencies	551	79.2
	Medical websites	296	42.5

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	News media	177	25.4
	Social media	114	16.3
	Friends and family	50	7.2
	Other	21	3.0
How concerned are you about the spread of monkeypox in your community?	Very concerned	106	15.2
	Somewhat concerned	267	38.4
	Not concerned	253	36.4
	Don't know	70	10.1
Do you believe monkeypox is a serious health threat?	Yes	301	43.2
	No	158	22.7
	Not sure	237	34.1
Have you participated in any public health initiatives related to monkeypox?	Yes (e.g., vaccination drives, awareness programs)	41	5.9
	No	616	88.5
	Not sure	39	5.6
Are you aware of any local health policies regarding monkeypox?	Yes, and I can describe them	56	8.0
	Yes, but I cannot describe them	119	17.1
	No	444	63.8
	Not sure	77	11.1
How would you rate the overall public awareness of monkeypox in your area?	Very high	71	10.2
	Good	121	17.4
	Average	171	24.6
	Poor	234	33.6
	Don't know	99	14.2
What role do you think educational institutions should play in increasing awareness about monkeypox?	Major role	475	68.2
	Minor role	112	16.1
	No role	17	2.4
	Don't know	92	13.2
How confident are you in your ability to recognize symptoms of monkeypox?	Very confident	101	14.5
	Somewhat confident	269	38.6
	Not confident	191	27.4
	Don't know	135	19.4
What are the potential consequences of not addressing monkeypox promptly?	Increased risk of spread	398	57.2
	More severe health issues	134	19.3
	Minimal impact	28	4.0
	Don't know	136	19.5
Do you think there is adequate coverage of monkeypox in the media?	Yes	144	20.7
	No	407	58.5
	Not sure	145	20.8
Would you be interested in attending a workshop or seminar about monkeypox?	Yes	249	35.8
	No	154	22.1
	Maybe	293	42.1

*Results may overlap

The data presented in Table 4 illustrates the levels of family awareness regarding the monkeypox virus in Saudi Arabia, revealing a predominance of moderate awareness among the population. With 49.9% of respondents indicating moderate awareness, it suggests that nearly half of the families possess a fundamental understanding of the virus, coupled with a notable 41.1% exhibiting high awareness. Conversely, only 9.1% demonstrate low

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awareness, pointing to a commendable baseline of knowledge regarding this emerging public health concern.

Table (4): Shows family awareness in Saudi Arabia regarding the monkeypox virus score results.

	Frequency	Percent
High awareness	286	41.1
Moderate awareness	347	49.9
Low awareness	63	9.1
Total	696	100.0

Table (5) shows that family awareness regarding the monkeypox virus has statistically significant relation to gender (p value=0.043), age (p value=0.035). It also shows statistically insignificant relation to educational level, employment status, monthly income and geographic region.

Table (5): Relation between family awareness regarding the monkeypox virus and sociodemographic characteristics.

Parameters		Family awareness regarding the monkeypox virus		Total (N=696)	P value*
		High awareness	Moderate or low		
Gender	Female	159	196	355	0.043
		55.6%	47.8%	51.0%	
	Male	127	214	341	
		44.4%	52.2%	49.0%	
Age	Under 18	11	10	21	0.035
		3.8%	2.4%	3.0%	
	18-24	76	91	167	
		26.6%	22.2%	24.0%	
	25-34	29	59	88	
		10.1%	14.4%	12.6%	
	35-44	104	123	227	
		36.4%	30.0%	32.6%	
	45-54	43	93	136	
		15.0%	22.7%	19.5%	
	55 and over	23	34	57	
		8.0%	8.3%	8.2%	
Education level	Less than high school	14	12	26	0.863
		4.9%	2.9%	3.7%	
	High school diploma	57	81	138	
		19.9%	19.8%	19.8%	
	Associate's degree	29	41	70	
		10.1%	10.0%	10.1%	
	Bachelor's degree	155	229	384	
		54.2%	55.9%	55.2%	
	Master's degree	17	26	43	
		5.9%	6.3%	6.2%	
	Doctorate	14	21	35	
		4.9%	5.1%	5.0%	
Employment status	Full-time employed	131	226	357	0.210

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		45.8%	55.1%	51.3%	
	Part-time employed	5	11	16	
		1.7%	2.7%	2.3%	
	Student	75	77	152	
		26.2%	18.8%	21.8%	
	Unemployed	14	20	34	
		4.9%	4.9%	4.9%	
	Housewife	29	30	59	
		10.1%	7.3%	8.5%	
	Retired	26	39	65	
		9.1%	9.5%	9.3%	
	Freelance/Contractor	2	3	5	
		0.7%	0.7%	0.7%	
	Other	4	4	8	
		1.4%	1.0%	1.1%	
Monthly Income Level (approximate):	Less than 2000 SAR	86	102	188	0.203
		30.1%	24.9%	27.0%	
	2000-4999 SAR	26	45	71	
		9.1%	11.0%	10.2%	
	5000-9999 SAR	36	74	110	
		12.6%	18.0%	15.8%	
	10000-14999 SAR	62	91	153	
		21.7%	22.2%	22.0%	
	15000 SAR and above	76	98	174	
		26.6%	23.9%	25.0%	
Geographic Region:	Riyadh Region	7	16	23	0.527
		2.4%	3.9%	3.3%	
	Makkah Region	213	317	530	
		74.5%	77.3%	76.1%	
	Madinah Region	16	15	31	
		5.6%	3.7%	4.5%	
	Eastern Province	8	16	24	
		2.8%	3.9%	3.4%	
	Asir Region	4	4	8	
		1.4%	1.0%	1.1%	
	Tabuk Region	31	34	65	
		10.8%	8.3%	9.3%	
	Al-Jouf Region	0	1	1	
		0.0%	0.2%	0.1%	
	Al-Qassim Region	1	0	1	
		0.3%	0.0%	0.1%	
	Najran Region	1	0	1	
		0.3%	0.0%	0.1%	
	Al-Baha Region	5	6	11	
		1.7%	1.5%	1.6%	
	Jazan Region	0	1	1	
		0.0%	0.2%	0.1%	

*P value was considered significant if ≤ 0.05.

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Discussion:

Monkeypox is an uncommon zoonotic illness caused by the monkeypox virus, which is classified within the genus Orthopoxvirus, the same family responsible for smallpox [15]. This disease is generally non-lethal and manifests with symptoms such as fever, malaise, fatigue, headache, back pain, and a skin rash; these symptoms resemble those of smallpox, but lymphadenopathy is a distinguishing feature. Additionally, monkeypox is noted for its vesiculopustular rash, which progresses through all stages (macular, papular, vesicular, and pustular), setting it apart from other illnesses that exhibit similar rashes [16]. The incubation duration for monkeypox ranges from 5 to 21 days. The primary means of transmission includes respiratory droplets and direct contact with lesions or bodily fluids contaminated with the virus. Instances of maternofetal transmission have also been reported. Typically, symptoms resolve on their own within two to three weeks [17]. Certain activities that involve close human contact, such as sharing a room or bed, living together, or consuming food from the same dish, present a potential risk for virus transmission. Interestingly, no significant links have been found relating to laundering clothing, assisting with personal hygiene, or accompanying someone to the restroom. It is hypothesized that the increased risk associated with specific behaviors may stem from the virus's easier transmission to the oral mucosa compared to exposure of just the skin [18]. In Saudi Arabia, the first recorded case of monkeypox was identified in July 2022 in Riyadh, involving an individual arriving from Europe [19]. Thus, we aimed in this study to assess the awareness of families regarding the monkeypox virus.

The assessment of family awareness regarding the monkeypox virus in Saudi Arabia reveals striking contrasts and similarities when compared to findings from other studies. In our study, 90.5% of participants reported having heard of monkeypox, with 41.1% demonstrating high awareness levels, starkly differing from the results of Alasslani et al. (2024), where only 50.4% of adults exhibited an excellent level of knowledge, and only 4.4% were rated as having poor knowledge [20]. Furthermore, another recent study conducted in Saudi Arabia found that only 48% of participants exhibited high knowledge regarding monkeypox [21], suggesting that while awareness is high, comprehensive understanding remains inconsistent. The study from Bangladesh (2022) indicates that although a significant portion of the population was aware of monkeypox, a concerning 66.6% lacked sufficient knowledge about its transmission, vaccination, and clinical manifestations [22]. This aligns with our study, where 25% of respondents were unaware of common symptoms. In Indonesia, the awareness landscape appears less favorable, as only 36.5% of general practitioners reported having good knowledge about monkeypox [23]. A notable finding in our study is that, while 83.6% recognized the importance of avoiding contact with infected individuals, a mere 11.9% felt confident about vaccine accessibility, highlighting a significant gap between awareness and actionable knowledge. The perception of inadequate media coverage (58.5%) and uncertainty regarding hygiene effectiveness (25.6%) further underscores the need for improved educational interventions, particularly in institutional settings, as suggested by the 68.2% of participants advocating for enhanced awareness initiatives in educational institutions. On the other hand, In Nigeria (2022), awareness of Monkeypox among general adult population was high (89%) while good knowledge was observed among 58.7% of them and the defective knowledge was mainly reported concerning the incubation period of the disease, the main signs and symptoms, the mode of transmission and preventive strategies [24]. Other studies have reported insufficient knowledge about monkeypox among the general population. In a recent population-based Saudi study, 52% of the participants expressed inadequate knowledge [25]. In the United Arab Emirates (2022), only 22.8% of university students had good knowledge about monkeypox [26]. In Pakistan (2022), most university students (68.3%) did not know about monkeypox before 2022, and overall, 76.7% of them had average knowledge [27]. Most medical students (72%) in another Saudi study had inadequate knowledge about monkeypox [28]. Furthermore, a considerable proportion of physicians in Saudi Arabia had poor knowledge regarding the endemic nature, mode of transmission, clinical variation from similar viral diseases, therapeutic management, and vaccination for monkeypox [29]. This can be partially explained by utilizing a different more scientific tool to assess the knowledge of physicians and medical students. Another study conducted in Indonesia found that general practitioners had low knowledge about monkeypox and only 10% could correctly answer 80% of questions about monkeypox [30]. Another recent study conducted in Italy found that medical professionals' knowledge of monkeypox was relatively unsatisfactory, with significant knowledge gaps in this subject [31].

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Conclusion:

In conclusion, this study highlighted significant awareness of the monkeypox virus among families in Saudi Arabia, with 90.5% of participants having heard of the disease. However, there remains a concerning disparity between general awareness and comprehensive understanding, as evidenced by the 25% of respondents unaware of its common symptoms and only 11.9% confident in vaccine accessibility. While a majority acknowledge the importance of preventive measures, a substantial proportion express uncertainty about hygiene effectiveness and perceive inadequate media coverage on the issue. These findings underline the critical need for targeted educational interventions, particularly within schools and community organizations, to enhance public knowledge and understanding of monkeypox. Addressing these gaps is essential for improving preparedness and response in the face of potential outbreaks, ultimately contributing to better public health outcomes.

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