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Rufaida Raed Fadhil
Al-Immamein Alkadhmein
Medical City, Baghdad, Iraq

Dr. Sina'a Kareem Abdullah
Baghdad Health Directorate -
Al-Karkh, Baghdad, Iraq

Hind Abdulelah Abdulsahib
Baghdad Health Directorate -
Al-Karkh, Baghdad, Iraq

Knowledge, attitude and practice among sample of people attending to Al-Immamein, Alkadhmein medical city/ Baghdad toward preventive measures of COVID-19

Rufaida Raed Fadhil, Dr. Sina'a Kareem Abdullah and Hind Abdulelah Abdulsahib

Abstract
Background: The newly discovered SARS-CoV-2 virus causes COVID-19. Since the WHO classified SARS-CoV-2 a worldwide pandemic, COVID-19 has spread to 223 countries with over 281 million illnesses and 5.4 million deaths. Various medical, social, and engineering strategies have been proposed to combat COVID-19, including therapy, prevention, detection, and prediction. Knowledge, awareness, risk perception, and efficacy belief inspire preventive behaviour, according to infectious disease studies. The aim of study to investigate COVID-19 preventive knowledge, attitude, and self-reported practise among Al-Imamain Al-Kadhmain Medical City/Baghdad patients. To identify Sociodemographic factors affecting participant knowledge and attitude towards COVID-19 prevention.
Method: A three-month cross-sectional analytic study at Al-Imamain Al-Kadhmain Medical City/Baghdad from January 2 to April 1, 2022. It included 300 adults who visited the hospital's outpatient clinic for whatever reason. The data was acquired using a five-part questionnaire: Participants' socio-demographics, vaccination status, COVID-19 virus prevention knowledge, attitude, and practice.
Results: This research found 73.6% fair to good knowledge, 80% favourable attitudes, and 67.7% good practise. Younger individuals, males, rural residents, illiterate, jobless, and non-COVID-19 vaccinees had poor knowledge. Participants aged 40-49, urban residents, highly educated, and COVID-19 vaccinees had a considerably greater positive attitude. Mask face was the most common preventive method (82%), followed by hand cleaning (75.7%). A substantial correlation existed between participant knowledge and practise.
Conclusion: Many study participants had good knowledge, positive attitudes, and effective practises for COVID-19 prevention. Participant knowledge of age, gender, domicile, education, occupation, and immunisation.

Keywords: Knowledge, attitude, practice, attending, al-immamein, Alkadhmein medical, preventive, COVID-19

Introduction
The emergence of novel infectious diseases, such as Ebola, Zika, Nipah, and various coronaviruses (CoVs), has been a significant concern in recent decades. Among these, the severe acute respiratory syndrome CoV-2 (SARS-CoV-2), which causes the disease COVID-19, has had a profound impact globally. Initially identified in Wuhan City, China, SARS-CoV-2 is distinct from previously sequenced CoVs, indicating a novel strain. The outbreak is believed to have a zoonotic origin, with the virus possibly jumping from an animal host to humans, followed by human-to-human transmission. This mode of transmission is consistent with other respiratory viruses like influenza and rhinovirus, primarily spreading through respiratory droplets produced by coughing and sneezing. Aerosol transmission is also possible, especially in closed spaces with high aerosol concentrations over prolonged periods [1, 2]. The World Health Organization (WHO) officially named the disease COVID-19 on 11 February 2020. The initial cluster of cases was linked to the Huanan South China Seafood Market in Wuhan. Common symptoms of COVID-19 include fever, cough, fatigue, and in some cases, headache, hemoptysis, and diarrhea. Interestingly, the symptoms observed in patients outside Wuhan in the early stages were milder compared to those in the initial cluster. Overall, the mortality rate of COVID-19 was found to be lower than that of previous SARS outbreaks.

Corresponding Author:
Rufaida Raed Fadhil
Al-Immamein Alkadhmein
Medical City, Baghdad, Iraq

Reports from countries like China, Japan, Thailand, and South Korea indicated milder manifestations in COVID-19 patients compared to those with SARS or MERS [3-5]. Since being declared a pandemic by the WHO, SARS-CoV-2 has spread to 223 countries, causing over 281 million infections and more than 5.4 million deaths worldwide. Preventive measures to curb the spread include vaccination, staying at home, wearing masks in public, avoiding crowded places, maintaining social distance, ventilating indoor spaces, managing exposure durations, frequent hand washing, practicing good respiratory hygiene, and avoiding touching the face with unwashed hands [6, 7]. The first COVID-19 vaccine received regulatory approval on 2 December 2020 from the UK's MHRA. Initially, the US National Institutes of Health did not recommend any specific medication for the prevention of COVID-19 outside clinical trials. A key strategy in the fight against the pandemic has been to "Flatten the curve" - slowing the infection rate to prevent overwhelming healthcare systems, providing better treatment for active cases, and buying time until more effective treatments or vaccines become available [8, 9, 10]. The aim of study is to evaluating the understanding, perceptions, and self-reported behaviors related to COVID-19 prevention among a group of individuals visiting Al-Immamain Al-Kadhmain Medical City in Baghdad, and to determining the impact of Sociodemographic factors on the participants' awareness and perspectives regarding COVID-19 preventive strategies.

Methods

A cross-sectional study. The current study was carried out during period of three months from 2nd of January to 1st of April 2022. The data collection was done through daily visits, and spending four hours / day, 3 days / week. The data analytic component conducted in Al-Imamain Al-Kadhmain Medical City / Baghdad. All adult's participants both sex in selected hospital in Baghdad who will agree to participate were enrolled in the study. All adults Participants both sex who refused to participate in the current study. The data had been collected through distribution of well-designed questionnaire including five parts: (Participants' Sociodemographic characteristics, vaccination status, knowledge, attitude and practice parts). The questionnaire based on previous studies [11, 12] and modified according to national needs. The questionnaire was prepared by the author and revised by supervisor and which was prepared in English and Arabic language. The study comprised a structured questionnaire divided into five parts, each targeting different aspects related to COVID-19 preventive measures among participants at Al-Immamain Al-Kadhmain Medical City in Baghdad. The first section gathered Sociodemographic data through six items. The second section inquired about vaccination status with a single question regarding receipt of the COVID-19 vaccine. The third section assessed knowledge about COVID-19 preventive measures through 18 questions. The fourth section evaluated attitudes towards these measures with five items. Finally, the fifth section focused on practices concerning COVID-19 prevention, consisting of eight items. A pilot study involving ten participants was conducted at the selected hospital to ensure the questionnaire's clarity, applicability, and reliability. It also helped in estimating the time required for completion and addressing potential challenges in the actual study. Ethical considerations were meticulously followed. Verbal permission was obtained from each participant, ensuring anonymity and confidentiality. Names were replaced with identification codes, and data were securely stored on a password-protected laptop for exclusive research use. The study received administrative approval from the Scientific Council of Arab Board of Family Medicine and Al-Imamain Al-Kadhmain Medical City, including its ethics review committees. For statistical analysis, participants' responses in the knowledge section were scored with 1 point for each correct answer, allowing a total score range from 0 to 18. A Likert scale was used for scoring, with higher scores indicating better knowledge. In the attitude section, responses were also rated on a 3-point Likert scale, with total scores ranging from 5 to 15. Scores above 50% indicated a positive attitude, while below 50% suggested a negative attitude. Similarly, practices were scored on a Likert scale, with a maximum of 8 points, where scores above 50% were considered good. Data were analyzed using SPSS version 26, presenting mean, standard deviation, and range for continuous data, and frequencies and percentages for categorical data. The Chi-square test was employed to explore associations between knowledge, attitudes, and practices, using a significance level of $p<0.05$.

Results

Of the 300 participants, 181 (60.3%) were males and 119 (39.7%) females with a male to female ratio of 1.52:1. Most of the participants 278 (92.7%) live in urban areas, more than half 168 (56%) were married, 172 (57.3%) had a university or higher educational level, 143 (47.7%) were employees (Table 1).

Table 1: Distribution of the participants by socio- demographic characteristics

Socio-demographic Characteristics	No (N=300)	Percentage (%)
Age (years)		
< 30	146	48.7
30-39	47	15.7
40-49	49	16.3
50-59	25	8.3
≥ 60	33	11
Gender		
Male	181	60.3
Female	119	39.7
Residence		
Urban	278	92.7
Rural	22	7.3
Marital Status		
Single	107	35.7
Married	168	56.0
Divorced or Widowed	25	8.3
Educational Level		
Illiterate	16	5.4
Primary School	37	12.3
Secondary School	75	25.0
University or Higher education	172	57.3
Occupation		
Student	73	24.3
Employed	143	47.7
Unemployed	48	16.0
Private Work	36	12.0

Concerning vaccination of COVID-19, 269 (89.7%) were vaccinated against COVID-19 infection (Figure 1).
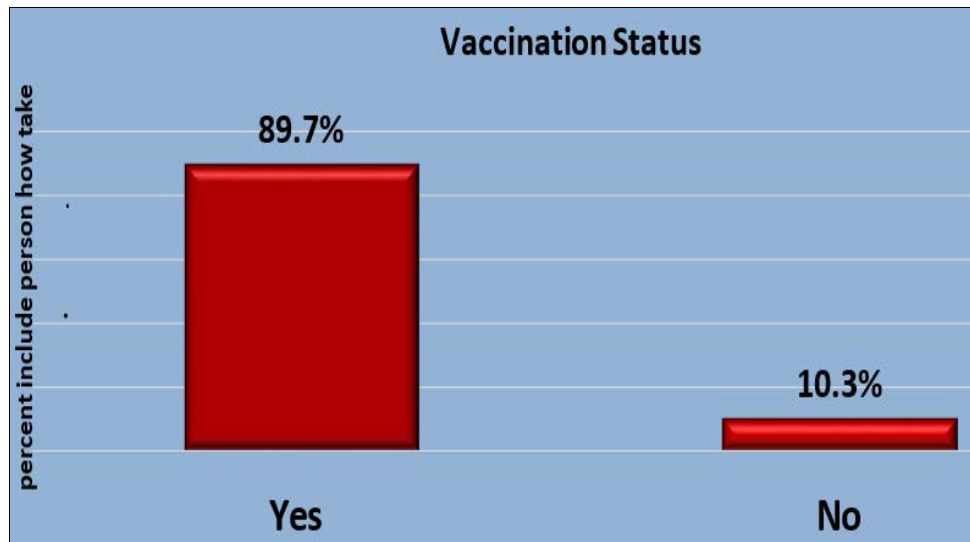
Fig 1: Vaccination status among the study participants

The highest percentage of the respondents 238 (79.3%) reported that health care workers were the source of their information about the COVID-19, while the social media and TV were the sources of information for 224 (74.7%) and 126 (42%) of the respondents, respectively (Table 2).

Table 2: Distribution of the study participants by source of information about COVID-19*

Source of Information	No. (N=300)	Percentage (%)
Social Media	224	74.7
TV	126	42.0
Health Care Workers	238	79.3
Radio	9	3.0
Family and Friends	73	24.3
Newspapers	9	3.0

* Multiple responses question

The overall knowledge score of the participants about the preventive measures of COVID-19 was as follow: 112 (37.3%) had good knowledge, 109 (36.3%) had fair knowledge, and the remaining 79 (26.4%) were with poor knowledge (Figure 2).
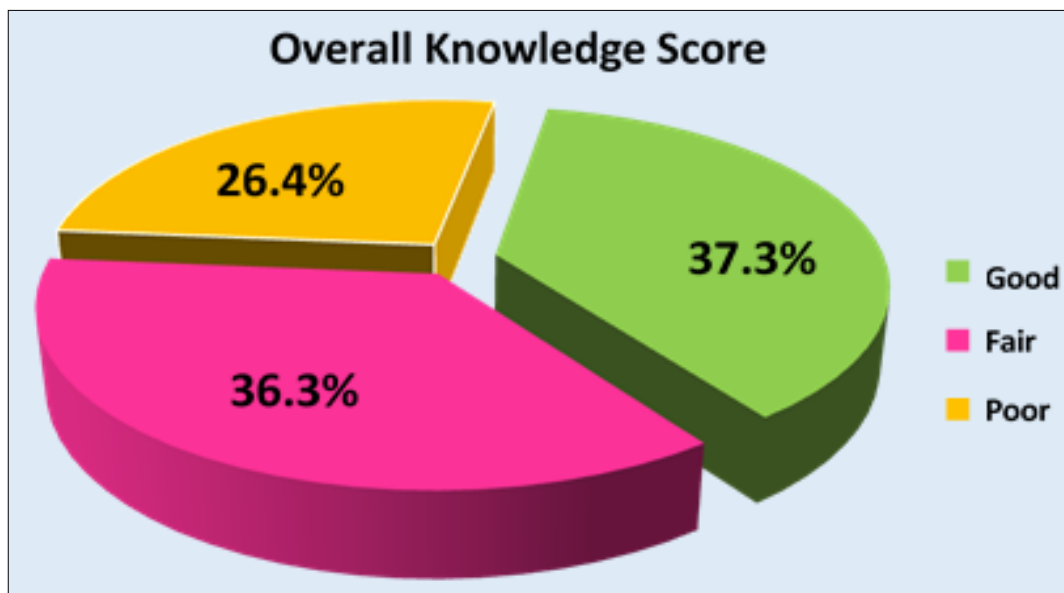

Fig 2: Overall knowledge score about the preventive measures for COVID-19

In this study, there was a statistically significant association ($p<0.05$) between knowledge score and age of participants, gender, residence, educational level, occupation, and vaccination status. Good knowledge about the preventive measures for COVID-19 was significantly higher among the participants aged (30-39) years (46.8%, P=0.003), females (46.2%, P=0.006), live in urban areas (38.5%, P=0.007), university or highly educated (46.5%, P=0.001), students (47.9%, P=0.001), and the participants who received the COVID-19 vaccines (40.6%, P=0.001), while marital status of the participants showed no significant association ($p≥0.05$) with knowledge score (Table 3).

Table 3: Distribution of the participants according to the knowledge score and it`s association with Sociodemographic characteristics and vaccination status

Participant' characteristics	Knowledge Score			Total (%) N=300	P-Value
	Poor (%) N=79	Fair (%) N=109	Good (%) N=112		
Age (Years)					
< 30	46 (31.5)	43 (29.5)	57 (39.0)	146 (48.7)	0.003
30 - 39	15 (31.9)	10 (21.3)	22 (46.8)	47 (15.7)	
40 - 49	5 (10.2)	23 (46.9)	21 (42.9)	49 (16.3)	
≥ 50	13 (22.4)	33 (56.9)	12 (20.7)	58 (19.3)	
Gender					
Male	46 (25.4)	78 (43.1)	57 (31.5)	181 (60.3)	0.006
Female	33 (27.7)	31 (26.1)	55 (46.2)	119 (39.7)	
Residence					
Urban	67 (24.1)	104 (37.4)	107 (38.5)	278 (92.7)	0.007
Rural	12 (54.6)	5 (22.7)	5 (22.7)	22 (7.3)	
Marital Status					
Single	29 (27.1)	41 (38.3)	37 (34.6)	107 (35.7)	0.206
Married	39 (23.2)	60 (35.7)	69 (41.1)	168 (56.0)	
Widowed or Divorced	11 (44)	8 (32.0)	6 (24.0)	25 (8.3)	
Educational Level					
Illiterate	10 (62.5)	4 (25.0)	2 (12.5)	16 (5.4)	0.001
Primary School	20 (54.1)	10 (27)	7 (18.9)	37 (12.3)	
Secondary School	26 (34.7)	26 (34.7)	23 (30.7)	75 (25.0)	
University or Higher education	23 (13.4)	69 (40.1)	80 (46.5)	172 (57.3)	
Occupation					
Student	13 (17.8)	25 (34.2)	35 (47.9)	73 (24.3)	0.001
Employed	28 (19.6)	50 (35)	65 (45.5)	143 (47.7)	
Unemployed	29 (60.4)	12 (25)	7 (14.6)	48 (16.0)	
Private Work	9 (25)	22 (61.1)	5 (13.9)	36 (12.0)	
Vaccination Against COVID-19					
Yes	56 (21.5)	99 (37.9)	106 (40.6)	269 (89.7)	0.001
No	23 (59)	10 (25.6)	6 (15.4)	31 (10.3)	

Regarding the overall attitude score, 240 (80%) had positive attitudes, and 60 (20%) had negative attitudes about the preventive measures of COVID-19 (Figure 3).
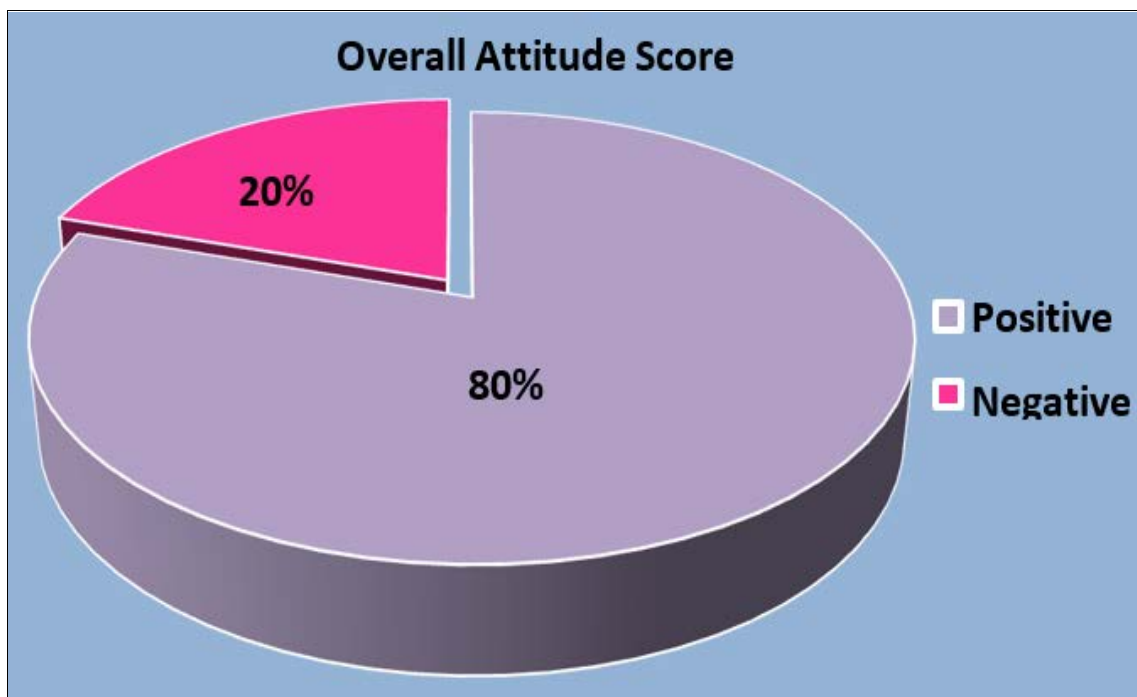

Fig 3: Overall attitude score towards the preventive measures for COVID-19

The result revealed that age had statistically significant impact on the attitude score (p-value = 0.021), the higher rate of positive attitude was identified among those who are at age of (40-49) years old. The results points to a significant associated between attitude score and residence, educational level and vaccination status (p-value = 0.011, 0.026, 0.006) respectively (Table 4).

Table 4: Distribution of the participants according to the attitude score and it`s association with Sociodemographic characteristics and vaccination status

Socio-demographic Characteristics	Attitude Score		Total (%) N=300	P-Value
	Positive (%) N=240	Negative (%) N=60		
Age (Years)				
< 30	122 (83.6)	24 (16.4)	146 (48.7)	0.021
30 - 39	38 (80.9)	9 (19.1)	47 (15.7)	
40 - 49	42 (85.7)	7 (14.3)	49 (16.3)	
≥ 50	38 (65.5)	20 (34.5)	58 (19.3)	
Gender				
Male	143 (79)	38 (21)	181 (60.3)	0.595
Female	97 (81.5)	22 (18.5)	119 (39.7)	
Residence				
Urban	227 (81.7)	51 (18.3)	278 (92.7)	0.011
Rural	13 (59.1)	9 (40.9)	22 (7.3)	
Marital Status				
Single	89 (83.2)	18 (16.8)	107 (35.7)	0.096
Married	135 (80.4)	33 (19.6)	168 (56.0)	
Widowed or Divorced	16 (64.0)	9 (36.0)	25 (8.3)	
Educational Level				
Illiterate	10 (62.5)	6 (37.5)	16 (5.4)	0.026
Primary School	26 (70.3)	11 (29.7)	37 (12.3)	
Secondary School	57 (76.0)	18 (24.0)	75 (25.0)	
University or Higher education	147 (85.5)	25 (14.5)	172 (57.3)	
Occupation				
Student	58 (79.5)	15 (20.5)	73 (24.3)	0.522
Employed	119 (83.2)	24 (16.8)	143 (47.7)	
Unemployed	36 (75.0.)	12 (25.0.0)	48 (16.0)	
Private Work	27 (75)	9 (25)	36 (12)	
Vaccination Against COVID-19				
Yes	221 (82.2)	48 (17.8)	269 (89.7)	0.006
No	19 (61.3)	12 (38.7)	31 (10.3)	

Out of the 300 participants, 203 (67.7%) were with good practices and the remaining 97 (32.3%) were with poor practices (Figure 4).
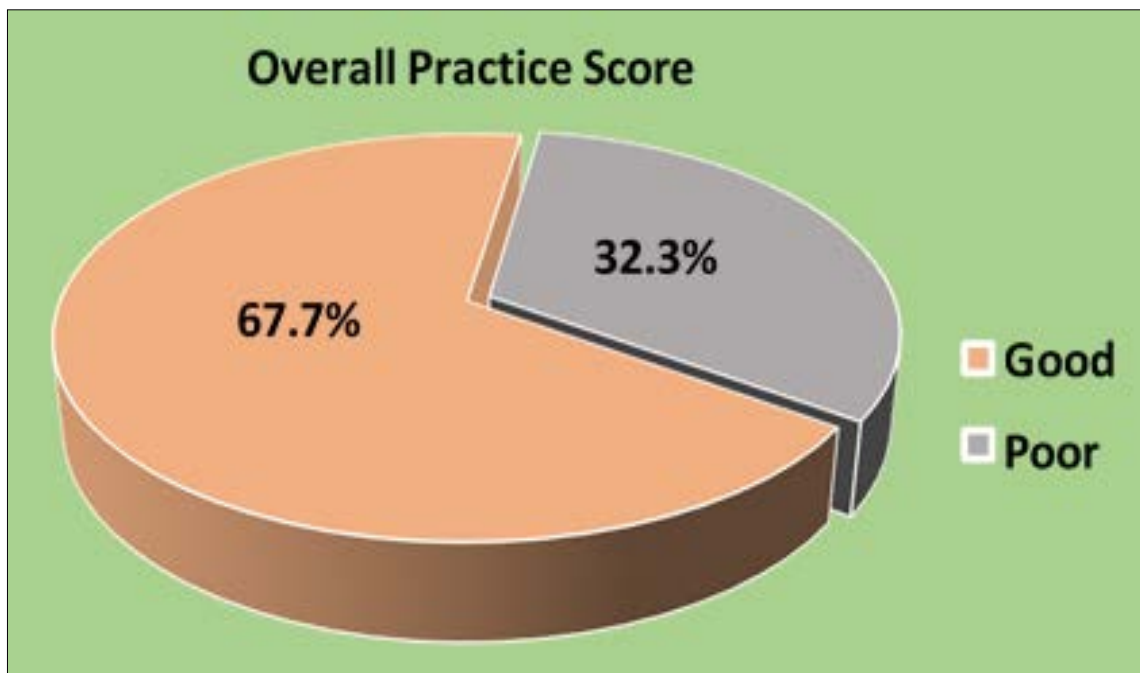

Fig 4: Overall practice score towards the preventive measures for COVID-19

In the present study, there was a statistically significant association between the participants 'knowledge level and their practices (p-value = 0.020). The proportion of good knowledge level was significantly higher among the participants who had good practices towards the preventive measures of COVID-19 (76.8%) (Table 5).

Table 5: Distribution of the participants by knowledge level and its association with practice level toward preventive measures of COVID-19

Knowledge Score	Practice Score		Total (%) N=300	P-Value
	Good (%) N=203	Poor (%) N=97		
Poor	46 (58.2)	33 (41.8)	79 (26.4)	
Fair	71 (65.1)	38 (34.9)	109 (36.3)	0.020
Good	86 (76.8)	26 (23.2)	112 (37.3)	

Discussion
The study's findings provide significant insights into the knowledge, attitudes, and practices (KAP) regarding COVID-19 prevention among participants in Al-Immamain Al-Kadhmain Medical City, Baghdad. The data suggest a diverse understanding and response to COVID-19 preventive measures, influenced by various Sociodemographic factors. Regarding Sociodemographic characteristics, the study's participants were predominantly male, urban residents, and mostly employed, with a significant portion having university-level education. These findings align with the study by Sebuufu et al. in Uganda, highlighting similar trends in demographics, though with differences in marital status. The younger age demographic, prevalent in this study, is crucial as it represents a significant portion of the workforce and active community members, potentially influencing the spread of COVID-19 [11]. Knowledge about COVID-19 varied among participants, with only a moderate percentage demonstrating awareness of the virus's incubation period, transmission modes, and effective preventive measures. This level of knowledge was notably lower than the findings in studies from Ethiopia, Saudi Arabia, and China (Bukata IT et al., 2022; Almalki MJ, 2021; Zhong BL et al., 2020) [13, 12, 14]. The disparity may be due to variations in public health campaigns and the population's access to accurate information. The attitudes of participants towards COVID-19 prevention showed a mix of compliance and skepticism. While a majority agreed with the effectiveness of isolation, mask-wearing, and avoiding crowded places, there was less agreement on other preventive measures like avoiding public transport and maintaining social distancing. These findings are somewhat consistent with studies from Ethiopia, Saudi Arabia, and China but show a lower level of agreement on certain measures [12, 14]. Cultural differences, public health policies, and the prevalence of COVID-19 in each region could contribute to these variances. The source of information about COVID-19 primarily included healthcare workers and social media, differing from the findings in Ethiopia, Uganda, Saudi Arabia, and Ghana, where social media was a more dominant source [11, 14, 15]. This highlights the significant role of healthcare professionals in disseminating information in Iraq, potentially reflecting the Iraqi Ministry of Health's efforts. The association between Sociodemographic characteristics and knowledge, attitude, and practice scores was evident. Factors such as age, gender, residence, educational level, and employment status significantly influenced the participants' knowledge level, consistent with studies from China and Saudi Arabia [12, 14]. This underlines the importance of tailored public health messaging and interventions targeting specific demographic groups. Practices towards COVID-19 prevention varied, with a significant portion of participants adhering to mask-wearing and hand washing but less compliance in other areas like avoiding gatherings and public transport. These practices were influenced by the participants' education level, suggesting the need for continued education and awareness campaigns. Overall, the study underscores the complexity of managing a public health crisis like COVID-19, where

knowledge, attitudes, and practices are influenced by a multitude of factors. Continued efforts in public health education, targeted messaging, and policy interventions are crucial to enhance adherence to preventive measures, ultimately controlling the spread of COVID-19.

Conclusion
The study revealed that most participants had fair to good knowledge, a positive attitude, and good practice regarding COVID-19 prevention measures. There was a significant correlation between participants' knowledge and various factors such as age, gender, residence, education, occupation, and vaccination status. Attitudes towards COVID-19 preventive measures were significantly associated with age, residence, educational level, and vaccination status. Notably, participants with a higher level of knowledge were more likely to engage in good practices related to COVID-19 prevention.

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