Original Article

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Mothers' plan to protect their children from COVID-19 and other viral illnesses

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ABSTRACT

Background: Mothers play a critical role in safeguarding the health and well-being of their children—a vulnerable population—particularly during outbreaks of infectious diseases. **Aim**: This study investigated the strategies employed by mothers to protect their children from COVID-19 and other viral illnesses. **Methods**: A cross-sectional study was conducted at the outpatient pediatric clinics of Basra Maternity and Children Hospital and Almawani Teaching Hospital, 118 mothers were enrolled from diverse backgrounds. Data was collected through structured interviews and a standardized questionnaire designed to assess maternal practices, attitudes, and experiences concerning the protection of their children. The key areas explored included hygiene practices, adherence to public health guidelines, and access to healthcare services. **Results**: Most participating mothers were between 20 and 40 years of age (79.66%), had attained a college education or higher (54.23%), and were primarily housewives (56.77%). Among the reported protective behaviors, 91.5% of mothers used hand sanitizers containing at least 60% alcohol, 75.4% cleaned and disinfected household objects and surfaces, and 60.16% frequently washed their hands with soap and water. Additionally, 94.91% communicated with family and friends solely through social media rather than in-person visits. A total of 66.94% avoided contact with individuals exhibiting flu-like symptoms, while 81.35% provided their children with information and health instructions regarding viruses. Furthermore, 71.4% reported preparing a sufficient supply of prescription medications for chronically ill children during the lockdown period. **Conclusion**: A positive association was found between the mothers' level of education and certain preventive behaviors, such as disinfecting household surfaces, educating their children about viruses, and adhering to quarantine practices during the pandemic. However, no significant relationship was observed between education level and behaviors such as hand washing, sterilizing, avoiding sick individuals, or preparing a list of hospitals. This study's findings provide valuable insights for developing evidence-based recommendations targeted at mothers, healthcare professionals, and policymakers. These results support the need for tailored educational programs and resources to enhance caregiver preparedness and protect children's health during future infectious disease outbreaks.

Keywords: mother's plan, COVID-19, viral illnesses, children, Iraq

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INTRODUCTION

The outbreak of the COVID-19 pandemic posed a significant threat to global public health, resulting in devastating consequences for individuals and communities worldwide. The structural and virulent characteristics of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), along with its

rapid transmission, have raised substantial global concerns regarding both physical and mental health.[1] The primary modes of transmission of COVID-19 are respiratory droplets and direct contact with contaminated surfaces or individuals.[2] Although many children infected with the virus remain asymptomatic, studies have shown that they may carry high viral loads in the nasopharynx, contributing to the risk of silent transmission.[3]

Children can contract COVID-19 and develop symptoms within approximately 2–14 days following exposure. However, these symptoms are generally mild. Common manifestations include flu-like symptoms such as fever, cough, and nasal congestion. Additional symptoms may involve shortness of breath, chest pain or pressure, muscle or body aches, headache, and loss of taste or smell. Gastrointestinal symptoms such as vomiting and diarrhea are also reported, particularly in younger children, while infants may present with feeding difficulties.[4]

Symptoms that warrant urgent medical attention include difficulty breathing, rapid or shallow breathing, grunting, difficulty breastfeeding, cyanosis (blue lips or face), chest pain or pressure, confusion, and decreased responsiveness or lack of interaction. In severe cases, complications may include cardiac injury, respiratory failure, acute respiratory distress syndrome (ARDS), and potentially death.[5]

The rapid transmission of the virus, coupled with its significant health consequences in 2020, has necessitated the implementation of various preventive measures to reduce its spread. The World Health Organization (WHO) has strongly recommended a range of preventive strategies, including frequent hand washing, maintaining social distancing, avoiding public gatherings, and utilizing personal protective equipment (PPE), such as face masks.[6,7] Mothers play a critical role in protecting the health of their children, who are considered a vulnerable population. Numerous mothers have taken proactive measures to safeguard their children from COVID-19 and other viral infections by closely monitoring their behavior, encouraging proper respiratory hygiene, and vigilantly watching for flu-like symptoms.[7]

The present study aims to investigate the strategies employed by mothers to protect their children from COVID-19 and other viral illnesses, highlighting the various approaches adopted and evaluating their effectiveness in preventing the transmission of these infectious diseases. Through this research, we seek to identify common patterns and trends among mothers in their efforts to safeguard their children. This study's findings will provide valuable insights into the efficacy of different preventive strategies and inform public health initiatives and interventions designed to enhance the protection of children against COVID-19 and other viral infections.

MATERIALS AND METHODS

Study Design

To investigate the strategies employed by mothers to protect their children from COVID-19 and other viral illnesses, a cross-sectional study design was employed.

Study Population

A total of 118 mothers, each with at least one child over the age of five, were recruited. Participants were selected from diverse socioeconomic backgrounds, regions, and cultural settings to ensure a representative sample. Prior to the main study, a pilot study involving 20 mothers was conducted to assess the clarity and feasibility of the data collection tool.

Data Collection

The study was conducted at the outpatient pediatric clinics of the Basra Maternity and Children Hospital and Almawani Teaching Hospital. Data were collected through structured interviews using questionnaires specifically developed for this study. Researchers conducted the interviews, which included standardized questions regarding mothers' practices, experiences, and attitudes toward protecting their children from viral illnesses. The questionnaires covered demographic and contextual variables such as mothers' age, occupation, education level, number of children, household size, presence of elderly family members (> 70 years), presence of children with chronic diseases, hygiene practices, adherence to public health guidelines, and access to healthcare services.

Data Analysis

The quantitative data obtained from the questionnaires were analyzed and presented in terms of frequencies and percentages. The chi-square test

was employed to examine associations between variables, with a P-value of less than 0.05 considered statistically significant.

RESULTS

Table 1 presents the demographic characteristics of the study population. Most mothers (79.66%) were aged between 20 and 40 years. Over half of the participants had attained a college education or higher (54.23%), and more than half were housewives (56.77%), while only 2.54% were healthcare providers. Regarding household size, 50% of families had fewer than five members, 44.06% had 5–10 members, and 5.94% had more than 10 members. Most families (61.86%) had between two and five children, 22.88% had only one child, and 15.26% had more than five children. Additionally, 72% of families included an elderly member, categorized as a high-risk group.

Table 1: Characteristics of the study population.

Character	Number (N = 118)	%
Mother's age (years)		
< 20	1	0.85
20–40	94	79.66
> 40	23	19.49
Education		
Never been to school	6	5.08
Primary	26	22.03
Secondary	22	18.64
College & above	64	54.23
Occupation		
Housewife	67	56.77
Government employee	35	29.66
Teacher	10	8.47
Health care provider	3	2.54
Private sector employee	3	2.54
No. of family members		
< 5	59	50
5–10	52	44.06
> 10	7	5.94
No. of children		
One	27	22.88
2–5	73	61.86
> 5	18	15.26

Table 2 summarizes the protective measures adopted by mothers against COVID-19 infection. A significant 94.91% of mothers limited communication with family and friends to social media platforms, avoiding in-person visits during the pandemic especially when the number of cases started to increase in Iraq from February to April 2020. Additionally, 91.5% of participants reported using hand sanitizers containing at least 60% alcohol for a minimum of 20 seconds. Approximately 81.35% provided their children with information about viruses and infection prevention. Three-quarters of the mothers (75.4%) regularly cleaned and disinfected frequently touched objects and surfaces, such as doorknobs, tables, TV remotes, and desks, within their homes. Furthermore, 66.94% avoided contact with individuals exhibiting flu-like symptoms or fever, and 60.16% practiced thorough and continuous hand washing with soap and water. Notably, fewer than one-quarter of mothers (24.57%) prepared a list of hospitals and organizations to contact when medical assistance was needed.

Table 2: Mother's protective measures against COVID-19 (N=118).

Protective measures	Number (%) Yes	Number (%) No
Thorough & continuous hand washing with soaps and water	71 (60.16)	47(39.83)
Use hand sanitizer containing at least 60% alcohol, for at least 20 seconds	108 (91.5)	10 (8.47)
Clean and disinfect objects and surfaces (doorknobs and handles, tables, TV remotes, desks, etc.)	89 (75.4)	29 (24.6)
Avoid contact with persons with fever or flu-like symptoms	79 (66.94)	39 (33.05)
Preparing a list of hospitals & organizations to resort to them when needed	29 (24.57)	89 (75.43)
Providing children with information about the viruses	96 (81.35)	22 (18.65)
Communicate with family and friends only through social media vs. visiting them	112 (94.91)	6 (5.08)

Figure 1 illustrates the participants' adherence to quarantine during the COVID-19 pandemic. The results indicate that nearly half of the mothers (48%) stayed at home most of the time throughout the period. Additionally, 35% reported staying at home all the time, while 17% stayed at home only occasionally. Figures 2 and 3 depict, respectively, the prevalence of children with chronic diseases within families and the

preparedness of mothers in securing an adequate supply of medication during the lockdown period. It was found that 28.2% of families had at least one child who had been previously diagnosed with a chronic disease. Furthermore, 71.4% of mothers reported having stocked enough medication to last several weeks for potential use during the lockdown.

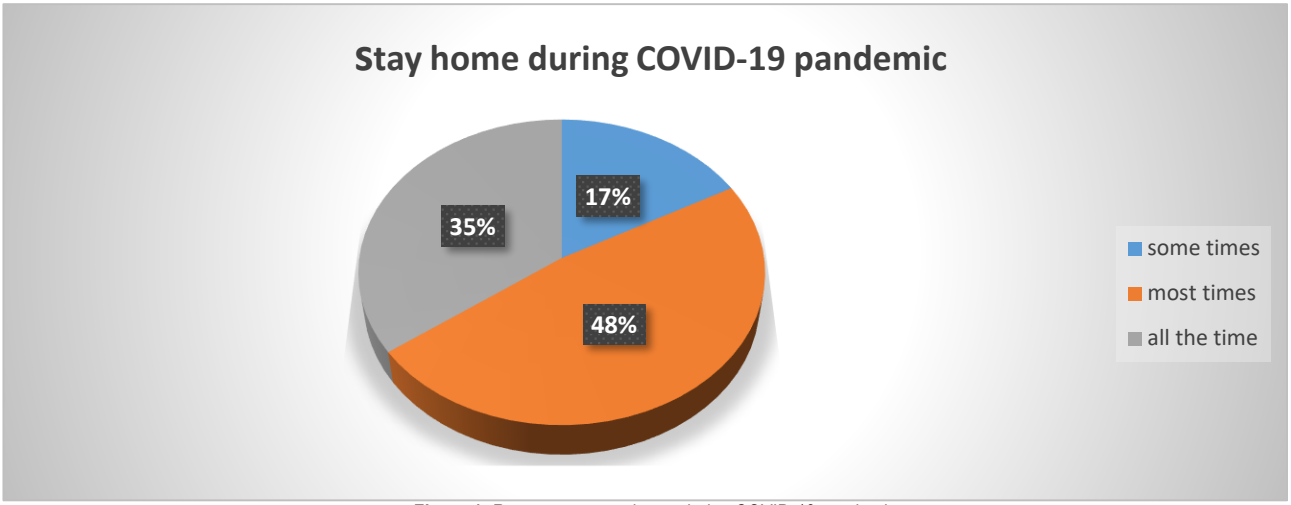

Figure 1: Response to stay home during COVID-19 pandemic

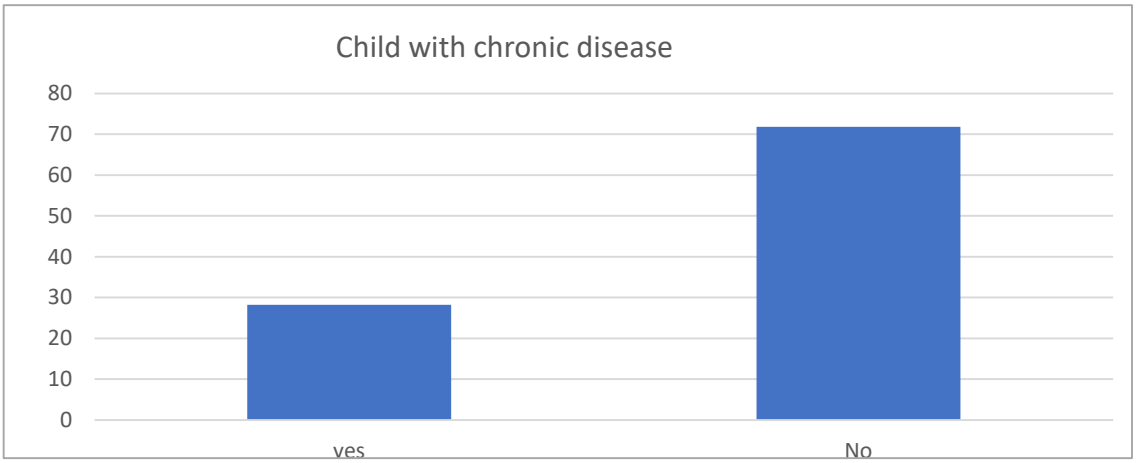

Figure 2: Presence of a child with chronic disease within the family.

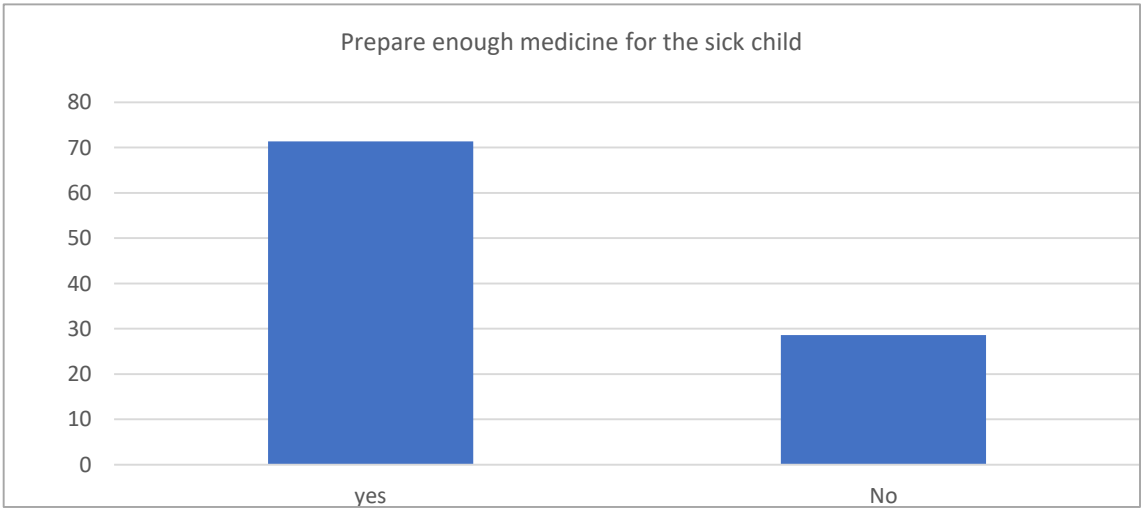

Figure 3: Prepare enough medicine to the sick child during the pandemic.

Table 3 presents the educational measures implemented to teach children how to protect themselves against COVID-19 infection. A significant majority of children (77.11%) consistently used face masks. Additionally, 65.26% frequently washed their hands with soap and water throughout the day, and 57.62% avoided contact with individuals exhibiting fever or flu-like symptoms. More than half of the children (55.09%) avoided close household contact with family members considered high-risk (e.g., those over 65 years of age or with chronic conditions such as lung disease, asthma, diabetes mellitus, or cardiovascular and kidney diseases). A similar proportion (54.24%) properly disposed of used tissues, washed their hands immediately after coughing or sneezing, coughed or sneezed into their elbows, and frequently used alcohol-based hand sanitizers. Moreover, 53.38% avoided touching their nose, mouth, or eyes.

Table 4 illustrates the relationship between mothers' level of education and the protective measures undertaken to safeguard their children from COVID-19 and other viral illnesses. A statistically significant positive association was observed between mothers' education level and their practice of disinfecting objects and surfaces (P = 0.0385), providing their children with information about the virus (P = 0.0078), and staying at home during the pandemic (P = 0.0228). However, no significant associations were found between education level and other preventive measures, including handwashing and sanitizer use, avoiding contact with sick individuals, and preparing a list of hospitals, with P-values of 0.3429, 0.6607, 0.2171, and 0.8851, respectively.

Table 3: Education of children to protect themselves against COVID-19.

Protective measures	Number (%) Yes	Number (%) No
Frequent washing of their hands with soap and water throughout the day	77 (65.26)	41 (34.74)
Clean hands frequently with alcohol-based hand rub	64 (54.24)	54 (45.76)
Dispose of used tissues properly and wash hands immediately after cough or sneeze; cough or sneeze into the elbow	64 (54.24)	54 (45.76)
Avoid touching their nose, mouth, or eyes	63 (53.38)	55 (46.62)
Wearing face masks	91 (77.11)	27 (22.89)
Avoid contact with persons with fever or flu-like symptoms	68 (57.62)	50 (42.38)
Avoid household contact with family members at high-risk	65 (55.09)	53 (44.91)

Table 4: The relation between mother's level of education and protective measures against COVID-19.

Protective measure	No education		Primary level		Secondary Level		College & above		P-value
	Yes	No	Yes	No	Yes	No	Yes	No	
Thorough & continuous hand washing with soaps and water.	2 33%	4 67%	15 58%	11 42%	16 73%	6 27%	38 59%	26 41%	0.3429
Use hand sanitizer containing at least 60% alcohol, for at least 20 seconds	5 83%	1 17%	24 92%	2 8%	21 95%	1 5%	58 91%	6 9%	0.6607
Clean and disinfect objects and surfaces.	5 83%	1 17%	25 96%	1 4%	15 68%	7 32%	44 69%	20 31%	0.0385
Avoid contact with persons with fever or flu-like symptoms	2 33%	4 67%	19 73%	7 27%	13 59%	9 41%	45 70%	19 30%	0.2171
Preparing a list of hospitals & organizations to resort to them when needed	1 17%	5 83%	6 23%	20 77%	5 23%	17 77%	17 27%	47 73%	0.8851
Providing children with information about the viruses	5 83%	1 17%	17 65%	9 35%	15 68%	7 32%	59 92%	5 8%	0.0078
Communicate with family and friends only through social media Vs visiting them	5 83%	1 17%	25 96%	1 4%	19 86%	3 14%	63 98%	1 2%	0.0228

DISCUSSION

This study investigates the strategies employed by mothers to protect their children from COVID-19 and other viral infections. A total of 118 mothers participated in the study, with the majority (79.66%) aged between 20 and 40 years. The findings revealed that more than half of the participants(54.23%) had attained a college education or higher. However, despite their educational qualifications, over half of the mothers (54.23%) were housewives, while only 2.54% were employed in the healthcare sector. Maternal education may have influenced their level of engagement, understanding of health-related information, ability to transmit that information to their children, and adherence to public health guidelines during the COVID-19 pandemic. . Furthermore, the findings indicate that maternal employment status is not necessarily correlated with educational attainment. This result contradicts a similar cross-sectional study conducted in 2020 at a private gynecology and obstetrics clinic in Baghdad, Iraq, which assessed the knowledge and practices of pregnant women regarding COVID-19 preventive measures. Most participants (50.5%) were aged between 20 and 29 years, but their knowledge score was found to be inadequate.[8] In the present study, half of the families consisted of fewer than five members, and most families (61.86%) had between two and five children, this finding considered as a low risk of overcrowding. Additionally, 72% of the households included at least one elderly person, who considered to be at high risk of COVID-19 infection during the pandemic.

In terms of protective measures adopted by mothers against COVID-19, the current study revealed that a significant proportion (94.91%) preferred to maintain social contact with family and friends exclusively through social media rather than in-person visits during the pandemic. Additionally, 91.5% of the respondents reported using hand sanitizers containing at least 60% alcohol for a minimum of 20 seconds as a preventive measure. These findings are consistent with those reported by a study conducted in the Sinna Urani area of Batticaloa, Sri Lanka, where 99.3% of mothers adhered to the practice of washing hands with soap and water for at least 20 seconds as a primary strategy for COVID-19 prevention. Furthermore, 95.1% of the Sri Lankan mothers acknowledged that frequent use of alcohol-based hand sanitizers contributes to the prevention of COVID-19 transmission.[9] The consistency

between these findings underscores the widespread adoption of WHO-recommended hygiene practices among mothers in both settings, despite cultural and contextual differences.

The current study also found that 81.35% of mothers provided their children with information about viruses, and nearly 75.4%reported cleaning and disinfecting frequently touched household surfaces such as doorknobs, handles, tables, TV remotes, and desks. Additionally, 66.94%avoided contact with individuals exhibiting fever or flu-like symptoms and practiced thorough hand washing with soap and water. Regarding preventive strategies, 48% of mothers reported staying at home most of the time, 35% reported staying at home all the time, and 17% reported staying at home occasionally. These findings align with those reported by a cross-sectional study carried out on a pregnant women in Abakaliki, Nigeria, where 60.9% of the participants had adequate knowledge of preventive measures against COVID-19. However, the study noted that 69.7% of participants did not practice these preventive measures effectively. Factors such as age, marital status, parity, rural residence, and lack of formal education were associated with poor practice of preventive measures.[10]

Similarly, a study conducted in the Kurdistan region of Iraq found that while participants exhibited high levels of knowledge and practice regarding COVID-19 prevention, attitudes were more varied. The study highlighted the importance of addressing both knowledge and attitudes to improve preventive practices.[11] In contrast, the current study's findings suggest that mothers in Iraq demonstrated a proactive approach to protecting their children from COVID-19, with high levels of information dissemination and adherence to hygiene practices. The variation in attitudes observed in the Kurdistan region study may reflect regional differences within Iraq, underscoring the need for tailored public health interventions that consider local contexts and cultural factors. These comparative findings also highlight the importance of not only providing accurate information but also fostering positive attitudes toward preventive measures to enhance public health outcomes.

Approximately 28.2% of families had at least one child diagnosed with a chronic illness, prompting heightened vigilance during the pandemic. Notably, 71.4% of mothers reported stocking an adequate supply of prescription medications during the lockdown. Additionally, 77.11% regularly used face masks and practiced frequent hand washing with soap and water. A substantial number(57.62%) avoided contact with symptomatic individuals and followed proper hygiene protocols such as using alcohol-based sanitizers, properly disposing used tissues, and observing respiratory etiquettes such sneezing or coughing into the elbow. A total of 80.7% mothers ensured that their children avoided touching their eyes, nose, and mouth after mask contact, and all mothers (100%) acknowledged the importance of mask-wearing when outside.

Importantly, there was a statistically significant relationship between the mother's educational level and preventive practices such as disinfecting surfaces (P = 0.0385), educating their children about the virus (P = 0.0078), and choosing to stay home during the pandemic (P = 0.0228). However, no significant associations were found between education level and practices such as hand washing, avoiding sick individuals, or preparing a list of nearby hospitals. These findings align with a cross-sectional survey that was conducted during the initial weeks of lockdown in Bangladesh, which indicated that younger, more educated women exhibited higher knowledge levels.[12] Similarly, a cross-sectional survey from seven low- and middle-income countries carried observed considerable international variation in COVID-19-related knowledge, with women in the Democratic Republic of Congo demonstrating lower awareness levels compared to women in other study locations.[13]

Moreover, the current study supports a cross-sectional online survey distributed among pregnant women in Bangkok, Thailand, which reported that pregnant women demonstrated adequate knowledge and strong adherence to preventive practices.[14] However, it contrasts with the systematic review and meta-analysis study that was carried out on pregnant women in Ethiopia, which concluded that pregnant women generally exhibited low knowledge, attitudes, and practices regarding COVID-19 prevention.[15] These varying results highlight the critical influence of context, resources, and education on public health behavior. The current study underscores that maternal education significantly impacts the extent and

effectiveness of home-based protective strategies, especially when children are involved. Nonetheless, inconsistencies with some studies suggest that further investigation is needed to explore how cultural, economic, and policy factors mediate this relationship.

During the COVID-19 pandemic, the use of PPE became a critical component of infection prevention and control within medical practice. In response to the evolving situation, the WHO issued updated guidelines and recommendations regarding the appropriate use of PPE. Furthermore, the WHO explicitly advises against several practices, including the reuse of PPE, the use of gloves in settings where they are not required, the wearing of a medical mask over a respirator, and the substitution of non-medical masks for medical masks or respirators.[16] In contrast to the current study, which focused on protective behaviors adopted by mothers in domestic settings rather than clinical environments, the participants—although not directly involved in medical practice—demonstrated behavioral adaptations that reflected a strong alignment with general public health principles. High rates of hand hygiene were reported, including the use of alcohol-based hand sanitizers and frequent hand washing with soap and water, which supports WHO's emphasis on basic infection control. The participants also took notable preventive measures, such as avoiding contact with symptomatic individuals and maintaining physical distancing through virtual communication, underscoring a conscientious approach to minimizing transmission risks. Although these behaviors align with broader WHO guidelines on COVID-19 prevention, they do not directly engage with the specific PPE protocols outlined for clinical environments. This comparison highlights the contextual differences between public and healthcare responses, suggesting that while non-professional populations may not engage with PPE in the same structured manner as healthcare workers, they nonetheless play a vital role in pandemic mitigation through accessible and WHO-consistent hygiene and distancing practices.

CONCLUSIONS

The study concludes that mothers within the sample population demonstrated a high level of commitment to protecting their children during the COVID-19 pandemic, primarily through effective hygiene practices and education. These behaviors were significantly associated with the mothers' educational levels. The findings can inform evidence-based recommendations for health education initiatives, encourage maternal involvement in public health, and support policy development aimed at enhancing family preparedness for future outbreaks.

Limitations

The study's limitations include its cross-sectional design and relatively limited sample size, which may affect the generalizability of findings. Future studies employing longitudinal approaches and larger, more diverse samples are recommended.

Ethical Considerations

Ethical approval was obtained from the Scientific Committee of Al-Zahraa College of Medical, University of Basrah, prior to the commencement of the study. Verbal informed consent was acquired from all participants after explaining the study objectives, ensuring confidentiality, and emphasizing the voluntary nature of participation.

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