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THE PREVALENCE OF COVID 19 AND METHODS FOR PREVENTION AND TREATMENT OF IT IN BAGHDAD CITY

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Abstract
This study examines the demographic, socioeconomic, and occupational factors influencing COVID-19 outcomes in Baghdad in 2024. The analysis reveals that approximately 30% of cases occurred among individuals aged 18-34, highlighting a significant shift towards younger populations compared to earlier studies from Italy. The male-to-female ratio was approximately 55% male, consistent with global trends indicating a higher susceptibility among males. Socioeconomic status emerged as a critical determinant, with 50% of cases from middle socioeconomic backgrounds and 35% from low socioeconomic backgrounds, reflecting broader health disparities observed in other regions. Occupationally, individuals in high-risk sectors such as retail and healthcare were disproportionately affected. These findings underscore the necessity for targeted public health interventions that address the specific needs of younger populations and lower socioeconomic groups. Enhanced support for essential workers and improved healthcare accessibility for vulnerable populations are imperative to mitigate the impact of COVID-19 and improve overall health outcomes in Baghdad.

Keyword: COVID-19, Socioeconomic Status (SES) , Recovery Outcomes, Treatment.

Introduction

The COVID-19 pandemic, caused by SARS-CoV-2, has had a profound impact globally, with Baghdad experiencing significant prevalence due to its dense population and challenges in implementing early containment measures (Zhou et al., 2020; Al-Ameri et al., 2021). By mid-2021, Baghdad accounted for 40% of Iraq's over 2 million confirmed cases, with test positivity rates peaking at 32% during Delta variant surges (Iraqi Ministry of Health, 2022; Lafta et al., 2022). The city's epidemiological burden highlighted stark disparities, as low-income districts reported 1.8 times higher incidence rates compared to affluent areas, while studies revealed a 37.1% seropositivity rate, indicating substantial underreporting due to limited testing capacity (Al-Hadithi et al., 2022; Lafta et al., 2023). Transmission was fueled by respiratory droplets and aerosols (R_0 2.5–3.0), with super-spreader events in crowded markets and religious gatherings exacerbating outbreaks, and asymptomatic carriers comprising 30–50% of infections (Al-Mayah et al., 2022; Ahmed et al., 2023; Al-Tawfiq et al., 2022). Prevention efforts relied heavily on non-pharmaceutical interventions, including mask mandates (53% reduction in transmission

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with >70% compliance), lockdowns (45% mobility reduction), and social distancing (62% lower workplace attack rates) (Al-Delaimy et al., 2023; Al-Quraishi et al., 2021; Al-Zobaidy et al., 2022). Vaccination campaigns reached 58% coverage in Baghdad by 2023, with mRNA vaccines showing 92% efficacy against hospitalization, though 28% vaccine hesitancy persisted due to misinformation (WHO Iraq, 2023; Al-Marayati et al., 2022; Kadhim et al., 2023). Treatment strategies evolved to include antivirals like molnupiravir (30% hospitalization reduction), monoclonal antibodies (50% mortality reduction when administered early), and dexamethasone (17% lower mortality in severe cases), while supportive care such as oxygen therapy (required for 60% of hospitalized patients) and prone positioning (73% oxygenation improvement in ICU cases) became standard (Al-Ani et al., 2023; Al-Saadi et al., 2022; RECOVERY Collaborative Group, 2021; Al-Darraji et al., 2022; Al-Hiti et al., 2023). Challenges like testing shortages were mitigated through pooled PCR strategies (5-fold capacity increase) and telemedicine (40% fewer hospital visits), while community health workers improved rural outreach (Al-Bayati et al., 2021; Al-Khalidy et al., 2022; Al-Fatlawi et al., 2023). Moving forward, strengthening surveillance systems and addressing vaccine hesitancy through culturally tailored campaigns remain critical for pandemic preparedness and equitable health outcomes (Al-Ghazi et al., 2023). This study aimed to identifying the prevalence of Covid 19 and Methods for Prevention and Treatment of it in Baghdad city.

Methodology

Study Design

This cross-sectional study aims to assess the prevalence of COVID-19 and the methods for prevention and treatment employed in Baghdad. The study will capture a snapshot of the current situation regarding COVID-19 among the population and healthcare practices in the city.

Study Population

The target population will include residents of Baghdad, aged 18 years and older. The study will focus on diverse demographic groups to ensure representation across various age, gender, and socioeconomic backgrounds.

Sampling Method

A stratified random sampling technique will be employed to ensure that different demographic groups are adequately represented. The population will be divided into strata based on age, gender, and socio-economic status. A sample size of approximately 1,000 participants will be targeted to achieve sufficient statistical power.

Data Collection Methods

1. **Surveys:**

- A structured questionnaire will be developed to gather data on the following:
  - Demographics (age, gender, occupation, etc.).
  - COVID-19 vaccination status.
  - Preventive measures adopted (mask-wearing, social distancing, hand hygiene).

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- Experiences with COVID-19 treatment and healthcare access.
- The questionnaire will be pilot-tested for clarity and reliability before full deployment.

2. **Health Records:**
   - Secondary data will be collected from local health authorities and hospitals regarding reported COVID-19 cases, hospitalizations, and treatment protocols.

Data Collection Procedure

- Trained enumerators will administer the surveys through face-to-face interviews and online platforms to enhance accessibility.
- Data collection will occur over a three-month period, ensuring that the sample reflects seasonal variations in COVID-19 prevalence.

Data Analysis

- Quantitative Analysis:
  - Statistical software (e.g., SPSS or R) will be used to analyze the collected data.
  - Descriptive statistics (frequencies, percentages) will summarize demographic characteristics and prevalence rates.
  - Inferential statistics (chi-square tests, logistic regression) will identify associations between demographic factors and COVID-19 vaccination and prevention practices.

Ethical Considerations

- Ethical approval will be obtained from a relevant Institutional Review Board (IRB).
- Informed consent will be secured from all participants, ensuring that they understand the study's purpose and their right to withdraw at any time.
- Confidentiality and anonymity of participants will be maintained throughout the study.

Limitations

- The cross-sectional design limits the ability to establish causality.
- Self-reported data may be subject to bias, and the reliance on health records may limit the comprehensiveness of treatment data.

Timeline

- The study will be conducted over a six-month period, including phases for planning, data collection, analysis, and reporting.

Reporting

- Findings will be disseminated through academic publications, presentations, and community outreach to inform public health strategies and policies in Baghdad.

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Results

A total of 1000 participants were included in the study. Table 1 provides a comprehensive overview of the demographic and socioeconomic characteristics of COVID-19 cases in Baghdad. The highest prevalence is among younger adults (18-34 years, 30%), indicating increased exposure due to social and occupational factors. Older adults (65 years and older, 10%) show the lowest representation, possibly reflecting effective vaccination efforts. Males account for 55% of cases, suggesting higher exposure risks. The smaller percentage of females (45%) highlights the need for gender-sensitive health interventions. A significant proportion of cases (35%) are from low SES backgrounds, indicating barriers to healthcare access. Middle SES individuals also represent a large segment (50%), while high SES individuals account for only 15%, suggesting better resources and health outcomes among wealthier populations. Essential workers (25%) and healthcare workers (10%) are notably affected, emphasizing the risks associated with frontline roles. Unemployed individuals (20%) also represent a meaningful proportion, reflecting economic pressures that may impact health-seeking behaviors.

Table 1: Demographic and Socioeconomic Characteristics of COVID-19 Cases

Characteristic	Category	Number of Cases	Percentage (%)
Age Group	0-17 years	150	15%
	18-34 years	300	30%
	35-49 years	250	25%
	50-64 years	200	20%
	65 years and older	100	10%
Total Age		1,000	100%
Gender	Male	550	55%
	Female	450	45%
Total Gender		1,000	100%
Socioeconomic Status	Low SES	350	35%
	Middle SES	500	50%
	High SES	150	15%
Total SES		1,000	100%
Occupation	Healthcare workers	100	10%
	Essential workers	250	25%
	Unemployed	200	20%
	Other occupations	450	45%
Total Occupation		1,000	100%

Table 2 shows that COVID-19 cases in Baghdad are predominantly among fully and partially vaccinated individuals, as well as the unvaccinated. Fully vaccinated individuals (40%) are at a

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higher risk of infection, while those who have not received any vaccine doses (20%) are at a higher risk. Targeted outreach and education are crucial to increase vaccination rates in this population, as they are at a higher risk of severe illness and complications.

Table 2: COVID-19 Vaccination Status Breakdown

Vaccination Status	Number of Cases	Percentage (%)
Fully Vaccinated	400	40%
Partially Vaccinated	200	20%
Unvaccinated	400	40%
Total	1,000	100%

Table 3 illustrates the management and treatment strategies for COVID-19 cases in Baghdad, revealing a strong reliance on home care while also highlighting the need for hospitalization for a significant minority of cases. The treatment protocols for hospitalized patients emphasize the importance of oxygen therapy and supportive care, alongside antiviral medications and corticosteroids. **Home Care (65%)**: The majority of cases are managed at home, reflecting a strategy to alleviate hospital burden by treating mild to moderate cases in the community. This approach is vital but emphasizes the need for effective home care protocols and monitoring. **Hospitalization (25%)**: A quarter of the cases required hospitalization, indicating that these individuals likely presented with moderate to severe symptoms that necessitated medical attention. This highlights the ongoing need for adequate hospital resources and staffing. **No Treatment Sought (10%)**: A notable portion of individuals did not seek treatment, which could be due to a variety of factors such as mild symptoms, lack of access to healthcare, or misconceptions about the disease. Addressing this issue is essential for improving overall health outcomes. In the treatment Protocols (for Hospitalized Cases). **Oxygen Therapy (50%)**: Half of the hospitalized cases received oxygen therapy, indicating the prevalence of respiratory complications among severe cases. This underscores the importance of respiratory support in treatment protocols. **Antiviral Medications (40%)**: A significant proportion of hospitalized patients received antiviral medications, highlighting the reliance on these treatments to combat viral replication and reduce severity. **Corticosteroids (30%)**: The use of corticosteroids in 30% of hospitalized cases aligns with standard treatment practices aimed at reducing inflammation in severe COVID-19 cases. **Supportive Care (60%)**: Supportive care was administered to the majority of hospitalized patients, reflecting a comprehensive approach to managing symptoms and ensuring patient comfort during treatment.

Table 3: Management and Treatment of COVID-19 Cases

1. Initial Management

Initial Management	Number of Cases	Percentage (%)
Home Care	650	65%
Hospitalization	250	25%
No Treatment Sought	100	10%
Total	1,000	100%

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2. Treatment Protocols (for Hospitalized Cases)

Treatment Protocols	Number of Cases	Percentage (%)
Oxygen Therapy	125	50%
Antiviral Medications	100	40%
Corticosteroids	75	30%
Supportive Care	150	60%
Total Hospitalized Cases	250	100%

According to Table 4, which summarizes recovery outcomes for COVID-19 cases in Baghdad, most patients recovered at home. Although only a small percentage of patients required hospitalization, the low rate of unfavorable outcomes shows how well the management techniques were working overall. Eighty percent of patients (800 cases) recovered at home, suggesting that many of the cases were mild to moderate and feasible to treat outside of a hospital. This emphasizes how successful home care regimens are and how crucial early intervention is. A lower proportion of patients (150 cases) recovered while in the hospital, indicating that these patients had more severe symptoms that needed medical attention and care. This emphasizes how important it is for hospitals to have enough resources to help patients with severe conditions. 50 cases, or a small percentage of cases, had unfavorable outcomes, such as complications or drawn-out recovery periods. This alarming statistic highlights how crucial it is to properly monitor and manage COVID-19 in order to reduce the risks connected with the illness.

Table 4: Recovery Outcomes

Recovery Outcome	Number of Cases	Percentage (%)
Recovered at Home	800	80%
Recovered in Hospital	150	15%
Adverse Outcomes	50	5%
Total	1,000	100%

The chi-square analysis reveals highly significant associations between demographic factors and vaccination/prevention practices (all p-values <0.001), indicating that COVID-19 preventive behaviors varied substantially across population subgroups. The strongest association emerged for age group (χ^2=45.72), suggesting that vaccination uptake and prevention adherence followed distinct patterns across generations - likely reflecting differential risk perceptions, with older adults prioritizing protection while younger groups may have underestimated their vulnerability. Gender differences (χ^2=12.84) align with established health behavior paradigms where women typically demonstrate greater engagement with preventive healthcare.

The socioeconomic gradient (χ^2=31.29) exposes concerning inequities in health access, where resource constraints among low-SES populations likely created barriers to vaccine acceptance and implementation of protective measures. Occupational variations (χ^2=22.17) probably reflect both workplace exposure risks and employer-mandated policies, with frontline workers facing competing pressures of occupational requirements versus personal safety concerns. These findings collectively paint a picture of a pandemic response shaped by fundamental demographic determinants, where structural advantages and disadvantages systematically influenced

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individuals' ability to protect themselves. The results underscore the necessity for public health strategies that move beyond one-size-fits-all approaches to address the specific needs, constraints, and motivations of different demographic segments - particularly vulnerable groups who face compounded risks from both biological susceptibility and social disadvantage. Future interventions should incorporate these insights to develop targeted outreach programs, culturally competent messaging, and structural supports that can bridge these observed disparities in health protective behaviors as shown in Table 5.

Table 5: Chi-Square Analysis of Demographic Factors and Vaccination/Prevention Practices

Demographic Factor	Chi-Square Statistic	p-value
Age Group	45.72	<0.001
Gender	12.84	<0.001
Socioeconomic Status	31.29	<0.001
Occupation	22.17	<0.001

Among hospitalized patients, treatment patterns demonstrated socioeconomic disparities. Those aged 65+ required oxygen therapy at 3.1 times the odds of younger patients ($p<0.001$), while low SES individuals had 1.9-fold higher odds ($p=0.01$), possibly reflecting delayed presentation. High SES patients were 2.2 times more likely to receive antivirals ($p=0.003$), suggesting access barriers to newer therapeutics. Corticosteroid use strongly correlated with disease severity (OR=4.5, $p<0.001$), aligning with clinical guidelines for managing inflammatory phases. These findings underscore how age and socioeconomic factors influence both hospitalization risks and treatment inequities, highlighting the need for targeted prevention in high-risk groups and equitable resource allocation in clinical care as shown in Table 6.

Table 6: For Initial Management (Home Care vs. Hospitalization)

Factor	Odds Ratio	95% CI	p-value
Age 65+	2.5	1.8-3.4	<0.001
Male gender	1.2	0.9-1.6	0.15
Low SES	1.8	1.3-2.5	0.002
Healthcare worker	0.6	0.4-0.9	0.02

In table 7 the logistic regression results reveal significant associations between demographic factors and COVID-19 management outcomes. For initial management decisions, older adults (65+ years) were 2.5 times more likely to be hospitalized than younger patients (95% CI: 1.8-3.4, $p<0.001$), reflecting their higher vulnerability to severe disease. Individuals with low socioeconomic status (SES) had 1.8 times greater odds of hospitalization (95% CI: 1.3-2.5, $p=0.002$), potentially due to limited access to early outpatient care or higher co-morbidity burdens. Notably, healthcare workers showed 40% lower odds of hospitalization (OR=0.6, 95% CI: 0.4-0.9, $p=0.02$), likely attributable to occupational health measures, earlier detection, or higher vaccination rates. Gender showed no significant association (OR=1.2, $p=0.15$).

Table 7: For Treatment Protocols (among hospitalized)

Treatment	Significant Predictors
Oxygen Therapy	Age 65+ (OR=3.1, p<0.001), Low SES (OR=1.9, p=0.01)
Antivirals	High SES (OR=2.2, p=0.003)
Corticosteroids	Severe cases (OR=4.5, p<0.001)

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Discussion

The demographic distribution in our study (30% 18-34 years, 25% 35-49 years) aligns with Al-Hadithi et al. (2021) who found similar age patterns in Baghdad, though our pediatric cases (15%) were higher than their 9%, possibly reflecting increased testing in children later in the pandemic. The male predominance (55%) matches Middle Eastern trends reported by the WHO Eastern Mediterranean Regional Office (2022), potentially due to gender-based occupational exposures. Our low-SES representation (35%) exceeds the 28% found in Jordanian studies (Al-Nsour et al., 2022), suggesting Baghdad's socioeconomic disparities may amplify COVID-19 risks. Our vaccination rates (40% fully vaccinated) show improvement compared to early 2021 Iraqi data (23%) from Lafta et al. (2021), but remain below neighboring Kuwait's 65% (Al-Mulla et al., 2022). The 40% unvaccinated rate parallels vaccine hesitancy patterns described in Al-Shammari's (2023) Baghdad survey, where misinformation was prevalent. Notably, our partially vaccinated group (20%) matches transitional trends observed in Saudi Arabia during dose-interval periods (Barry et al., 2022). The 65% home care rate exceeds Egypt's 52% (Hamdy et al., 2021), possibly reflecting Baghdad's adapted triage protocols. Our hospitalization rate (25%) is nearly double Tehran's 13% (Pourajam et al., 2022), potentially indicating higher severity thresholds in resource-limited settings. The 10% untreated cases mirror Syria's refugee populations (Ekzayez et al., 2021), suggesting healthcare access barriers persist in conflict-affected regions. Oxygen therapy use (50%) was higher than Turkey's 38% (Erdem et al., 2022), possibly due to later presentation. Our antiviral rate (40%) trails UAE reports (60%) by Al Kaabi et al. (2022), reflecting medication access disparities. Corticosteroid use (30%) aligns with Recovery trial adaptations (Horby et al., 2021), though our lower rate may indicate concerns about secondary infections in resource-limited settings. The 80% home recovery rate surpasses Pakistan's 68% (Saleem et al., 2022), possibly due to younger demographics. Hospital recoveries (15%) match Lebanese outcomes (Osman et al., 2021), while our 5% adverse outcomes are lower than Iran's 9% (Shahriarirad et al., 2023), potentially reflecting exclusion of critical cases from hospitalization during peaks. Our chi-square results mirror Jordan's findings (Al-Tammemi et al., 2021) for age (χ^2=38.2) and SES (χ^2=29.7) significance. The stronger occupational association (χ^2=22.17 vs Egypt's χ^2=15.3; Gouda et al., 2022) may reflect Baghdad's concentrated essential workforce. Gender patterns align with Qatari reports (χ^2=11.9; Al-Kuwari et al., 2021), confirming modest but significant sex-based differences. Our age 65+ hospitalization OR (2.5) is lower than Italy's (3.8; Onder et al., 2022), possibly due to family protection of elders. The SES gradient (OR=1.8) exceeds India's (OR=1.4; Gupta et al., 2021), highlighting acute urban inequalities. Healthcare worker protection (OR=0.6) matches UK reports (OR=0.55; Nguyen et al., 2022), validating early vaccine prioritization. Treatment disparities (High SES OR=2.2 for antivirals) exceed Brazil's OR=1.7 (Martins-Filho et al., 2022), suggesting steeper therapeutic inequities.

Implications for Public Health

The Baghdad study highlights the need for targeted interventions, strengthening healthcare resources, and continuous evaluation of treatment protocols and recovery outcomes to adapt to the evolving nature of the pandemic. It emphasizes the importance of targeting vulnerable groups, enhancing community healthcare resources, and ensuring adequate information and support during home recovery.

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Conclusion

The comparison of COVID-19 results in Baghdad (2024) offers important new perspectives on demographic, therapeutic, and recovery trends. The results indicate that, despite the fact that Baghdad has attained favorable recovery rates, there are still ongoing challenges, particularly in the administration of severe cases and the adequacy of treatment. Future studies should keep investigating these patterns to guide public health decisions and raise patient outcomes over several groups.

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