COVID-19 Infection Patterns and Preventive Behaviors at Babylon University

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Abstract

Background: The COVID-19 pandemic, caused by SARS-CoV-2, has significantly impacted global health and socioeconomic systems. Understanding public attitudes, behaviors, and compliance with health mandates is crucial for effective pandemic management, especially in countries like Iraq, where the healthcare system faces unique challenges due to infrastructural inadequacies and public mistrust. Methods: A survey of 510 respondents, including academic staff and university students at Babylon University, was conducted between December 2020 and April 2021. The questionnaire, incorporating references from recent COVID-19 research, assessed demographics, COVID-19 infection patterns, and preventive behaviors. Data were analyzed using SPSS version 20, with statistical significance evaluated at a p-value of ≤ 0.05. Results: The survey revealed a higher incidence of COVID-19 among individuals aged 10-29 years and among students (65.69%) compared to teaching staff (34.31%). Higher education correlated with better protective behaviors. Most participants had a normal BMI (49.61%) and blood group A+ (39.22%). Only 11.57% required hospitalization, and 51.76% experienced moderate symptoms. Non-use of multivitamins (63.73%) and anticoagulants (83.53%) was prevalent. Conclusion: The study highlights the need for targeted public health interventions to improve preventive practices among younger populations in educational settings. Addressing misinformation and enhancing public trust in health authorities are essential for managing the ongoing COVID-19 pandemic effectively. The findings underscore the importance of community-level adoption of protective measures to support overburdened healthcare systems like Iraq's.

Keywords: COVID-19, Iraq, university students, preventive measures, public health

Significance | Understanding COVID-19 infection patterns and behaviors among university students in Iraq highlights the need for targeted health interventions and improved communication strategies.

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Introduction

The novel coronavirus disease, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has rapidly spread worldwide, with over 472,816,657 confirmed cases (World Health Organization, 2022). To control the outbreak, the global community implemented a series of measures that have significantly impacted global socioeconomic development (McKibbin & Fernando, 2020). COVID-19, caused by SARS-CoV-2, presents a wide range of symptoms from very mild to life-threatening (Zhou et al., 2020). Understanding public attitudes and behaviors, including concerns, trusted sources of information, and reasons for compliance or non-compliance with public health mandates, is critical for effective pandemic management (World Health Organization, 2020).

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Early in the pandemic, surveys in the United States and the United Kingdom revealed acceptable general awareness of disease transmission but highlighted a lack of understanding of effective prevention measures and widespread misinformation on social media (Geldsetzer, 2020). The COVID-19 pandemic has strained health systems worldwide, consuming significant medical resources and challenging even the most advanced healthcare systems (Organisation for Economic Co-operation and Development, 2021).

For Iraq, an emerging nation in the Mediterranean, the challenge has been even greater and more complex. Iraq's healthcare system has suffered from decades of infrastructural inadequacy due to civil unrest, sanctions, and conflicts. This has resulted in a deep public mistrust of the medical system, contributing to widespread non-compliance with recommended health precautions (Iraqi Ministry of Health, 2019; Lami et al., 2021). Additionally, the Ministry of Health established a technical advisory council comprising retired university specialists and experts to provide technical guidance. The Prime Minister's Office later restructured the higher committee to form a new advisory committee (Lami et al., 2021).

The aim of this survey is to determine the number of students and employees infected with different patterns of COVID-19 infections who are not vaccinated, providing insight into an educated group of society capable of self-reporting symptoms and assessing their awareness and commitment to their health conditions.

2. Materials and Methods

2.1. Design and Administration of the Questionnaire

The survey comprised fifteen questions, incorporating both single-choice and multiple-choice response options. At the onset of the COVID-19 outbreak, the questionnaire included references to recently published scientific articles on COVID-19 research to ensure its relevance and accuracy (Guan et al., 2020; Yu et al., 2020). The target respondents were academic staff and university students at Babylon University. The questionnaire was distributed and collected between December 2020 and April 2021. The study protocol was reviewed and approved by the University Committee on Health Studies, following the guidelines set by the Ministry of Health (MOH) and the Ministry of Higher Education and Scientific Research (MOHSER).

2.2. Biostatistical Consideration

Data analysis was performed using the Statistical Package for the Social Sciences (SPSS), version 20 (SPSS Inc., Chicago, Illinois, USA). Chi-square tests were used for statistical analysis. Experimental results were expressed as percentages. The significance of the estimates was evaluated at a p-value of ≤ 0.05.

3. Results

All 510 respondents with previous COVID-19 infection, comprising teachers and students, were enrolled in the study and administered the questionnaire. The demographic characteristics of the study subjects are shown in Table 1. The sample included 50.98% males and 49.02% females, with ages ranging from 19 to 71 years, categorized into four age groups: 10-29, 30-49, 50-69, and 70+ years.

The study found significantly more COVID-19 cases among individuals aged 10-29 years ($p \leq 0.0001$). Despite Iraq's young population, with 60% under 25 years old and a median age of 20, the highest proportion of affected patients was in the age groups 30-39 years (25.6%), 20-29 years (21.6%), and 40-49 years (20.2%) (Figure 1). The majority of participants (65.69%) were students, while 34.31% were teaching employees, indicating a higher infection rate among students.

Higher education was associated with better protective behavior, consistent with previous research suggesting that increased risk perception leads to more precautionary measures (Zhu, 2016). However, a study by Zhu (2016) reported no significant relationship between educational attainment and the usage of gloves, masks, or avoiding large crowds.

The proportion of respondents with a normal BMI was significantly higher (49.61%) than other BMI groups ($p = 0.0003$). Blood group A+ was the most common among the infected individuals (39.22%), followed by O+ (9.80%) and O- (0.59%) (Figure 2). The majority of cases were infected only once (84.12%, $p < 0.0001$) (Table 2).

Regarding marital status, 75.49% of participants were single, with the largest number of infections among students (65.69%, $p < 0.0001$). Cases with moderate symptoms during the first infection were higher (51.76%) than those with mild or severe symptoms ($p < 0.0001$) (Figures 3 and 4).

More individuals reported using masks before infection onset (54.90%), experiencing loss of taste (58.82%) and smell (69.80%), not requiring oxygen during infection (76.67%), and not being hospitalized (88.43%) (Figures 5, 6, 7, and 8).

A significant proportion (63.73%) did not take multivitamins before infection, and 83.53% were not given anticoagulants ($p < 0.0001$) (Figures 10 and 11). Most respondents were non-smokers (76.27%, $p < 0.0001$) (Figure 12).

4. Discussion

The survey included 510 respondents with previous COVID-19 infection, comprising both teachers and students. The majority of participants (65.69%) were students, while 34.31% were teaching staff. There was no significant difference in gender representation among the participants. Most respondents were non-smokers, aged 10-29 years, single, and had a normal BMI.

Table 1. Demographic characteristics of the COVID-19- infected participants (n = 510).

	No. (%)	p-value
Gender		
Male	260 (50.98%)	**0.658**
Female	250 (49.02%)	
Age (years)		
10-29	389 (76.27%)	**0.0001****
30-49	80 (15.69%)	
50-69	38 (7.45%)	
70>	3 (0.59%)	
BMI (kg/m^2)		
Underweight (below 8.5)	30 (5.88%)	**0.0003****
Normal weight (18.5-24.9)	253 (49.61%)	
Overweight (25-29.9)	157 (30.78%)	
Obese (>30)	70 (13.73%)	
* refer to significant difference at p≤0.05. ** refer to significant difference at p≤0.001		

Table 2. Blood groups of the COVID-19- infected participants

	No. (%)	p-value
ABO		
A+	200 (39.22%)	**0.0001****
A-	31 (6.08%)	
B+	104 (20.39%)	
B-	11(2.16%)	
AB+	107 (20.98%)	
AB-	4 (0.78%)	
O+	50 (9.80%)	
O-	3 (0.59%)	
** refer to significantdifference at p≤0.001		

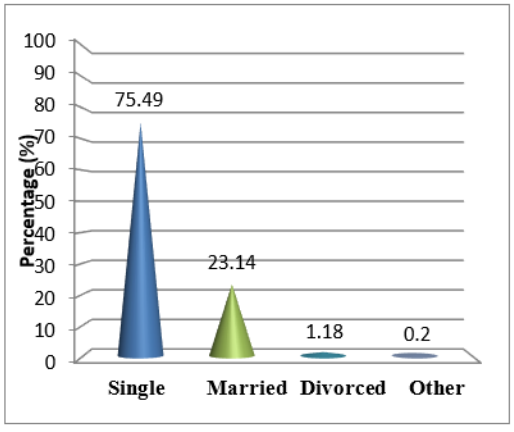

Figure 1. Social Status of the COVID-19 inffected Particpants.

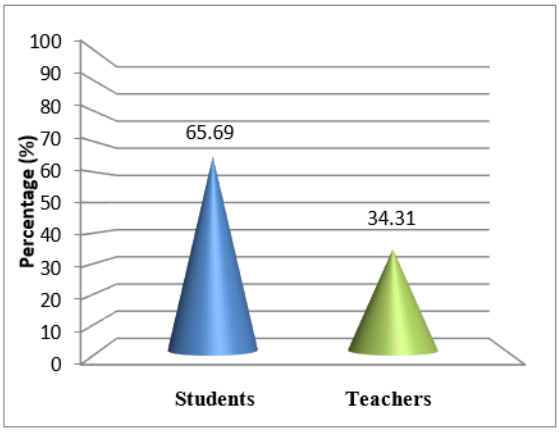

Figure 2. Education of the COVID-19 infected participants

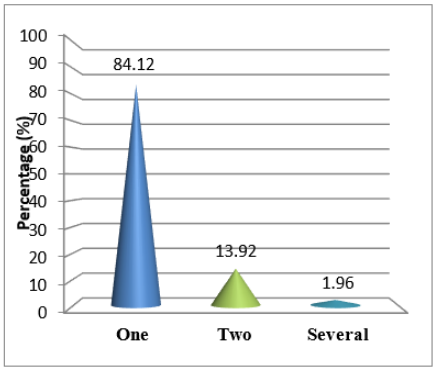

Figure 3. Number of infections.

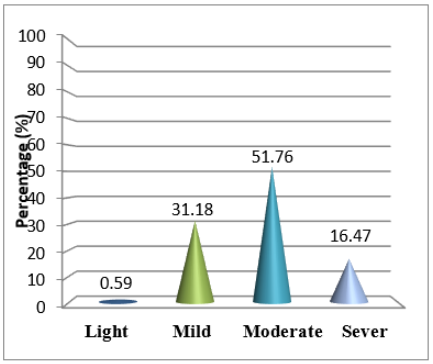

Figure 4. Symptoms of frist infection

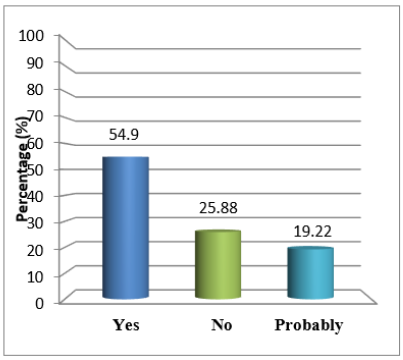

Figure 5. Wearing mask

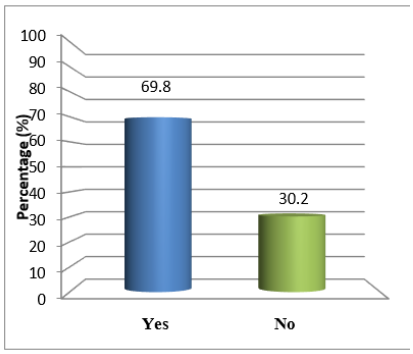

Figure 6. Lost Smelling

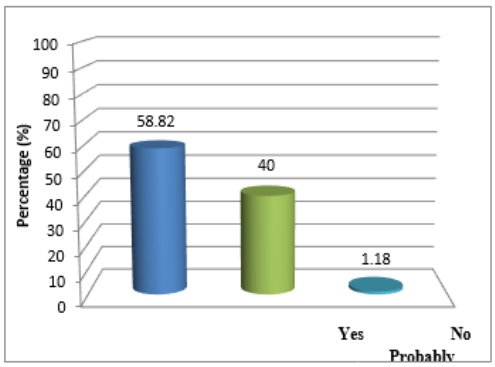

Figure 7. Lost taste

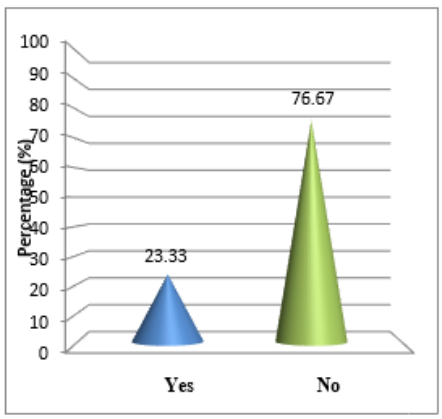

Figure 8. Need Oxygen

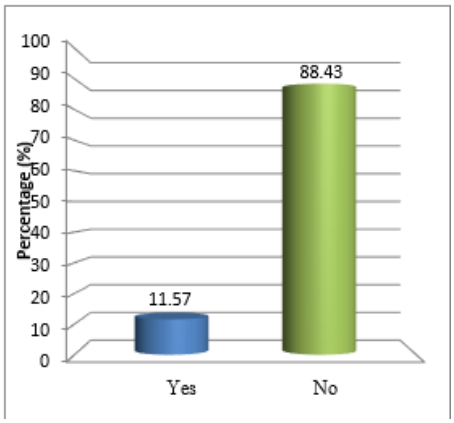

Figure 9. Hospital

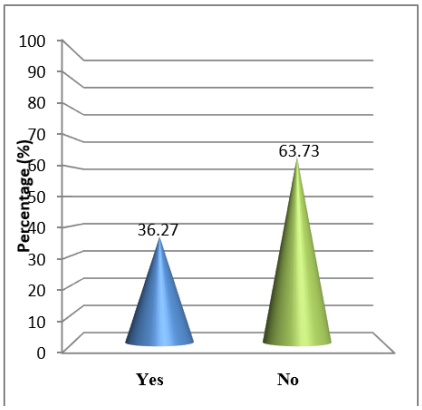

Figure 10. Take Multivitamins

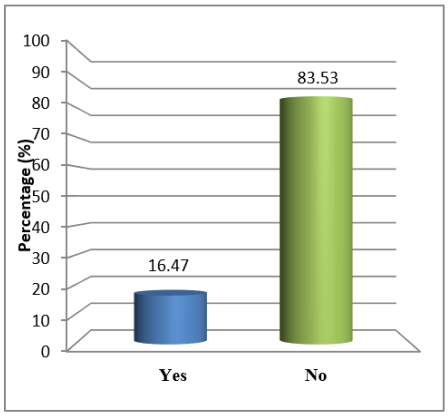

Figure 11. Given anticoagulant

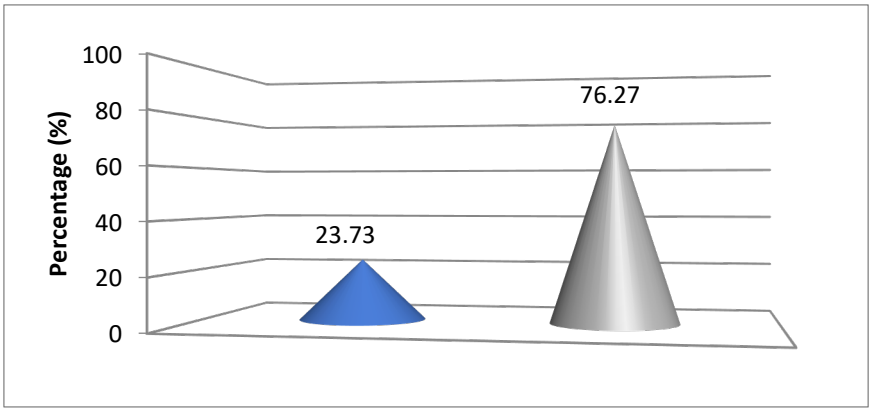

Figure 12. Smoker of participants

A significantly higher number of cases were found among individuals with blood group A+ compared to other blood groups. Most participants were infected only once, used masks before infection, experienced loss of taste and smell after infection, and did not require hospitalization or anticoagulants. The proportion of respondents with a normal BMI (49.61%) was significantly higher than other BMI groups ($p = 0.0003$).

Regarding marital status, 75.49% of participants were single. The already overburdened healthcare system in Iraq has faced unique challenges due to the COVID-19 outbreak. However, significant gaps in communication and social mobilization need to be addressed to improve the situation.

This study provides valuable insights into the demographic and behavioral characteristics of individuals infected with COVID-19 at Babylon University. The data reveal a higher incidence of COVID-19 among younger age groups, particularly those aged 10-29, which aligns with Iraq's demographic trends where the population is predominantly young.

The higher infection rates among students (65.69%) compared to teaching staff suggest that the university environment might contribute to higher transmission rates among younger individuals. The association between higher education levels and better protective behavior aligns with findings from previous research (Zhu, 2016), indicating that education may enhance awareness and adherence to preventive measures. However, there remains a significant gap in the actual practice of these measures, such as wearing masks and avoiding large gatherings, despite awareness of the risks.

The prevalence of normal BMI among respondents suggests a potential link between healthy body weight and lower COVID-19 severity, although further research is needed to establish causality. The distribution of blood groups among the infected aligns with other studies indicating a higher susceptibility among individuals with blood group A+ (Zhao et al., 2020; Ellinghaus et al., 2020).

The low hospitalization rates (11.57%) and the high percentage of cases with moderate symptoms (51.76%) indicate that most infections were not severe. The significant number of respondents who did not use multivitamins or anticoagulants before infection suggests a lack of preventive health measures among the population.

This study underscores the importance of effective communication and social mobilization to address the gaps in preventive practices and misinformation. Iraq's overburdened healthcare system faces unique challenges, including addressing the global infodemic and ensuring compliance with public health measures. Government actions alone are insufficient to control the pandemic; community-level adoption of protective practices is crucial.

The findings emphasize the need for targeted public health interventions to improve compliance with preventive measures, particularly among younger populations in educational settings. Addressing the spread of misinformation and enhancing public trust in health authorities are essential steps in managing the ongoing COVID-19 pandemic effectively.

5. Conclusion

The study showed the high COVID-19 infection rates among younger individuals, particularly students, at Babylon University. It underscores the need for targeted public health interventions and improved communication strategies to address gaps in preventive practices, misinformation, and public trust, especially in Iraq's overburdened healthcare system.

Author contributions

T.A.A. and A.A.A. conceived the study and developed the hypothesis. A.N.A. and H.K.H. performed data analysis and interpretation. A.K.A. contributed to writing the manuscript, including the introduction and methods. S.A.M. and N.S.M. collected data and assisted with the literature review. A.A.A. supervised the project and conducted the final revision. All authors read and approved the final manuscript.

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Competing financial interests

The authors have no conflict of interest.

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