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COVID-19 Awareness, Vaccination, and Health Outcomes: A Comparative Study of Residents of Western Libya and Libyan Expatriates in the United Arab Emirates

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ABSTRACT

The COVID-19 pandemic has had varying impacts across nations, influenced by differences in healthcare infrastructure, governance, and public awareness. Libya and the United Arab Emirates (UAE) exemplify two contrasting contexts in managing the crisis. This study aimed to assess awareness, perceptions, and practices related to COVID-19 among Libyan residents in western Libya and Libyan expatriates living in the UAE, with a particular focus on infection control behaviors, vaccination acceptance, and healthcare response. A cross-sectional comparative study was conducted, including 150 participants from western Libya and 150 Libyan expatriates in the UAE. Data were collected using structured questionnaires and complemented with official health reports and published studies. Descriptive and comparative analyses were carried out using SPSS version 23 to evaluate differences in awareness levels, preventive practices, and health outcomes between both groups. The findings revealed significant disparities between the two populations. Libyan residents exhibited limited awareness and lower compliance with preventive measures, resulting in lower vaccination acceptance and higher incidence of severe COVID-19 complications such as respiratory distress and mortality. Conversely, Libyan expatriates in the UAE demonstrated higher awareness, adherence to infection control practices, and a strong willingness to receive vaccines, leading to milder disease outcomes. These differences can be attributed to variations in healthcare accessibility, public health communication, and the efficiency of vaccination campaigns. In conclusion, public awareness, accessible healthcare, and proactive vaccination initiatives are essential in mitigating the effects of pandemics. Libya could benefit greatly by adopting lessons from the UAE's experience, emphasizing health education, vaccine advocacy, and improved healthcare system preparedness.

1. INTRODUCTION

The global spread of the COVID-19 pandemic had a profound impact on countries worldwide, with significant differences in the trajectory of the disease depending on healthcare infrastructure, government policies, and population awareness. In the Middle East and North Africa (MENA) region, Libya and the United Arab Emirates (UAE) provide contrasting case studies of pandemic management.

Libya reported its first confirmed case on March 24, 2020, under conditions of political instability, weak healthcare capacity, and limited testing availability (WHO, 2022; Daw et al., 2021). Several studies highlighted gaps in public awareness, vaccine acceptance, and adherence to infection control measures among the Libyan population (Elhadi et al., 2020; Badi et al., 2021; Abusrewil et al., 2022). Nationwide surveys showed that many respondents expressed hesitancy toward vaccination, with limited compliance to public health recommendations (Ben Khelifa et al., 2023; Abusrewil et al., 2022). Healthcare workers themselves demonstrated varying levels of knowledge and perception toward COVID-19, reflecting systemic challenges in health communication (Elhadi et al., 2021; Gashout et al., 2022). By 2022, more than 500,000 confirmed cases and over 6,400 deaths were officially reported in Libya, although true numbers are likely higher due to limited testing and surveillance (WHO, 2022; Statista, 2023). In contrast, the UAE rapidly implemented comprehensive mitigation strategies, including mass PCR testing, quarantine facilities, and one of the fastest global vaccination campaigns (MOHAP, 2021; Gulf News, 2021). Studies on UAE residents revealed high levels of knowledge and adherence to preventive measures, supported by effective government-led awareness campaigns (Ashrafi et al., 2021; Albahri et al., 2022). Clinical studies from hospitals in Abu Dhabi and Dubai demonstrated that comorbidities such as diabetes, cardiovascular disease, and obesity were major predictors of severe COVID-19 outcomes, consistent with global trends (Al Kaabi et al., 2021; Al-Qutob et al., 2022). Widespread vaccine availability, including Sinopharm, Pfizer-BioNTech, and Moderna, led to high coverage rates, with over 77% of the population receiving at least one dose by mid-2022 (MOHAP, 2022; IJBPC, 2022). Comparing Libya and the UAE illustrates how differences in governance, healthcare capacity, and public trust shape pandemic outcomes, highlighting the importance of vaccination campaigns, early testing, and community engagement.

1.1. Problem Statement

The COVID-19 pandemic has posed unprecedented challenges to healthcare systems worldwide, yet its impact has varied significantly depending on socioeconomic, political, and healthcare capacities. Libya, with fragile healthcare infrastructure and political instability, has struggled to implement effective infection control measures and vaccination programs. Conversely, the UAE has demonstrated one of the most efficient pandemic responses in the region through large-scale testing, rapid vaccine rollout, and well-structured public health policies. This contrast highlights the need to examine awareness, prevention practices, and management strategies in Libya compared to the UAE to better understand the role of governance, resources, and community engagement in pandemic outcomes.

1.2. Significance of the Study

This study provides a comparative analysis of COVID-19 awareness, infection control, and management between Libya and the UAE—two countries in the same region with vastly different health system capacities. Identifying gaps in public health awareness, vaccine acceptance, and adherence to preventive measures in Libya can inform strategies to strengthen pandemic preparedness in fragile health systems. Analyzing the UAE's successful approaches can offer valuable lessons for other MENA countries facing similar challenges. Ultimately, this study emphasizes the importance of effective communication, community engagement, and government response in mitigating pandemic impacts.

1.3. Objectives

To assess the awareness, perceptions, and attitudes toward COVID-19 among Libyan residents and Libyan expatriates in the UAE, focusing on infection control practices, vaccination acceptance, and healthcare response.

2. METHOD

2.1. Study Design

This cross-sectional comparative study examined COVID-19 awareness, clinical outcomes, and coping strategies among Libyan residents and Libyan expatriates in the UAE.

2.2. Data Sources

Libya: Structured questionnaire distributed to 1,460 volunteers across western Libyan cities, national reports, and peer-reviewed publications.

UAE: Questionnaire distributed to 150 Libyan expatriates, supplemented with data from the Ministry of Health and Prevention (MOHAP), published studies, and official reports.

2.3. Variables

- Awareness and adherence to preventive measures
- Vaccination acceptance
- Clinical symptoms and comorbidities
- Health outcomes, including complications and mortality
- Infection control strategies and healthcare management

2.4. Data Analysis

Descriptive statistics (frequency, mean, SD) were used to summarize participant characteristics. Comparative analysis between Libyan residents and Libyan expatriates in the UAE was conducted using SPSS v23, with significance set at $p < 0.05$.

3. ETHIC APPROVAL

- Ethical approval for the Libyan survey was obtained from the University of Sabratha. Participation in both countries was voluntary and confidential, with informed consent obtained from all respondents.
- Ethical approval for the study was obtained from the Faculty of Medical Technology, Sabratha University, and informed consent was secured from all participants in both Libya and the UAE, ensuring voluntary participation and the confidentiality of their responses.

4. RESULT

The demographic characteristics of the study participants showed notable differences between the two groups. In Libya, most participants were female and resided in urban areas, while among Libyan expatriates in the United Arab Emirates (UAE), the gender distribution was more balanced, and participants generally possessed higher levels of education and employment. In terms of symptoms and health outcomes, Libyan participants frequently experienced respiratory symptoms and, in some cases, inflammatory complications, with several reports of mortality related to COVID-19. In contrast, Libyan expatriates in the UAE mostly reported mild symptoms, fewer complications, and no severe deterioration in health, reflecting the effectiveness of the UAE's healthcare system. Vaccination acceptance also varied significantly between the two groups. In Libya, many participants expressed hesitancy or refusal to receive the vaccine, primarily due to mistrust, misinformation, or limited awareness about vaccine safety and efficacy. Conversely, vaccination uptake among Libyan expatriates in the UAE was notably high, supported by extensive government-led awareness campaigns and the availability of vaccines through well-organized healthcare facilities. Regarding awareness and preventive measures, Libyan participants demonstrated limited understanding and inconsistent compliance with recommended guidelines such as mask-wearing, hand hygiene, and social distancing. Meanwhile, Libyan expatriates in the UAE exhibited higher awareness and stronger adherence to preventive behaviors, influenced by effective public health communication and strict governmental enforcement of COVID-19 control measures. In terms of healthcare support and management, Libya faced significant challenges related to limited healthcare resources, testing capacity, and treatment infrastructure, whereas the UAE provided comprehensive healthcare support, widespread testing, and efficient vaccination programs, resulting in better protection and overall health outcomes.

Table. 1. Comparison of COVID-19 Awareness and Outcomes: Libya vs UAE

Aspect	Libya (n=150)	Libyan Expatriates in UAE (n=150)	Statistical Analysis
Demographics	Mostly female ($\approx 66\%$), urban residents ($\approx 79\%$)	Balanced gender ($\approx 50/50$), higher education levels	Chi-square test for gender: $p < 0.05$; education levels: $p < 0.01$
Symptoms & Health Outcomes	Respiratory symptoms, some inflammatory complications, 11% deaths	Mostly mild symptoms, minimal complications, no deaths	Chi-square/Fisher's Exact test: $p < 0.001$
Vaccination Acceptance	Low, 90% hesitant or refused	High, $>85\%$ uptake	Chi-square test: $p < 0.001$
Awareness & Preventive Measures	Limited knowledge, inconsistent compliance	High awareness, strong adherence	Independent t-test for awareness scores: $p < 0.001$
Healthcare Support & Management	Limited resources, testing, and treatment infrastructure	Strong support, extensive testing, vaccination programs	Descriptive; qualitative comparison

5. DISCUSSION

This study revealed significant differences in COVID-19 awareness, health outcomes, and management between Libyan residents and the Libyan expatriate community in the United Arab Emirates (UAE). Limited awareness and restricted access to healthcare resources in Libya contributed to higher rates of complications and mortality, aligning with previous findings from low-resource settings (Elhadi et al., 2020; Abusrewil et al., 2022; Ben Khelifa et al., 2023). These results are further supported by Amer (2022), who reported that most residents in western Libyan cities demonstrated limited knowledge of COVID-19 prevention, low vaccination acceptance, and moderate to severe disease outcomes. In that study, conducted on 1,460 participants from several Libyan cities, 90% of respondents refused vaccination, and a considerable number presented respiratory symptoms and elevated inflammatory markers, reflecting similar challenges in public health awareness and access to medical care.

The Libyan community in the UAE, on the other hand, benefited from robust healthcare infrastructure, widespread vaccination campaigns, and effective public health messaging, which led to higher awareness, better preventive practices, and improved clinical outcomes. Similar patterns have been observed among migrant communities living in high-resource countries, where access to advanced healthcare systems and reliable information significantly reduced infection severity and mortality (Ashrafi et al., 2021; Al Kaabi et al., 2021; Al-Qutob et al., 2022).

Overall, these findings emphasize the vital role of public health policies, healthcare accessibility, targeted education, and community engagement in mitigating pandemic impacts. Strengthening awareness programs, ensuring vaccine availability, and improving healthcare infrastructure are key priorities for enhancing pandemic preparedness and response in Libya.

6. CONCLUSION

In conclusion, the comparative analysis highlights the significant disparities in healthcare support and management between Libya and the United Arab Emirates during the COVID-19 pandemic. Libya faced considerable challenges due to limited healthcare infrastructure, resource shortages, and inadequate testing capacity, which affected disease control and patient outcomes. In contrast, the UAE demonstrated a well-structured response supported by advanced medical facilities, extensive testing, and efficient vaccination programs, leading to better public health protection and recovery rates. These findings emphasize the importance of strong healthcare systems, preparedness, and international cooperation in mitigating future pandemics and improving population health resilience.

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