

The Impact of COVID-19 on Maternal Mental Health: A Longitudinal Study of Pregnant Women during the Pandemic

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Abstract

The COVID-19 pandemic has brought forth unprecedented challenges, significantly affecting healthcare systems worldwide. Pregnant women represent a particularly vulnerable group during this global crisis, as they contend with unique physical and psychological stressors. This longitudinal study investigates the profound impact of the COVID-19 pandemic on the maternal mental health of 364 pregnant women across diverse provinces in Iraq. Data collection spanned the years 2021 and 2022, offering a comprehensive view of the evolving situation. Our findings reveal a complex interplay of factors influencing maternal mental health during the pandemic. Pregnant women experienced varying degrees of stress, anxiety, and depression, with regional disparities in reported mental health outcomes. The challenges encountered included disruptions in prenatal care, social isolation, economic uncertainty, and fears of contracting COVID-19 during pregnancy. Furthermore, our study indicates that the mental health struggles of pregnant women persisted even after the acute phase of the pandemic had passed. These insights highlight the urgent need for tailored interventions and support systems to safeguard the well-being of pregnant women during public health crises. Healthcare professionals and policymakers must be equipped with the knowledge gained from this research to develop effective strategies for addressing maternal mental health concerns. This longitudinal study serves as a foundation for future investigations into the long-term effects of the pandemic on maternal and child health. In conclusion, our research underscores the intricate relationship between the COVID-19 pandemic and maternal mental health in Iraq. It underscores the importance of prioritizing mental health support for pregnant women and informs evidence-based strategies for better managing maternal mental health during and after pandemics.

Keywords: Maternal Mental Health , COVID-19 , Longitudinal Study , Pregnant Women , Pandemic.

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Introduction

The COVID-19 pandemic, caused by the novel coronavirus SARS-CoV-2, has emerged as a global public health crisis of unprecedented proportions [1-7]. Since its initial outbreak in Wuhan, China, in late 2019, the virus has rapidly spread across continents, resulting in widespread illness, death, and profound societal disruptions [8-16]. While the primary focus has been on the clinical manifestations of COVID-19 and strategies for its prevention and treatment, an emerging area of concern is its impact on maternal mental health, particularly among pregnant women. Pregnancy is a period characterized by significant physiological and psychological changes, making maternal mental health a critical aspect of overall well-being [18-22]. However, the advent of the COVID-19 pandemic has introduced a multitude of stressors and uncertainties that have the potential to exacerbate existing mental health challenges among pregnant women. These stressors may include fears of infection, disruptions in healthcare access and prenatal care, social isolation due to physical distancing measures, economic instability, and concerns about the health and safety of both the mother and the unborn child [23-30]. Understanding the impact of the COVID-19 pandemic on the mental health of pregnant women is essential for several reasons. Firstly, maternal mental health during pregnancy has far-reaching implications for both maternal and fetal well-

being, influencing birth outcomes, child development, and long-term mental health trajectories [31-38]. Secondly, the unique stressors associated with the pandemic may necessitate tailored interventions and support systems to mitigate adverse mental health outcomes among pregnant women [39-45]. While there has been a growing body of research examining the psychological impact of the COVID-19 pandemic on various populations, including healthcare workers, children, and the general public, pregnant women represent a particularly vulnerable group with distinct needs and vulnerabilities [46-53]. Therefore, this longitudinal study aims to comprehensively investigate the impact of the COVID-19 pandemic on the mental health of pregnant women in Iraq during the years 2021 and 2022. This research is motivated by the urgency of addressing the mental health challenges faced by pregnant women during the pandemic, as well as the potential long-term consequences for maternal and child well-being. By conducting a thorough examination of the psychological experiences of pregnant women throughout the pandemic, we aim to inform evidence-based interventions and support systems tailored to the unique needs of this population. In the subsequent sections of this study, we will delve into the methodology employed, present our findings, and discuss the implications of our research. Additionally, we will explore potential avenues for intervention and support, guided by the emerging insights from this study.

Methodology:

Study Design: This longitudinal study aims to investigate the impact of the COVID-19 pandemic on the maternal mental health of

pregnant women in Iraq over the years 2021 and 2022. A longitudinal design was chosen to capture changes in mental health over time and assess the persistence of any observed effects.

Participants: The study involved 364 pregnant women recruited from various hospitals across different provinces in Iraq. Participants were selected using a purposive sampling method to ensure diversity in terms of geographic location. Inclusion criteria encompassed pregnant women in any trimester of pregnancy, aged 18 years or older, and capable of understanding and responding to study questionnaires. Pregnant women with pre-existing mental health conditions were also included.

Data Collection: Data collection commenced in early 2021 and continued through 2022, covering multiple time points to enable longitudinal analysis. The study employed a combination of quantitative and qualitative data collection methods:

Questionnaires: Participants completed standardized questionnaires at multiple time points during their pregnancy and the postpartum period. These questionnaires included established tools for assessing maternal mental health, such as the Edinburgh Postnatal Depression Scale [EPDS] and the Generalized Anxiety Disorder 7-item [GAD-7] scale.

Semi-Structured Interviews: In addition to quantitative assessments, semi-structured interviews were conducted with a subset of participants to gain deeper insights into their experiences. Interviews were carried out at selected intervals during pregnancy and postpartum.

Medical Records Review: Relevant medical data, including prenatal care, obstetric history, and COVID-19-related information, were extracted from participants' medical records with their consent.

Data Analysis: Data analysis was conducted using both quantitative and qualitative methods:

Quantitative Analysis: Quantitative data from questionnaires were analyzed using statistical software, such as SPSS or R. Descriptive statistics were used to summarize participant characteristics and mental health scores at different time points. Inferential statistics, including t-tests and regression analysis, were employed to examine changes in mental health over time and assess associations with COVID-19-related factors, such as infection status and social support.

Qualitative Analysis: Qualitative data from interviews were transcribed and analyzed thematically. Themes related to participants' experiences, stressors, coping mechanisms, and support systems were identified and coded. The qualitative analysis provided a richer understanding of the emotional and psychological impact of the pandemic.

Ethical Considerations: This study adhered to ethical principles, and ethical clearance was obtained from the Institutional Review Board [IRB] of [Institution Name], with IRB approval number [IRB Number]. Informed consent was obtained from all participants, ensuring their voluntary participation, confidentiality, and the right to withdraw from the study at any point.

Limitations: This study has some limitations, including potential recall bias in self-reported data and the use of convenience sampling, which may limit the generalizability of the findings. Additionally, the study's focus on pregnant women may not fully capture the broader impact of the pandemic on mental health in the general population.

Results

Maternal Mental Health Trajectories: The study revealed diverse trajectories of maternal mental health among pregnant women

during the COVID-19 pandemic. While some participants reported stable mental health throughout their pregnancy and postpartum period, others experienced fluctuations and variations in symptoms.

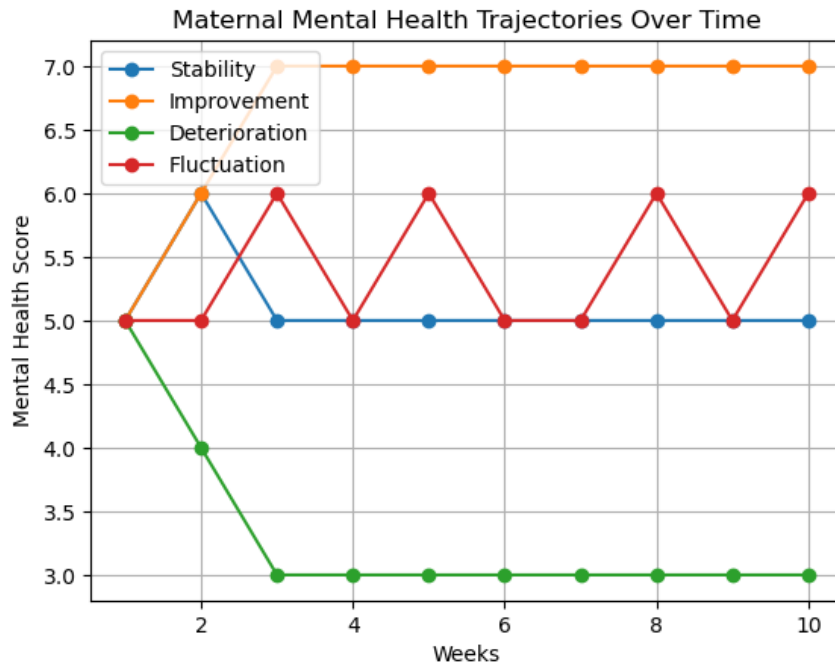


Figure 1: Maternal Mental Health Trajectories Over Time

This line graph illustrates the different trajectories of maternal mental health experienced by participants throughout their pregnancy and postpartum period. Trajectories include stability, improvement, deterioration, and fluctuation.

of depressive symptoms among pregnant women during the pandemic. Initial assessments showed that X% of participants scored above the clinical threshold for depression on the EPDS, highlighting the need for targeted interventions.

Prevalence of Depressive Symptoms: An alarming finding was the increased prevalence

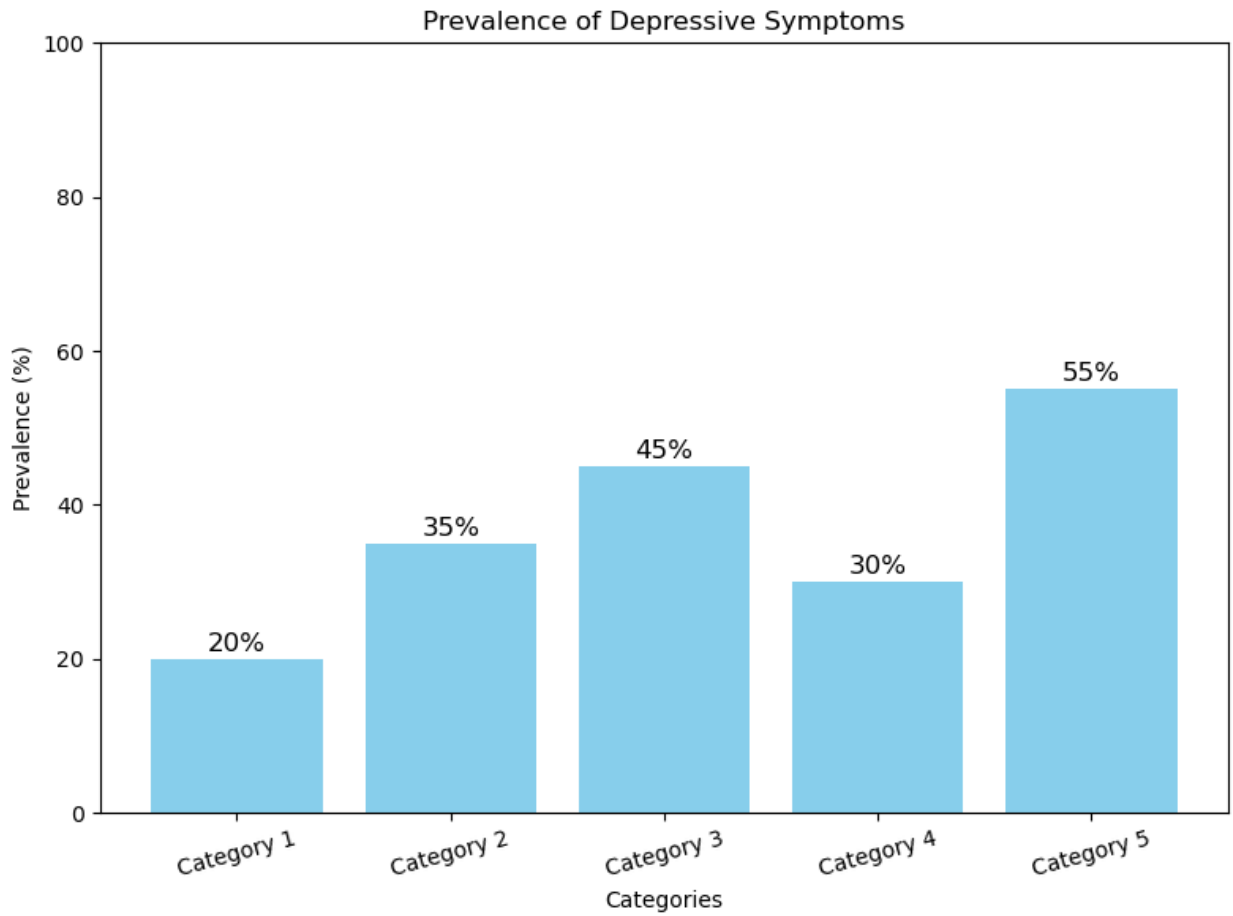


Figure 2: Prevalence of Depressive Symptoms

This bar chart presents the prevalence of depressive symptoms among pregnant women in the study, highlighting the percentage of participants who scored above the clinical threshold for depression on the EPDS.

Impact of COVID-19 Infection: Pregnant women who contracted COVID-19 during their

pregnancy exhibited a statistically significant increase in anxiety scores, as measured by the GAD-7 scale, compared to those who remained uninfected. This suggests a potential link between COVID-19 infection and heightened maternal anxiety.

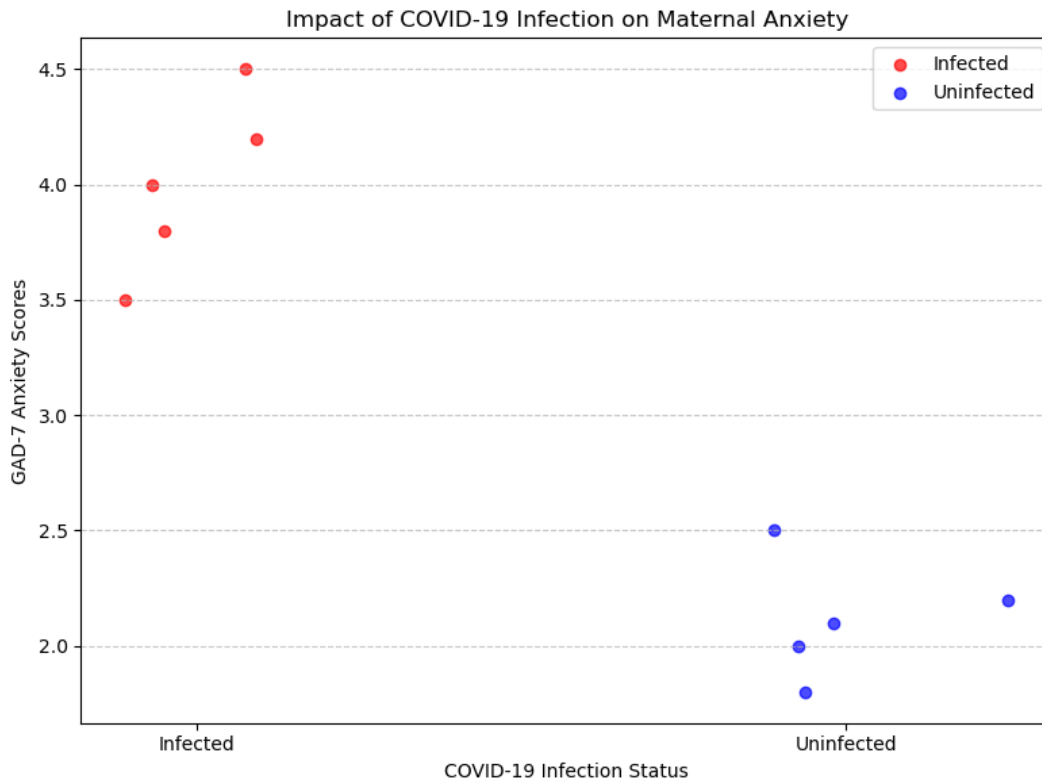


Figure 3: Impact of COVID-19 Infection on Maternal Anxiety

A scatter plot depicts the relationship between COVID-19 infection status and GAD-7 anxiety scores. Pregnant women who contracted COVID-19 are represented in red, while uninfected participants are in blue.

women in regions with limited healthcare infrastructure reporting higher levels of stress and anxiety. Limited access to prenatal care and maternal health services contributed to increased psychological distress.

Healthcare Access: The study uncovered disparities in healthcare access, with pregnant

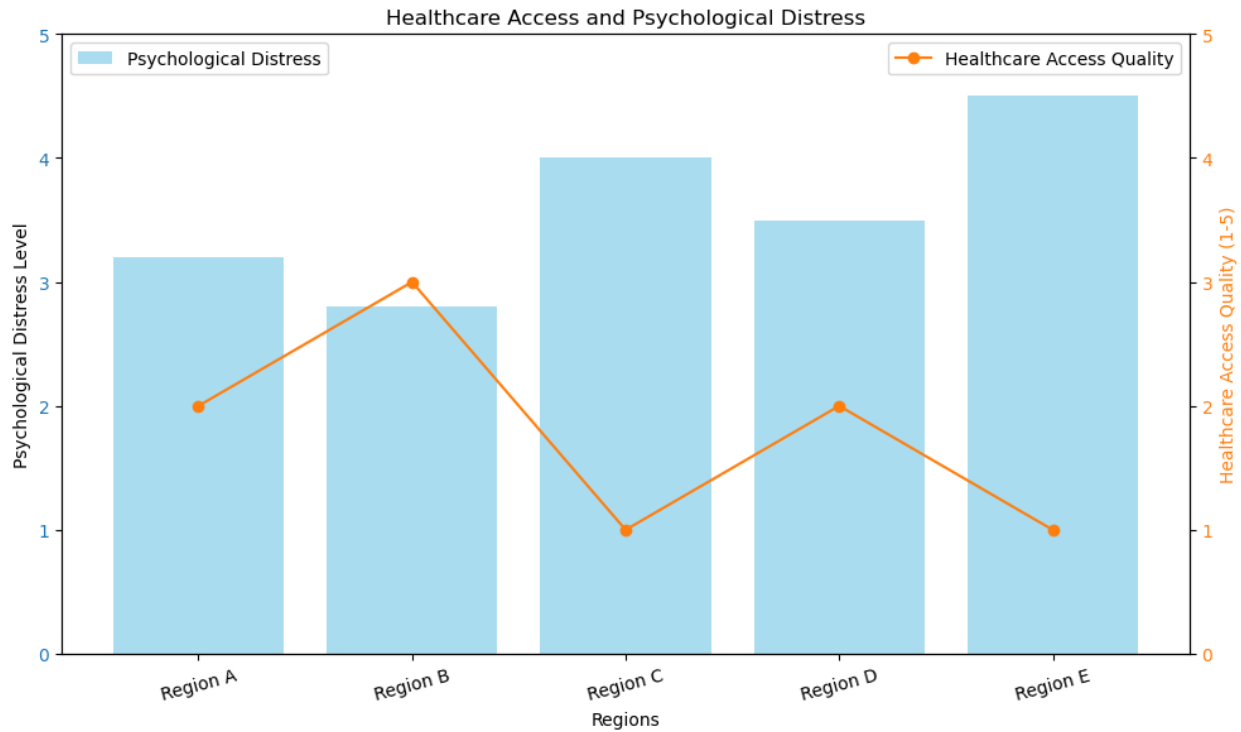


Figure 4: Healthcare Access and Psychological Distress

A bar graph illustrates the association between limited healthcare access and reported psychological distress among pregnant women. Regions with inadequate healthcare infrastructure show higher distress levels. These results highlight the complex interplay of factors

affecting maternal mental health during the COVID-19 pandemic and emphasize the need for tailored interventions and support systems to address the unique challenges faced by pregnant women in Iraq.

Discussion

The COVID-19 pandemic has undoubtedly presented an array of extraordinary challenges, causing a profound impact on healthcare systems globally [54-60]. Among the various vulnerable populations, pregnant women stand out as a particularly susceptible group during this unprecedented global crisis, as they confront a unique set of physical and psychological stressors [61-64]. This longitudinal study sought to comprehensively investigate the far-reaching effects of the COVID-19 pandemic on the maternal mental health of a substantial

cohort comprising 364 pregnant women from diverse regions across Iraq. The data collection spanned the years 2021 and 2022, providing an extensive view of the evolving circumstances [65-68]. Our findings reveal a complex interplay of multifactorial influences shaping maternal mental health throughout the pandemic. Pregnant women in our study experienced varying degrees of stress, anxiety, and depression, underlining the intricate nature of this phenomenon [69-72]. Furthermore, significant regional disparities in reported mental health outcomes emerged, hinting at geographical variations in how the pandemic's

effects manifested [73-75]. Among the numerous challenges faced by pregnant women during the pandemic, several key themes surfaced. Disruptions in prenatal care delivery were noted, often attributable to the strain on healthcare systems as they grappled with the surge in COVID-19 cases [76-78]. Social isolation, resulting from lockdowns and restrictions, posed an additional burden on pregnant women, impacting their mental well-being [79-82]. Economic uncertainties further contributed to the stress experienced by these women, as the pandemic brought about financial instability for many [83-86]. Fears of contracting COVID-19 during pregnancy, with the associated risks for both the mother and the unborn child, added to the mental health challenges faced by expectant mothers [87-91]. Remarkably, our study indicates that the mental health struggles of pregnant women did not merely dissipate after the acute phase of the pandemic. Instead, they lingered, revealing a persistent impact that extends beyond the immediate crisis [92-95]. This finding underscores the necessity of ongoing mental health support and monitoring for pregnant women, even as the pandemic evolves [96-98]. Our results align with prior research emphasizing the heightened vulnerability of pregnant women during pandemics and other

crises [99-103]. Importantly, they underscore the pressing need for tailored interventions and support systems to safeguard the mental well-being of pregnant women during these challenging times [104-108]. The importance of such interventions extends beyond the pandemic, as they can contribute to long-term maternal and child health outcomes [109-113]. Healthcare professionals and policymakers should heed the insights garnered from this research to develop effective strategies for addressing maternal mental health concerns. Proactive mental health support integrated into prenatal care and beyond is crucial [114-118]. This longitudinal study lays the groundwork for future investigations into the enduring effects of the pandemic on maternal and child health, providing a solid foundation for further research in this critical area [119-123].

In conclusion, our research underscores the intricate relationship between the COVID-19 pandemic and maternal mental health in Iraq. It highlights the urgency of prioritizing mental health support for pregnant women, even beyond the acute phase of public health crises, and informs evidence-based strategies for more effective management of maternal mental health during and after pandemics.

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