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Investigating the Role of the Covid-19 Epidemic on Iranians' Queries for Health Information on the Internet during Six Outbreaks of the Disease from February 2020 to April 2022

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Extended Abstract

Aim

With the increase in Internet usage, people's concerns have been increasingly reflected in their search queries (Knipe et al., 2020). Analyzing these queries can provide insights into individuals' mental priorities and concerns (Rovetta, 2021). The emergence of COVID-19 brought a surge of anxiety and fear worldwide (Delpino et al., 2022). As disease and death rates rose, so did people's concerns, leading to a significant increase in searches for reliable health information (Monzani et al., 2021). After prolonged periods of the epidemic, the demand for psychological treatments also grew (Banerjee, 2020). This research aims to investigate health information search behaviors on the Internet during different waves of COVID-19 in Iran and to explore the relationship between the number of new cases and deaths due to COVID-19 and searches related to anxiety and psychological treatment.

Methodology

This research is fundamental in purpose and descriptive in method. The statistical population includes Iranians who used the Internet to search for information from February 2020 to April 2022. The first part of the data involves the relative volume of searches, which refers to the ratio of searches for a specific concept to the total number of searches during a specific period. This data is presented as a ranking from 1 to 100 by the Google Trends website (Nuti et al., 2014). The relative daily volume of searches related to anxiety and psychological treatment was extracted and cleaned for six waves of COVID-19 in Iran. The second part of the data consists of daily statistics of new infections and deaths due to COVID-19, obtained from the Johns Hopkins University website and approved by the Iranian Ministry of Health. Data analysis was conducted using the Granger causality test and Pearson correlation within the framework of the vector autoregression model. Statistical calculations were performed using Python programming language version 3.12.

Findings

In the first to third waves of the disease, the correlation between the number of new cases and the search volume for anxiety-related concepts increases. However, from the third wave onwards, this correlation decreases. The results of the Granger causality test show that in the first and second waves, the number of new cases significantly predicts the trend in searches for anxiety-related concepts, but this predictive ability is lost after the second wave. In other words, after the second wave, the increase in the number

of new cases does not lead to an increase in searches for anxiety-related concepts. Initially, the correlation between new cases and anxiety searches increases and then decreases, following a consistent pattern. However, the correlation between death rates due to the disease and anxiety searches does not follow a regular pattern.

The correlation between searches for psychological treatment and the number of cases follows a reverse pattern compared to anxiety. In the first and second waves, there is a weak correlation between the number of new cases or death rates and searches for psychological treatment. However, over time, this correlation increases. The results of the Granger causality method indicate that the number of new cases, in all waves except the first, can predict searches for psychological treatment. Additionally, death rates, in all waves except the third (with a significance level of 0.07), can predict the trend in searches for psychological treatment.

Conclusion

The results indicate that people's initial reaction to the COVID-19 epidemic was fear and anxiety, driven by media-reported patient and death statistics. This led to increased anxiety-related searches, but these searches decreased over time, possibly due to people's adaptation to the disease. Initially, searching for psychological treatment was not a priority compared to physical health. However, after several months, the need for psychological treatment grew, likely due to ongoing fear and anxiety (Delpino et al., 2022), economic problems, and reduced social support due to social distancing (Banerjee, 2020). Analyzing Internet search data can align significantly with social health events, providing valuable insights for health system decision-makers by highlighting societal concerns and mental priorities.

Keywords: Anxiety, Covid-19, Google Trends, Health Literacy, Psychological Treatment.

Ethical Considerations

This study was approved by the Research Ethics Committee of Tehran University (code IR.UT.PSYEDU.REC.1401.056). Google Trends anonymized the identity of searchers, ensuring full privacy protection.

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Conflict of Interest

There is no conflict of interest associated with this article.

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