The Impact of Social and Broadcast Media on Public Health Initiatives: Study of the COVID-19 Infodemics

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Abstract. The COVID-19 outbreak, declared a pandemic in March 2020, lacked specific treatments until vaccine development. Medication misinformation via media caused panic, self-prescription, and drug resistance. False propaganda led to shortages. This study analyzes Google Trends for hydroxychloroquine (HCQ), azithromycin, and BCG vaccine searches across six countries. US, Brazil, and India showed interest in HCQ, while Taiwan, Japan, and South Korea focused on BCG vaccine. This article aims to raise awareness of adverse drug reactions, cautioning against self-prescription, political assumptions, and social media during future emergencies.

Keywords. COVID-19, Adverse Drug Reactions, Misinformation, Google Trends, Social Media, Broadcast Media, Pandemic

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1.   Introduction

WHO's Director General - Dr. Tedros Ghebreyesus said in the Munich Security Conference 2020: "We're not just fighting a pandemic; we're fighting an infodemic." [1]. The COVID-19 pandemic was accompanied by an infodemic, which refers to the sharing of excessive amount of false / misleading information through digital / physical environments during the pandemic [2]. The infodemic, comprising of fake news, misinformation, rumors, stigma and conspiracy theories, became very common during the pandemic. The easy access and excessive use of social media (from Facebook and Twitter to online websites etc.) and broadcast media (TV, Radio, and Newspapers etc.) were the major communication channels in spreading the infodemic during COVID-19 pandemic. Sharing unverified medical or scientific information poses significant dangers, particularly during pandemics. Swiftly identifying and countering misinformation from these sources is imperative. Social and broadcast media, when used responsibly, can effectively distribute accurate medical and scientific information to patients, clinicians, and scientists [3]. Therefore, proper management and monitoring of social / broadcast media should be done to avoid and manage the possible Infodemics [4].

The outbreak of coronavirus disease (COVID-19), caused by the novel coronavirus -severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), reported in December 2019 in Wuhan, China was declared a pandemic by the World Health Organization (WHO) in March 2020 [5]. Frontline healthcare providers have since struggled to find standard efficacious treatment regimens till now. So far, no specific antiviral treatment has been recommended for COVID-19, even though several potential drugs, such as artesunate, infliximab, imatinib, and tocilizumab (Monoclonal antibody) are under trial [6]. In the meantime, infected patients are receiving supportive care to help alleviate symptoms. The literature has shown that influential people with political / social positions do have effects on public attention, behavior and daily lives, e.g., decision making and purchasing power [7]. Social media's power to spread catchy quotes instantly has grown alongside TV news. On March 19 and April 4, 2020, ex-US President Trump's endorsement of hydroxychloroquine (HCQ) triggered global attention [8]. Following suit, Brazilian President Bolsonaro advocated HCQ use [9]. Analytics from TV, Tweets, Google searches, and Amazon purchases reflected public response [7]. Panic buying led to medication shortages and ICU cases due to self-medication [10].

2.   Methods

In response to promotion by the US President, there was an increased number of prescriptions in hospitals and also an increased number of clinical trials being conducted on this drug [11]. His recommendation towards the use of HCQ, concealed the negative aspects of the drug. Deaths due to an overdose of the drug were reported in Nigeria following attempts at self-prescribing [12]. IWe quantified public interest in HCQ, azithromycin, and BCG vaccine using Google Trends (as shown in Figure 1), during the period from 13 March to 12 April 2020 [13]. Search peaks for HCQ aligned with the US President's endorsement. Relative search volume data were categorized by pandemic

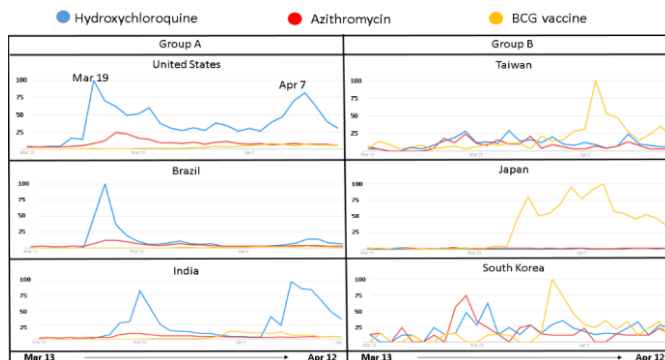response success. Group A (US, Brazil, India) struggled; Group B (Taiwan, Japan, South Korea) succeeded [14].

Figure 1. Google trends for hydroxychloroquine, azithromycin, and the Bacillus Calmette-Guérin (BCG) vaccine across six countries from 13 March to 12 April 2020.

3.   Results

COVID-19 response divided into two groups: Group A (US, Brazil, India) struggled; Group B (Taiwan, Japan, South Korea) succeeded. Group A sought HCQ, while Group B explored BCG vaccine. Politics and media influence. Lopinavir/ritonavir, ribavirin, and remdesivir had less interest due to limited evidence from small studies.[6].

4.   Discussion

This article discusses the influence of media and political leaders on drug use during emergencies, potentially worsening public health issues. HCQ, a long-used drug for malaria, RA, DLE, and SLE, is studied [15]. These drug at one point was being used to treat COVID-19 patients, due to its efficacy as indicated in early preliminary trials [16]. The increasing popularity of HCQ following the US President's promotion led to the general public trying to stock up on the drug, and pharmacies reporting shortages due to panic-buying of HCQ [17]. Regular HCQ users for chronic conditions faced unnecessary suffering [17]. FDA and WHO cautioned against HCQ in trials for heart rhythm risks [18,19]. Renowned journal retractions due to data fabrication occurred [20,21]. Articles suggesting HCQ's cardiovascular effects added uncertainties. Moreover, harm from the combination of HCQ and azithromycin was reported. Adverse effects in the form of increased potential for ventricular arrhythmias and cardiovascular fatalities indicated that these drugs should be avoided in combination [22]. However, a study also indicated that there was no significant association of the combination of HCQ and azithromycin with in-hospital mortality [23].

Information on the BCG vaccine (a common vaccine for tuberculosis) was also widely searched, especially in Asian countries (see Figure 1). It has been hypothesized

that countries with a mandatory BCG vaccine were less affected by COVID-19 as compared to the countries without the policy [24]. However, there was a lack of evidence in support of this assumption which indicated the need for more investigation. Public participation showed an effective role for successful public health initiative [25].

As COVID-19 treatment options, the efficacy of these drugs is unverified and unsupervised use can be harmful. This article increases awareness of associated adverse reactions. We analyzed common adverse drug reactions (ADRs) for HCQ, azithromycin, and the BCG vaccine through Vigilances', an ADR database managed by the WHO Collaborating Centre, Uppsala Monitoring Centre, providing vital support to the WHO Program for International Drug Monitoring [26].

HCQ ADR search: 22,373 records; 57% Americas, 14% Asia. Top ADRs: general disorders (9,752), GI issues (3,832), musculoskeletal problems (3,244). Azithromycin ADRs: 56,953 reports; 34% Americas, 48% Asia. BCG vaccine ADRs: 33,913 reports; 25% Americas, 16% Asia. Leading ADRs: infections (12,859), blood issues (10,800), general disorders (10,314) [26].

DRs for HCQ were highest in the Americas, followed by Asia. Azithromycin ADRs were predominantly from Asia, with the Americas next. For BCG, the Americas reported the second-highest ADRs. These results signal the need for increased caution in using these drugs for COVID-19 in regions with high ADR reports.

5.   Conclusions

We aim to increase awareness and deter self-prescription of drugs. WHO and US FDA COVID-19 treatment recommendations are uncertain. Strong clinical evidence is lacking. Public should avoid self-prescribing or hoarding HCQ, especially with heart issues. Trust verified health authorities like CDC, not politics or social media. Following recommended preventive measures is key for safety.

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