Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Letter to the Editor

Potential impact of COVID-19 pandemic on escalating antimicrobial resistance in Pakistan

Dear Editor,

We read with interest the article recently published in this journal, entitle underestimation of co-infection in COVID-19 due to non-discriminatory use of antibiotic by Chien and Chan.[1] Authors discussed the use of antibiotics and risk of antimicrobial resistance during the COVID-19 pandemic and in this letter we explored the possible effects of COVID-19 pandemic on antimicrobial resistance (AMR) in Pakistan.

The COVID-19 pandemic has become a worldwide public health disaster and as of July 14, 2021, there had been more than 189 million confirmed cases and 4 million deaths reported globally. Likewise the toll of confirmed COVID-19 cases in Pakistan reached more than 981,392, including over 22,689 deaths, since February 26, 2020.[2]

In the shadow of COVID-19 Pandemic, there has been another ongoing pandemic of antimicrobial resistance (AMR). It is likely that the COVID-19 pandemic is fueling the emergence of antimicrobial resistance due to high rate of inappropriate use of antibiotics worldwide. World Health Organization (WHO) has places antimicrobial resistance among the top 10 most urgent health threats to mankind.[3]

Antimicrobial resistance (AMR) has emerged as one of the principal public health disaster of the 21st century that threatens the effective prevention and treatment of an ever-increasing range of infections caused by bacteria, parasites, viruses and fungi no longer susceptible to the common medicines used to treat them. The problem of AMR is especially urgent regarding antibiotic resistance in bacteria. Antimicrobial resistance poses a serious threat to global public health with long term negative humanitarian and economic consequences. It is estimated that drug resistant infections already kill more than 700,000 people per year around the world and if this threat left unchecked it could kill 10 million people per year by 2050.[4] The COVID-19 pandemic could lead to a further increased the over and misuse of antibiotic, possibly resulting in subsequent emergence and further high level spread of antibiotic resistance. Current scientific literature suggests that only 8% of hospitalized COVID-19 patients experience a bacterial or fungal co-infection, however 72–90% of these patients receive antibiotic treatment.[5] Wide spread use of antibiotics increases the likelihood of bacteria becoming resistant with catastrophic effect. COVID-19 pandemic has not only exposed health system challenges but also exacerbated other public health crises such as AMR in poor countries including Pakistan.

In Pakistan, the percentage of antimicrobial resistance is already very high and COVID-19 pandemic further increases the percentage of AMR to the alarming level which could spell the serious disaster on the fragile health care system of the country. In Pakistan, the 65% increase in the consumption of antibiotics was reported between, 2000–2015. More than 500,000 people, annually die in Pakistan due to medication errors such as wrong prescription, overdose of drugs and self-medication.[6] Although unmeasured, there is a chance that a high proportion of people are taking antibiotics in misguided attempts such as self-medication. Such practices would likely be more prevalent in developing countries including Pakistan where antibiotics are easily obtained without a prescription. In June 2020 in Pakistan, with the up-surge of COVID-19 cases during the first wave of pandemic, the consumption of antibiotics increased 23.3% as compared to January 2020. The consumption of azithromycin in June 2020 was at 88.6% from January 2020.[7]

Pakistan is the third highest consumer of antibiotics in the world after India and China. It is already reported that there are more than 600,000 non-registered medical practitioners and 70,000–80,000 unqualified quacks involve in illegal medical practice in Pakistan.[6]

In Pakistan antimicrobial resistance has been recognized as a national concern since 2014. However, challenges in efforts to stringently monitor the consequences of the spread of AMR have not been consistently and substantially addressed at a national level. The mapping of AMR in the absence of a well-established surveillance network, has meant that AMR information, at national level is not available. Pakistan is the fifth country in the world with highest burden of tuberculosis and over 27,000 drug resistant TB cases reported every year.[8] On the other hand during 2016–2018, 5274 cases of extensively drug resistant (XDR) typhoid fever were reported in Sindh province of Pakistan. Drug resistant TB or typhoid fever cases in Pakistan are not only a serious threat for Pakistan but also for health authorities worldwide. However the overuse and misuse of Azithromycin in Pakistan could generate resistance against antibiotic, further complicating the treatment of extensively drug resistant typhoid fever in Pakistan and its consequences will be beyond the borders.

Key reasons for the emergence of drug resistance in Pakistan include, delays in diagnosis, unsupervised, inappropriate and inadequate drug regimens, poor follow-up and lack of social support programs for high risk populations and now due to COVID-19 pandemic disruption in healthcare services, shortage of drugs, wide use of biocides, misuse of antiobiotics and surge in misinformation. Emerging scientific evidence for the treatment of COVID-19 will helpful that healthcare professionals recommend antibiotics only when needed.

Health authorities in Pakistan and other developing countries must be vigilant and cautious that the fight against COVID-19 does not invite another microbial threat to the humanity. Long term research studies are needed to assess the overall impact of excessive use of antibiotics during COVID-19 pandemic and AMR trends worldwide. Greater efforts are require to preserve antimicrobial

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stewardship measures during COVID-19 pandemic and future outbreaks and epidemics. In addition, educating healthcare professional and general public is critical, especially given the misinformation circulating on social, electronic and print media about potential treatment for COVID-19, including antibiotics.

Declaration of Competing Interest

All author declared that there is no conflict of interest.

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