

## Antimicrobial resistance, COVID-19 and self-medication in Syria: a potential boost for an already escalating problem

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The COVID-19 pandemic has devastated the world and its impact has spread far beyond healthcare facilities, even influencing health-seeking behaviours, thereby awakening one major concern for us. The debate on whether the pandemic has resulted in an increase or decrease in antimicrobial resistance (AMR) rates has become a necessity.<sup>1</sup> Although antibiotics' overuse and self-medication direct us towards the worst result, stringent containment measures employed by governments across the globe might have counteracted the increase. However, in war-torn countries those measures were not as effective as they should have been.

Syria has been ravaged by a protracted war that has resulted in a deteriorated healthcare system. The economic impact of a long-lasting lockdown and stringent containment measures was difficult to bear in light of the pre-existing economic burden of the war. Moreover, awareness campaigns reinforcing social distancing and the wearing of facemasks have not yielded the desired outcomes given the ongoing near-normal life. Additionally, antibiotics and particularly azithromycin are being widely prescribed for cases with flu-like symptoms, or more easily, obtained from pharmacies without a prescription. Apart from a national curfew and lockdowns in certain areas of Syria during the first wave of COVID-19, other containment measures that could limit the increase of AMR rates, such as social distancing and isolation of positive cases, have been poorly employed since then. However, it cannot be said that factors suggesting the decrease of AMR rates are entirely absent in Syria. General hygiene was being taken more seriously by Syrians, as the majority of the participants in one study reported washing their hands carefully after returning home, using sanitizers and avoiding physical contact (81.3%, 60.7% and 84.9%, respectively),<sup>2</sup> while 95.8% of the participants of another study indicated washing their hands more frequently and 90.8% affirmed that they were paying greater attention to their hygiene after the pandemic.<sup>3</sup> However, both these studies revealed that the recommendation of wearing facemasks outside homes has been overlooked, as the adherence to this protective measure was 40.9% and 27.9%, respectively,<sup>2,3</sup> although it was somewhat better in crowded areas (52.5%);<sup>2</sup> still, the community seems very well informed about the importance of this and other preventative measures, as 89.3% of the participants in one study agreed that

facemasks protect against COVID-19 and more than 99% of them asserted that staying home and avoiding crowded areas can spare them from the disease.<sup>4</sup>

The first wave of the pandemic was reportedly associated with an increasing interest in self-medication, as the Google search trends for self-medication and other similar terms saw an increase during the first half of 2020.<sup>5</sup> This might have actually relieved to some extent the burden on the overwhelmed healthcare workers and prevented some nosocomial infections. However, self-medication with antibiotics as prophylactics against COVID-19 has been observed, and estimated at 19.5% of the participants in one study in Australia, for instance,<sup>6</sup> and such practice might have contributed to the increased incidence of AMR reported in some parts of the world.<sup>7</sup> Self-medication with antibiotics exacerbates the AMR crisis and is commonplace in Syria, as the majority of participants in two studies indicated self-medicating with antibiotics.<sup>8,9</sup> Although the impact of the pandemic on this practice in Syria is yet to be addressed, several factors could affect both possibilities. Patients worried about getting the disease and therefore seeking medical advice, in addition to the number of public polyclinics—which are devoted to secure access to nearly free healthcare—increasing throughout the years of conflict might have increased the reliance on professional consultation. On the contrary, factors supporting the increase of self-medication include: harsh economic conditions accompanied by a surge in the clinical examination charges in private clinics; the existing tendency to take antibiotics based on others' experience,<sup>8</sup> which oftentimes encompassed an antibiotic prescribed to treat possible COVID-19 coinfections; avoiding clinics and hospitals for fear of getting infected or stigmatized; using leftover antibiotics for recurrent infections; the widespread misinformation about azithromycin's efficiency against COVID-19; and finally the psychological distress reflected in the need to do anything preventative.

Although regulations prohibit the sale of antibiotics without prescription in Syria, this process could not be any smoother. Patients obtain antibiotics from pharmacies without prescriptions routinely and pharmacists dispense effortlessly.<sup>10-12</sup> Moreover, patients misuse antibiotics and are not well aware of the AMR problem;<sup>8</sup> sadly, neither are some community pharmacists.<sup>11</sup>

Finally, a recent study revealed that around 45% of the participants would self-medicate if they suspected they were infected with COVID-19; moreover, around one-fifth of them believed antibiotics could treat this disease,<sup>2</sup> and so did 34% of the participants in another study.<sup>4</sup>

Loose containment measures imposed in Syria and the potential increase in the practice of self-medication with antibiotics could worsen the already precarious situation. High rates of AMR in Syria have already been reported,<sup>13</sup> and the underlying factors as well as the potential solutions are well illustrated.<sup>14</sup> Considering this problem as a local threat is an illusion and a grave mistake, since the continued immigration of Syrian people leaves no one free of the clutches of this major problem, which could become some of the worst collateral damage of this pandemic, driving us a step backward towards the pre-penicillin era.

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## Transparency declarations

None to declare.

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