

Toxicology practice during COVID-19 pandemic: Experience of the Dammam Poison Control Centre-Eastern Province, Saudi Arabia

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ABSTRACT

The sudden emergence of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and scarcity of the accurate information especially in the initial phase of the struggle presented a series of challenges to health systems. To evaluate the changes in poisoning cases regarding distribution, types, and characteristics for better framing and planning of the role of our field in responding to pandemics. Study of telephone consultation calls and toxicology analysis records of poisoning cases referred to the Dammam

Poison Control Center in Saudi Arabia during the first half of 2020. Their distribution according to frequencies, causes, and other characteristics was compared to the first half of 2019. Analysis of telephone consultation calls revealed that the proportion of exposure to disinfectants and hand sanitizers during first half of 2020 increased to 20.4% (n=496) and 3.4% (n=83), respectively, compared to 9.8% (n=215) and 0.4% (n=10) for surface disinfectants and hand sanitizers, respectively, during the first half of 2019. In 2020, exposure to disinfectants and hand sanitizers dominated in preschool children (0-5 years). The total number of cases suspected for drugs/drugs of abuse overdose during the first 6 months of 2020 (n=783) showed a significant decrease ($P<0.001$) compared to the first 6 months of 2019 (n=1086).

INTRODUCTION

The increased availability and use of disinfectants and sanitizers significantly increased the risk of poisoning, especially in preschool-aged children. Public health education for the prevention of such home exposures is urgently needed to avoid unnecessary emergency medical system use in such a critical time. All COVID-19 prevention strategies include regular use of surface disinfectants and hand sanitizers. As these measures took hold in Croatia, the Croatian Poison Control Centre started receiving phone calls from the general public and healthcare workers, which prompted us to investigate the risk of suspected/symptomatic poisonings with disinfectants and sanitizers really increased. To that end, we compared their frequency and characteristics in the first half of 2019 and 2020. Cases of exposure to disinfectants doubled in the first half of 2020 (41 vs 21 cases in 2019), exposure to sanitizers increased about nine times (46 vs 5 cases in 2019) and exposure to sanitizers increased about nine times (46 vs 5 cases in 2019). In 2020, the most common ingredients of disinfectants and sanitizers involved in poisoning incidents were hypochlorite/glutaraldehyde, and ethanol/isopropyl alcohol, respectively. Exposures to disinfectants were recorded mostly in adults (56%) as accidental (78%) through ingestion or inhalation (86%). Fortunately, most callers were asymptomatic (people called for advice because they were concerned), but nearly half reported mild gastrointestinal or respiratory irritation, and in one case severe symptoms were reported (gastrointestinal corrosive injury). Reports of exposure to hand sanitizer's highlighted preschool children as the most vulnerable group. Accidental exposure through ingestion dominated, but, again, only mild symptoms (gastrointestinal or eye irritation) developed in one third of the cases. These

preliminary findings, however limited, confirm that increased availability and use of disinfectants and sanitizers significantly increased the risk of poisoning, particularly in preschool children through accidental ingestion of hand sanitizers. We therefore believe that epidemiological recommendations for COVID-19 prevention should include warnings informing the general public of the risks of poisoning with surface and hand disinfectants in particular.

The pandemic due to Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) has emerged as a serious global public health issue. Since the start of the outbreak, the importance of hand-hygiene and respiratory protection to prevent the spread of the virus has been the prime focus for infection control. Health regulatory organisations have produced guidelines for the formulation of hand sanitizers to the manufacturing industries. This review summarises the studies on alcohol-based hand sanitizers and their disinfectant activity against SARS-CoV-2 and related viruses. The literature shows that the type and concentration of alcohol, formulation and nature of product, presence of excipients, applied volume, contact time and viral contamination load are critical factors that determine the effectiveness of hand sanitizers. The SARS-CoV-2 outbreak causing the respiratory disease COVID-19 has left many chemists in academia without an obvious option to contribute to fighting the pandemic. Some of our recent experiences indicate that there are ways to overcome this dilemma. A three-pronged approach is proposed. An increased use of disinfectants during the coronavirus disease 2019 (COVID-19) pandemic may increase the number of adverse health effects among people who apply them or among those who are in the area being disinfected.

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