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A review of poisonings originating from self-administration of common preventative substances during COVID-19 pandemic

The emergence of a new strain of virus leading to an epidemic or even a pandemic has always been a major challenge for the global healthcare community [1]. Accordingly, the WHO provided some public healthcare guidelines to protect individuals against the COVID-19, including hand-washing with water and soap, use alcohol-base hand sanitizers, consumption of dietary supplements and use of face mask, etc. Since the early public health measures by various local, national and global health agencies, many studies have been conducted and many are underway to investigate the treatment of COVID-19 by testing existing antiviral medications, production of vaccines and new drugs. In addition, different medications previously approved by Food and Drug Administration (FDA) for other purposes were repositioned to treat COVID-19 by reduction in symptoms or to boost the human immune systems. The overall purpose of this review manuscript was to document that there is an increase in substance poisoning as the result of malpractices applied, in the use of disinfectants and detergents, on alcohol consumption, self-medication, in the form of oral consumption, incense and smoking, with drugs, herbal medicine and opium derivatives, etc. as the disease has progressed. The literature search of this narrative review was done in Google Scholar, PubMed, Web of Science and Scopus databases. All relevant published articles since the beginning of pandemic, were selected in order to report the poisonings originating from in self-administration of common preventative substances during COVID-19 pandemic.

A list of reported poisonings of alcohol-based sanitizers, disinfectants, detergents and drugs during the COVID-19 pandemic are provide in Table 1.

According to the previous studies, increased of disinfectant exposure can have various negative effects such as upper and lower respiratory tract irritation, inflammation, edema, ulceration, and allergic reactions on human and other organisms health [21]. Ethanol has been widely used as a disinfectant and/or consumed orally as an alcoholic beverage. Ingestion and/or skin contact with ethanol-based hand sanitizers is associated with minor systemic toxicity [6].

Recently, detergent chemicals have been widely used by people for proper hygiene against micro-organisms [22,23]. The anti-microbial properties of detergents rely on membrane damage/disruption, causing metabolite leakage. It has been proven that the first line of protection against coronavirus is hand washing with water and soap, so the use of liquid and solid soap sales have significantly increased. Furthermore, clothes washing with laundry liquids/powders and disinfection of products that people buy from hypermarkets or department stores by washing liquids has dramatically increased over this pandemic.

In light of the COVID-19 pandemic, it has become extremely difficult to ignore the toxicity effects of detergents overuse on the human body.

In general, detergent products comprise of anionic surfactants and detergent builders, including sodium phosphate, sodium carbonate and sodium aluminosilicate, which are highly alkaline and destructive to our body cells exposed. It has been proposed that overexposure to detergents is associated with various side-effects including irritant contact dermatitis, respiratory problems, such as allergies, asthma aggravation, injury in epithelial cells, and optical problems (corneal irritation and damage). In addition, swallowing dishwashing liquids or other detergents or their residues can lead to gastrointestinal disorders such as nausea, vomiting, pain in mouth and abdomen, diarrhea, and tissue damage in epithelium cells [24].

It has been maintained that isolation experience and loneliness, economic repercussions, job loss and stress or fear with COVID-19 pandemic can play a significant role in triggering the substance abuse and overdose, as a coping mechanism. This may result in an elevation in the prevalence of Substance Use Disorders (SUD) and other harmful associated problems [25-29]. In addition, the informal and illegal production of alcoholic drinks has been reported in many parts of the world, especially in Islamic countries where alcohol is prohibited. The most problematic part of this kind of drinks is methanol poisoning.

One of the greatest health challenges within COVID-19 pandemic is self-medications/self-administrations by different drugs, including overconsumption of dietary supplements, as well as preventive measures such as anti-inflammatory drugs and non-steroid anti-inflammatory drugs (NASID). Some researchers claimed that coronavirus can be treated with nutrition, exactly the same as influenza and

Table 1

A list of reported poisonings of alcohol-based sanitizers, disinfectants, detergents and drugs during the COVID-19 pandemic

Group	Substance name	References
Disinfectants	Hand sanitizer (sodium hypochlorite)	[2]
Disinfectants	Bleaches, hand sanitizers, chlorine gas, other disinfectants	[3]
Disinfectants	Bleach products, hand sanitizers, ethylic alcohol, hydrogen peroxide, and other products	[4]
Disinfectants	Alcoholic hand sanitizers	[5,6]
Detergents, disinfectants, drugs, alcohol	Bleach and home cleaners, hand sanitizers and hand washing, opioids, nicotine, NSAIDs (ibuprofen)	[7]
Detergents, disinfectants, self-medication	House cleaning products, parent- medication, poisonous plants	[8]
Disinfectants	Alcohol-based hand sanitizers	[9]
Disinfectants	Alcohol-based hand sanitizers	[10]
Detergents and disinfectants	All of the dermal COVID-19 protective materials	[11]
Disinfectants	Bleach products, essential oils, alcohol-based hand sanitizers	[12]
Drug poisoning	drug poisoning	[13]
Alcoholic drinks	Illegal and methanol containing alcoholic drinks	[14-20]

SARS-CoV-1. However, overconsumption may contribute to wide spectrum of toxic effects in human body. Since most of the toxic effects of the dietary supplements and anti-inflammatory drugs and herbal medicines are not acute, there were no published report of their direct poisoning during this pandemic.

In conclusion, although there is different preventive approaches for COVID-19, but overuse of all possible prophylactic options offered during the COVID-19 pandemic till the advent of the certain cure, can cause more health problems and lead to different types of crisis. Generally, the main health problems that may occur due to the overconsumption of the possible preventive options are methanol intoxication, skin injury, respiratory problems, gastrointestinal ulcers, nausea, vomiting, epigastric pain, and liver injury. Therefore, increasing the public awareness about the dangers of overuse of disinfectants, detergents, and self-medication of dietary supplements, drugs, and herbal products, seems absolutely necessary.

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H. H.: Supervision, writing and final check, S.G: Search and articles selection, draft writing, N.N: Reviewing and Editing, M.S: Reviewing and Native Editing. All of the authors have read and verified the last version of the manuscript.

Informed consent statement

Not applicable.

Declaration of Competing Interest

The authors declare no conflict of interest.

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