A Review On: Survey of OTC drug trend in covid-19

Prasad Vithoba Kalasare *, Dr. Narendra Govekar *

*1 M.Pharm, Department of Quality assurance technique, Shiddhant Collage of Pharmacy, Sudumbre, Pune, Maharashtra, India.
*2 Assistant Professor, Department of Quality assurance technique, Shiddhant Collage of Pharmacy, Sudumbre, Pune, Maharashtra, India.

ABSTRACT:The current COVID-19 pandemic has spread rapidly worldwide and has challenged fragile health care systems, vulnerable socioeconomic conditions, and population risk factors, and has led to an overwhelming tendency to misuse prescription drugs and self-medication with prescription drugs, over the counter (OTC) drugs, herbals products, and unproven chemicals as a desperate preventive or curative measure for COVID-19. In this chapter, we present the legislative differences between prescription drugs, OTC drugs, and herbals. Various approved and nonapproved prescription and OTC drugs as symptomatic treatment for COVID-19 are listed and evaluated based on their reported efficacy, safety, and toxicological profile. We also present the various herbal products that are currently studied and used as treatment and preventive for COVID-19. The efficacy, toxicology profile, safety, and legal issues of some speculative preventive and treatment options against COVID-19, such as Miracle Mineral Solution (MMS), chlorine dioxide solution (CDS), colloidal silver, and hydrogen peroxide is presented. The chapter also emphasizes the specific strategies that need to be implemented to guide the population in the effective and safe use of prescribed medications, such as the Medication Therapy Management or Pharmaceutical Care process. Finally, this chapter aims to provide a deeper insight into the lack of health literacy in the population and the effect that drug utilization research (DUR) has in the decision making of health authorities and general public. We aim to provide the current information about the various treatment and preventive options used for COVID-19.

KEYWORDS:COVID-19, OTC drug, Analgesic-Antipyretic, Cold-cough, Antibiotic, multivitamin, Prescription, Preventive, SARS-CoV-2, Treatment

I. INTRODUCTION

Since November 2019, a new type of coronavirus infected patients in China. This virus has spread rapidly to 213 countries and territories around the world causing a pandemic that at the time of writing (end of September 2020) has taken the lives of over 1 million people. The COVID-19 pandemic migrated from its initial epicenter in Asia to Europe and is currently causing a tremendous burden in Latin America. This situation has exposed fragile health care systems, vulnerable socioeconomic conditions, higher risk factors because of obesity and increasing rates of undernutrition, lack of procurement of medical supplies, and an inadequate reporting of COVID-19 cases and deaths. For instance, the Ministry of Health of Peru has recognized that its health care system was fragmented before the pandemic, and the current situation has made its fragility become more evident. Latin America has not implemented public policies to control self-medication that it is currently occurring at alarming rates as speculative preventive measures against COVID-19 start to flourish. This event has challenged many health care systems, causing the collapse of many hospitals around the globe. It also impacted the global economy, leaving it vulnerable and probably prone to lose an estimated 2.4% of the GDP of the major economies. Unemployment rates have remarkably increased, leading to a possible recession. The COVID-19 pandemic was accompanied by conspiracy theories, rumors, and infodemic, aggravated because of the availability to access social media, and the development of mental health issues on the population due to the lockdown.

Currently, with over six months of the outbreak of the pandemic, the COVID-19 crisis is expected to markedly affect people's well-being and mental healthas reported in China, Singapore, Iran, Italy, France, United Kingdom, Spain, Chile, Bolivia, Ecuador, Brazil, Peru, and indigenous populations. This disruption in people's work and life has been accompanied by an unprecedented infodemic of fake news. This plethora of misinformation and false reports have spread faster because of social media. The entire

world has been affected by this infodemic, and Latin America has been no exception. However, Peru was the only country in Latin America that took a different approach by implementing prison sentences to the creators and disseminators of fake news.

The infodemic has been accompanied by a surge of unproven religious and herbal treatments for COVID-19 prevention. Herbal remedies or phytomedicinal self-medication use is common in developing countries and patients often do not properly report it to their physicians. It has been reported in a cross-sectional survey that patients do not disclose this information since they are afraid of their doctor's disagreement or negative response because most of them followed advice from a nonmedical source (family, friend, internet, or social media). Other patients stated that their doctor did not ask them, while others considered that it was not necessary to inform their doctor. However, possible drug-herbal interactions are discussed in various reputable pharmacopeias that detail herbal use, efficacy and safety. Furthermore, drug-herbal interaction databases allow physicians to check possible interactions online. This is a confounding factor since people typically self-medicate regardless of the effort of regulatory agencies to educate the population. Unproven prescription drugs have been falsely promoted for COVID-19 prevention and treatment. Health literacy has been defined as the individuals' capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions, and to address or solve a health-related problem. Latin America is a region with a low literacy rate that affects directly the drug utilization research (DUR), which encompasses the use, efficacy, and safety of medicines based on local research. This is primarily caused by the existence of a very limited generation of scientific publications by local investigators. On the available studies, data collection bias has been identified since they present methodological issues such as limited validation, small sample size, and unavailability of information and involvement of the public sector. All this causes a significant impact in the clinical and regulatory decisions that impact directly the public health decision making. In general, public health decisions in Latin America are adaptations of public health policies of other countries,[11] rather

Over The Counter (OTC) Drugs

OTC drugs are medicines that can be sold without a prescription directly to the consumer

than an actual country-based decision justified by local research. A clear example of this was the implementation of supervised walks for children and adolescents during the COVID-19 lockdown in Peru, which was based on the same measure that was implemented in Spain. However, this decision in Peru was implemented on May 18, 2020, when data from Spain already indicated that the number of COVID-19 cases increased in this age group, but importantly occurred at the time that the Multisystem Inflammatory Syndrome in Children (MIS-C) cases kept increasing in COVID-19 children around the world.

The U.S. Food and Drug Administration (FDA) declared that there are not any approved drugs or therapeutics to treat or prevent COVID-19 yet. That doesn't mean that health professionals don't know how to treat a patient with COVID-19, the management consists of symptomatic care and individualized treatment depending on the type of patient we have. However, this lack of knowledge has created a pathway leading to a growth in the tendency of self-medication, self-treatment, and self-care within the society. People put their health at risk due to peer pressure, medication availability, previous experience self-medicating, among other correlated factors. For example, a person can take dietary supplements such as silver instead of receiving professional care to treat or prevent coronavirus without any sustainable evidence of the effects of those substances against the SARS-CoV-2 or the adverse effects of those products just because someone recommended it on social media or TV.

This chapter intends to present the safety, efficacy, and toxicology profiles of different products that were promoted by the people during the COVID-19 pandemic promising to treat or prevent the disease, such as prescription drugs, over the counter (OTC) drugs, herbal products, and unproven chemicals. It also shows the need to implement strategies to guide the population and health care professionals in order to take safe and effective measures to fight against this virus. The COVID-19 pandemic has shown us that the population needs to be urgently correctly informed about the protocols, ways of prevention, unsafe medications and treatments for this disease, and what to do if a person suspects of having the disease.

according to the specific regulations of each country. In the context of the COVID-19 pandemic, OTC drugs can be used as symptomatic treatment for mild COVID-19 cases without the need for the

patient to go to the hospital. It is important to notice that due to the ongoing situation regarding COVID-19 pandemic, hospitals regularly are saturated. As a consequence, patients who have mild symptoms of coronavirus can be treated at home. The mild symptoms of COVID-19 include fever, dry cough, and tiredness. It is important to note that loss of smell (anosmia) has been recognized as a prominent clinical symptom in COVID-19 patients without any other significant signs. Since there is no available treatment for COVID-19 related anosmiait is important to have a proper olfactory evaluation. Other symptoms that are less common but still considered mild are body aches, headache, sore throat, nasal congestion, and diarrhea.We present the OTC drugs that have been recommended for mild COVID-19 symptoms. Below Table shows the OTC drugs that have been used for COVID-19 symptomatic treatment.
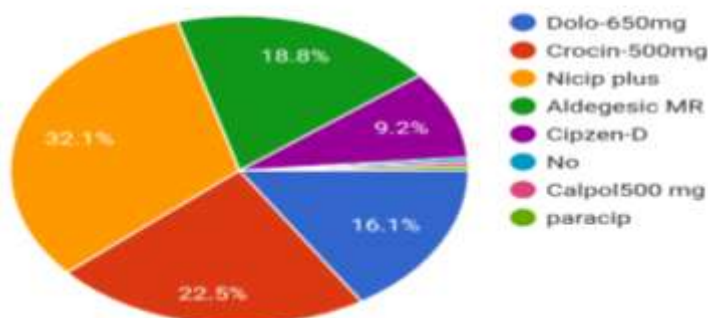
Type of drug	Generic name	Symptom
Analgesic	Acetaminophen	Fever, mild pain
Antiinflammatory	Ibuprofen	Fever, moderate pain
	Naproxen	
Cough suppressant	Dextromethorphan	Cough
Antihistamines	Loratadine	Nasal congestion, Sneezing
	Cetirizine	
Sympathomimetic	Pseudoephedrine	
	Phenylephrine	
Opioid	Loperamide	Diarrhea

Some Of OTC drugs as COVID-19 symptomatic treatment.

The most commonly self-prescribed medications are analgesics, antipyretics, antitussives, antidiarrheals, calcium and vitamin supplements, anabolic steroids, sedatives, certain the air gaps.

antibiotics, and many herbal and homeopathic remedies.
Analgesic-Antipyretic-The drug which are used to cure or Prevent Fever&Pain.

I have purchased drug from Analgesic Antipyretic category
218 responses

- Dolo-650mg
- Crocin-500mg
- Nicip plus
- Aldegesic MR
- Cipzen-D
- No
- Calpol500 mg
- paracip

18.8% / 9.2% / 16.1% / 22.5% / 32.1%

Fever and body aches

In the management of fever due to COVID-19, and in general to any pathology, acetaminophen is recommended. The antipyretic effect and its safety at recommended doses make acetaminophen one of the most-used OTC drugs during the COVID-19 pandemic. However, the increasing use of acetaminophen for managing the COVID-19 associated fever is generating concern because patients can take high doses, which can lead to acute liver injury (ALI) or acute liver failure (ALF) due to overdose. Acetaminophen standard therapeutic oral dose is 0.5–1 g every 4–6 h to a maximum of 4 g/day, but more importantly it has a dose-dependent toxicity. Acetaminophen can cause hepatoxicity after major overdose, and severe liver damage has been observed with long-term use even at therapeutic doses in patients with alcoholic liver disease or viral infections. Furthermore, it has been reported that long-term consumption of acetaminophen carries a potential risk factor for chronic renal failure, cardiovascular and gastrointestinal diseases, and even mortality. This is corroborated in recent studies that have reported an increase in alanine aminotransferase, aspartate aminotransferase, bilirubin, and creatinine in patients with confirmed COVID-19. In addition, it has been reported that more than half of patients with ALI and ALF induced by acetaminophen have

undetectable levels of acetaminophen, which is concerning. Therefore, clinicians should not rule out the possibility of acetaminophen toxicity and should pay attention to patients with a history of suspected acetaminophen poisoning or associated biochemical profile. This is important now with a potential significant increase in acetaminophen use due to the COVID-19 pandemic.

Nonsteroidal anti-inflammatory drugs (NSAIDs) play an important role in the treatment of fever and muscle aches. Ibuprofen is the most widely used OTC NSAID and has good properties for fever and pain. However, in the context of COVID-19 pandemic, it should be noted that the use of ibuprofen had a controversy due to statements in France, where it was stated that ibuprofen could worsen the clinical state in COVID-19 patients. Nevertheless, both the World Health Organization (WHO) and the European Medicines Agency (EMA) recommended not avoiding NSAIDs when clinically indicated due to lack of scientific evidence. Recent studies suggest that there are two phases in the immune response induced by the SARS-CoV-2. The first corresponds to the incubation and nonsevere stages, in which an immune response is required to eliminate the SARS-CoV-2 and prevent progression to severe stages of the disease. Thus, the defense mechanism in the initial stage might be blocked by NSAIDs. The second phase corresponds to the severe stage, in which lung damage appears to be related to a cytokine storm due to an acute immune reaction. It is in this second stage where the use of NSAIDs might be of more importance. In addition, the strong antipyretic efficacy of ibuprofen, which is more potent to reduce fever compared to acetaminophen, may be interfering with the benefits of a fever response. Nonetheless, there is no strong evidence that can support the worsening of COVID-19 symptoms due to ibuprofen, and more research is needed such as case-control studies, cohorts, and randomized clinical trials. Therefore, acetaminophen continues to be the first option in treating fever during the SARS-CoV-2 infection. NSAIDs are clinically recommended when the fever is high, and the aches are really strong. In the case it is required to take an NSAID, although there is no significant evidence to remove ibuprofen from the list, people can opt for naproxen, which is also an OTC drug, and its effects last longer than ibuprofen. Likewise, it is important to keep in mind the presence of fever as a symptom in areas of prevalence of malaria and dengue, because it can be a factor that is confused with COVID-19 when in reality it denotes the possibility of contagion by these two diseases.

Dry cough

In the treatment of dry cough, dextromethorphan has been widely used. In the context of COVID-19, it has been reported that dextromethorphan has a pro-viral activity because it stimulated the growth of the virus in monkey epithelial cells. A cellular stress coping process appears to be started by dextromethorphan, and this mechanism is also used by the SARS-CoV-2 for its replication. Consequently, its use should merit caution and further study in the context of COVID-19 treatment. In contrast, the TAS2R gene is believed to play an important role in host defense pathways and has been reported that dextromethorphan is an agonist of this gene and could improve immunity especially in the treatment of dry cough. However, both studies are not conclusive enough to promote or restrict the use of dextromethorphan for the management of dry cough in SARS-CoV-2 infection.

Nasal congestion

Despite the fact that nasal congestion is a not-so-frequent symptom during COVID-19 infection, it is a symptom that should not be ignored. There are some OTC drugs for this symptom such as antihistamines, phenylephrine, and pseudoephedrine in combination with antihistamines: pseudoephedrine and loratadine, or dexbrompheniramine and pseudoephedrine. In an experimental study, it was reported that pseudoephedrine had a protective effect in mice infected with influenza A virus because it could mitigate the cytokine storm and improved lung pathological damage. However, a clinical study is still necessary to support its use in humans.

I have purchased drug for cold cough, thorat inf
218 responses

- Triz syrup
- Ascoril
- Benedryl
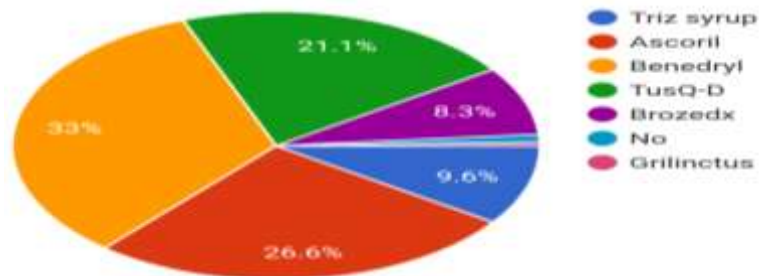- TusQ-D
- Brozedx
- No
- Grilinctus

Fig: Antibiotic-the drug which are used to kill microorganisms and most commonly purchased antibiotics during covid 19 period

I have purchased drug from Antibiotic category
218 responses

- Azee-500mg
- Doxycycline-100...
- Almox 500mg
- Zificv 200mg
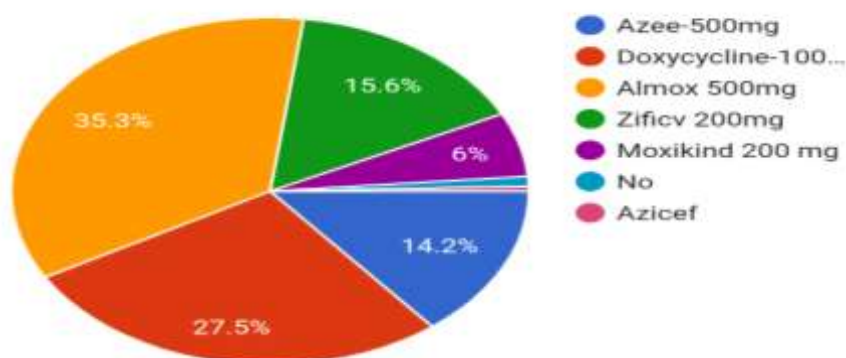- Moxikind 200 mg
- No
- Azicef

Fig: Multivitamins-multivitamins are used to boost immunity and the immunity factor is very important during treatment of covid 19 or any other diseases.Eg. zincovit, limcee, eucee, becasule, supraden,

I have purchased multivitamin tabelt
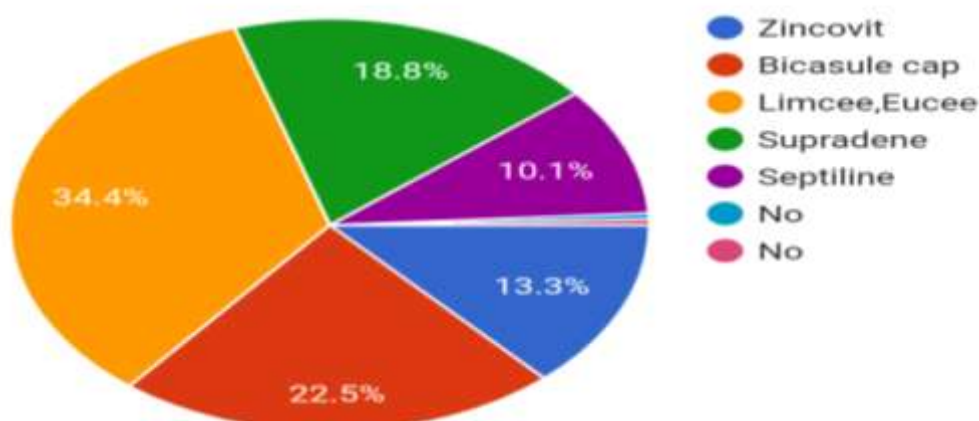218 responses

Fig: Ayurvedic/Herbal Drug: mahasudarshan kadha, liv13, Adulsa, safi, kanthasudharak vati,tula drop, Ayush kadha, liv52 etc.

Herbals
The lack of evidence to recommend a specific treatment for COVID-19 and the absence of an available vaccine to prevent this disease, lead us to consider the supportive care and the symptomatic treatment as good strategies to deal with COVID-19. Historically, herbal medicine has been used in everal epidemics of acute respiratory infectious diseases, including severe acute

Pharmaceutical care during the COVID-19 pandemic
COVID-19 is an infectious disease of pandemic proportions, with more than 34 million cases and over 1 million deaths reported worldwide (at the time of writing). The current pandemic has generated many problems with the use of drugs for prevention and treatment, influenced by fake news[17] and other aspects. During COVID-19, people have needed to receive pharmaceutical care and it has been shown that pharmacists have been able to provide different services to patients. The care of patients with COVID-19 within hospital settings presented different limitations that has generated negative impact in the mental health and job satisfaction of health care professionals. Despite this, it has been possible to report clinical interventions to optimize the use of medications and avoid self-medication. There is a need for health professionals to guide patients and their families to take the necessary actions to prevent further infections, especially the most

respiratory syndrome (SARS) and influenza. This knowledge is valuable to inspire possible treatments for COVID-19. In this section, we present the use of several herbal medicine, that have been evaluated in randomized controlled trials (RCT) and some other herbal compounds with an antiviral effect that have evaluated in preclinical studies.

vulnerableThus, Cadogan and Hughesrecognized that pharmaceutical care can contribute to the following actions:
1.Provide objective and reliable information on the disease and associated symptoms.
2.Educate the public about infection control and preventive measures to reduce transmission (e.g., hand hygiene, social distancing, and self-isolation).
3.Implement infection control measures (e.g., cleaning and disinfection of the pharmacy environment, limiting public access to the pharmacy).
4.Maintain continuity of pharmacy services, including supplies of essential medications and other products (e.g., hand sanitizers, protective masks).
5.Facilitate continued supply of OTC and prescription medications to patients (including emergency supply of repeat medications where necessary).
Likewise, Li et al. were able to recognize innovative strategies to deal with COVID-19 such

as establish evidence-based drug evaluation and guidelines; remote inpatient order review and dispensing telepharmaceutical care, telehealth counseling, and patient education; and multimedia health education. At the hospital level, Song et al. has also evidenced the contribution in medical rounds of pharmacists to optimize pharmacotherapy. Many community pharmacies have been on the frontline of health service to fight against COVID-19, dispensing products, and providing counseling about drugs to patients,and fighting against misinformation.Specifically, there is evidence from Germany that shows that pharmaceutical care in the pharmacy, telephone, and video call was provided from community pharmacies with 44.2% of pharmacies that conducted medication reviews during the COVID-19 epidemic. The contribution from the rural pharmacy in actions against COVID-19 has even been described. In China expert teams were created to focus on issues related to pharmaceuticals, pharmacokinetics, and pharmacotherapy, as well as treatment alternatives due to drug shortages. Finally, it has been reported that telepharmacy services have continued to guide patients.

Methods: The actual survey consisted of an online questionnaire in Google surveys that was sent via WhatsApp, Messenger, and Facebook,and it was configured to submit an email at the end of the surveyso that investigation group can eliminate duplicate answers. Theshared questionnaire was made anonymous ensuring data confidentiality and reliability.

II. CONCLUSION

COVID-19 is a new disease, and we are still understanding its pathophysiology and symptomatology, and are in the process of producing an effective and safe vaccine and specific treatments. Currently, various prescription and OTC drugs, herbal products, and unproven chemicals have been used in an effort to manage the COVID-19-related symptoms. The efficacy, safety, and toxicology of these has been presented, and caution needs to be taken with all of them. Medication therapy management or pharmaceutical care is critical as well as consultation with community pharmacists. The sense of urgency and desperation against a pandemic is evident, but the caution against the preventive and COVID-19-related symptom treatment is warranted. Future studies and therapeutic strategies will continue to be produced in order to counter a pandemic that has affected so many people and lives across the globe.

REFERENCES
[1]. Ma J. 28 September 2020. Coronavirus: China's first confirmed Covid-19 case traced back to November 17.https://www.scmp.com/news/china/society/article/3074991/coronavirus-chinas-first-confirmed-covid-19-case-traced-back Available from: [Google Scholar]

[2]. Davidson H. 28 September 2020. First Covid-19 case happened in November, China government records show - report. https://www.theguardian.com/world/2020/mar/13/first-covid-19-case-happened-in-november-china-government-records-show-report Available from: [Google Scholar]

[3]. ong E., Du H., Gardner L. An interactive web-based dashboard to track COVID-19 in real time. Lancet Infect Dis. 2020;20(5):533–534. [PMC free article] [PubMed] [Google Scholar]

[4]. Almeida F. Exploring the impact of COVID-19 on the sustainability of health critical care systems in South America. Int J Health Pol Manag. 2020 In press. [PubMed] [Google Scholar]

[5]. Cuevas A., Barquera S. COVID-19, obesity and undernutrition: a major challenge for Latin American countries. Obesity. 2020 In press. [PMC free article] [PubMed] [Google Scholar]

[6]. Rubin R., Abbasi J., Voelker R. Latin America and its global partners toil to procure medical supplies as COVID-19 pushes the region to its limit. J Am Med Assoc. 2020;324(3):217–219. [PubMed] [Google Scholar]

[7]. Yáñez J.A. EClinicalMedicine; 2020. Demographic and geographic COVID-19 death risk factors in Peru. A nationwide analysis. https://ssrn.com/abstract=3648543 Available at: SSRN. [Google Scholar]

[8]. Panamericana. 05 July 2020. COVID-19 sí habría ocasionado más muertes en el país que casos reconocidos por el gobierno. https://panamericana.pe/nacionales/295269-covid-19-ocasionado-muertes-pais-casos-reconocidos-gobierno Available from: [Google Scholar]

[9]. Yáñez J.A., Alvarez-Risco A., Delgado-Zegarra J. 01 July 2020. Rapid Response: Does Peru really have that high number of

COVID-19 confirmed cases? The deception of combining RT-PCR and rapid test results. https://www.bmj.com/content/369/bmj.m2518/rr-4 Available from: [Google Scholar]

[10]. Rojas Román B. Tratamiento de la COVID-19 en Perú y Bolivia y los riesgos de la automedicación. Rev Cubana Farmac. 2020;53(2):1–20. [Google Scholar]

[11]. Yáñez J.A., Alvarez-Risco A., Delgado-Zegarra J. Covid-19 in Peru: from supervised walks for children to the first case of Kawasaki-like syndrome. BMJ. 2020;369:m2418. [PubMed] [Google Scholar]

[12]. Yáñez J.A. Anxiety, distress, and turnover intention of healthcare workers in Peru by their distance to the epicenter during the COVID-19 crisis. Am J Trop Med Hyg. 2020;103(4):1614–1620. [PMC free article] [PubMed] [Google Scholar]

[13]. Quispe-Cañari J.F. Self-medication practices during the COVID-19 pandemic among the adult population in Peru: a cross-sectional survey. Saudi Pharmaceut J. 2021;29(1):1–11. [PMC free article] [PubMed] [Google Scholar]

[14]. Duffin E. 28 September 2020. Impact of the coronavirus pandemic on the global economy - Statistics & Facts.https://www.statista.com/topics/6139/covid-19-impact-on-the-global-economy/ Available from: [Google Scholar]

[15]. Yan J. Hospitality workers' COVID-19 risk perception and depression: a transactional theory of stress model. Int J Hospit Manag. 2021; 95:102935. [Google Scholar]

[16]. Lones L., Palumbo D., Coronavirus D.B. 28 September 2020. A visual guide to the economic impact. https://www.bbc.com/news/business-51706225 Available from: [Google Scholar]

[17]. Alvarez-Risco A. The Peru approach against the COVID-19 infodemic: insights and strategies. Am J Trop Med Hyg. 2020;103(2):583–586. [PMC free article] [PubMed] [Google Scholar]

[18]. Matias T., Dominski F.H., Marks D.F. Human needs in COVID-19 isolation. J Health Psychol. 2020;25(7):871–882. [PubMed] [Google Scholar]

[19]. Datta R. The infodemics of COVID-19 amongst healthcare professionals in India. Med J Armed Forces India. 2020;76(3):276–283. [PMC free article] [PubMed] [Google Scholar]

[20]. Pfefferbaum B., North C.S. Mental health and the covid-19 pandemic. N Engl J Med. 2020;383(6):510–512. [PubMed] [Google Scholar]

[21]. Tasnim S., Hossain M.M., Mazumder H. Impact of rumors and misinformation on COVID-19 in social media. J Prev Med Public Health. 2020;53(3):171–174. [PMC free article] [PubMed] [Google Scholar]

[22]. Tang P.M. Geographical identification of the vulnerable groups during COVID-19 crisis: the typhoon eye effect and its boundary conditions. Psychiatr Clin Neurosci. 2020;74(10):562–563. [PMC free article] [PubMed] [Google Scholar]

[23]. Lai J. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. JAMA Netw Open. 2020;3(3): e203976. [PMC free article] [PubMed] [Google Scholar]

[24]. Kang L. Impact on mental health and perceptions of psychological care among medical and nursing staff in Wuhan during the 2019 novel coronavirus disease outbreak: a cross-sectional study. Brain Behav Immun. 2020; 87:11–17. [PMC free article] [PubMed] [Google Scholar]

[25]. Tan B.Y.Q. Psychological impact of the COVID-19 pandemic on health care workers in Singapore. Ann Intern Med. 2020:M20–M1083. Online ahead of print. [PMC free article] [PubMed] [Google Scholar]

[26]. Zhang S.X. At the height of the storm: healthcare staff's health conditions and job satisfaction and their associated predictors during the epidemic peak of COVID-19. Brain Behav Immun. 2020; 87:144–146. [PMC free article] [PubMed] [Google Scholar]

[27]. Jahanshahi A.A. The distress of Iranian adults during the Covid-19 pandemic - more distressed than the Chinese and with different predictors. Brain Behav Immun. 2020; 87:124–125. [PMC free article] [PubMed] [Google Scholar]

[28]. Moccia L. Affective temperament, attachment style, and the psychological impact of the COVID-19 outbreak: an early report on the Italian general population. Brain Behav Immun. 2020; 87:75–79. [PMC free article] [PubMed] [Google Scholar]

[29]. Mazza C. A nationwide survey of psychological distress among Italian people during the COVID-19 pandemic: immediate psychological responses and associated factors. Int J Environ Res Publ Health. 2020;17(9):3165. [PMC free article] [PubMed] [Google Scholar]

[30]. Maher A. COVID-19 outbreak situation and its psychological impact among surgeon in training in France. World J Urol. 2020:1–2. Epub ahead of print. [Google Scholar]

[31]. World Health Organization. Guidelines for the regulatory assessment of medicinal products for use in self-medication. Geneva: World Health Organization; 2000. [Google Scholar]

[32]. Eticha T, Mesfin K. Self-medication practices in Mekelle, Ethiopia. PLoS ONE. 2014;9(5): e97464. doi: 10.1371/journal.pone.0097464. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

[33]. Afridi MI, Rasool G, Tabassum R, et al. Prevalence and pattern of self-medication in Karachi: a community survey. Pak J Med Sci. 2015;31(5):124–125. doi: 10.12669/pjms.315.8216. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

[34]. Noone J, Blanchette CM. The value of self-medication: summary of existing evidence. J Med Econ. 2018;21(2):201–211. doi: 10.1080/13696998.2017.1390473. [PubMed] [CrossRef] [Google Scholar]

[35]. Kassie AD, Bifftu BB, Mekonnen HS. Self-medication practice and associated factors among adult household members in Meket district, Northeast Ethiopia, 2017. BMC Pharmacol Toxicol. 2018;19(1):15. doi: 10.1186/s40360-018-0205-6. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

[36]. World Health Organization. WHO Coronavirus Disease (COVID-19) Dashboard. https://covid19.who.int/?gclid=CjwKCAjwk dL6BRAREiwA-kiczFVgD9G2jqjziCEtALuFBCwLGVS3hX LfiP4Fcvpq4nPcz8cwu1G8SRoCs8kQAvD_ BwE. Accessed 21 Sep 2020

[37]. Yang Y. Use of herbal drugs to treat COVID-19 should be with caution. Lancet. 2020;395(10238):1689–1690. doi: 10.1016/S0140-6736(20)31143-0. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

[38]. Erku DA, Belachew SA, Abrha S, et al. When fear and misinformation go viral: Pharmacists' role in deterring medication misinformation during the 'infodemic' surrounding COVID-19. Res Social Adm Pharm. 2020; S1551–7411(20):30455–30461. [PMC free article] [PubMed] [Google Scholar]

[39]. Onchonga D. A Google Trends study on the interest in self-medication during the 2019 novel coronavirus (COVID-19) disease pandemic. Saudi Pharm J. 2020;28(7):903–904. doi: 10.1016/j.jsps.2020.06.007. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

[40]. Azami-Aghdash S, Mohseni M, Etemadi M, et al. Prevalence and cause of self-medication in Iran: a systematic review and meta-analysis article. Iran J Public Health. 2015;44(12):1580–1593. [PMC free article] [PubMed] [Google Scholar]

[41]. Al-Worafi YM. Drug safety in Yemen. In: Al-Worafi Y, editor. Drug safety in developing countries: achievements and challenges. Chennai: Elsevier Inc.; 2020. pp. 391–405. [Google Scholar]

[42]. Chauhan V, Galwankar S, Raina S, et al. Proctoring hydroxychloroquine consumption for health-care workers in India as per the revised national guidelines. J Emerg Trauma Shock. 2020;13(2):172–173. doi: 10.4103/JETS.JETS_75_20. [CrossRef] [Google Scholar]

[43]. US Food and Drug Administration. FDA cautions against use of hydroxychloroquine or chloroquine for COVID-19 outside of the hospital setting or a clinical trial due to risk of heart rhythm problems. July 1, 2020; https://www.fda.gov/drugs/drug-safety-and-availability/fda-cautions-against-use-hydroxychloroquine-or-chloroquine-covid-19-outside-hospital-setting-or. Accessed 3 Aug 2020

[44]. Johnson RM, Vinetz JM. Dexamethasone in the management of COVID-19. BMJ. 2020;370:m2648. doi: 10.1136/bmj.m2648. [PubMed] [CrossRef] [Google Scholar]

[45]. World Health Organization. Coronavirus disease (COVID-19) advice for the public: mythbusters. https://www.who.int/emergencies/diseases/n

ovel-coronavirus-2019/advice-for-public/myth-busters. Accessed 6 Sep 2020

[46]. The Nation. Governor encourages herbal remedies to treat COVID-19. https://nation.com.pk/18-May-2020/governor-encourages-herbal-remedies-to-treat-covid-19. Accessed 23 Aug 2020

[47]. Hughes CM, McElnay JC, Fleming GF. Benefits and risks of self-medication. Drug Saf. 2001;24(14):1027–1037. doi: 10.2165/00002018-200124140-00002. [PubMed] [CrossRef] [Google Scholar]

[48]. Atif M, Malik I, Asif M, et al. Drug safety in Pakistan. In: Al-Worafi Y, et al., editors. Drug safety in developing countries: achievements and challenges. Chennai: Elsevier Inc.; 2020. pp. 287–325. [Google Scholar]

[49]. Mallhi TH, Khan YH, Alotaibi NH, et al. Drug repurposing for COVID-19: a potential threat of self-medication and controlling measures. Postgrad Med J. 2020; postgradmedj-2020-138447. [PMC free article] [PubMed]

[50]. Hussain R, Dawoud DM. Drive-thru pharmacy services: a way forward to combat COVID-19 pandemic. Res Soc Adm Pharm. 2020; S1551–7411(20)30601-X. [PMC free article] [PubMed]

[51]. Alhomoud F, Aljamea Z, Almahasnah R, et al. Self-medication and self-prescription with antibiotics in the Middle East-do they really happen? A systematic review of the prevalence, possible reasons, and outcomes. Int J Infect Dis. 2017; 57:3–12. doi: 10.1016/j.ijid.2017.01.014. [PubMed] [CrossRef] [Google Scholar]