

The Importance of Drug Control within the Human body

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Abstract

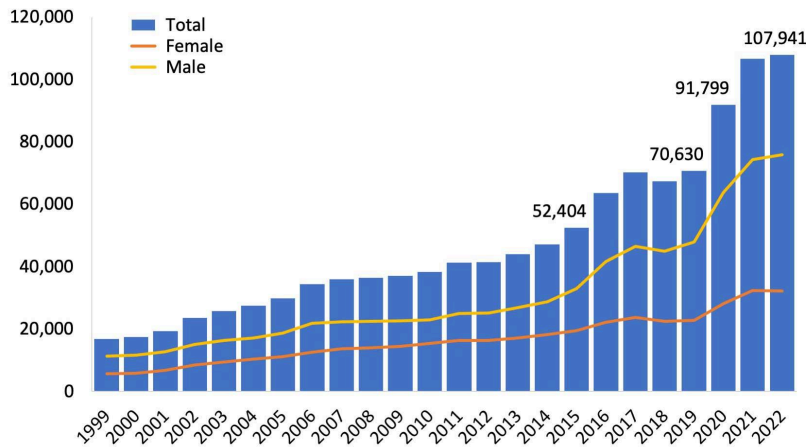
The use of medicine can be commonly seen around the world today, whether it's in the form of liquids, tablets or injections. Yet, millions of conditions frequently seen within the human body are caused by the overdose of certain medications, due to the lack of knowledge about the consequences resulting in an act of irresponsible drug consumption. Misuse of medicine can affect the human body, ranging from something as little as an allergic reaction, to circumstances as serious as a long term/permanent effect on the human body. In addition, modern innovation such as the internet and pharmacies have allowed us to gain easy access to drugs, further increasing the chances of unsupervised and the misuse of medications. This paper aims to emphasize the importance of drug control within the human body, using cases of conditions caused by the lack of drug control frequently seen today, such as antibiotic resistance, and the withdrawal of topical steroids. The research summarizes the results from research articles with the author's experiences in the serious conditions caused by an overdose of medicine while using scientific research to raise awareness on the correct and responsible consumption of drugs.

Introduction

Medicine was first seen to be used in the 2600 BC, different from how doctors and medicine prescriptions are described today, magic and religion played a major role in healing and drug usages during the ancient times, where medicines were first created to be used for a cure. Folk medicine (medicine produced by herbal materials) were the most common source of drugs in which people of the ancient time harvested and used for wounds and broken bones, usually made by raisins, myrrh, frankincense, etc. Similar to healthcare today, "the placebo effect" takes place when a prescribed drug does not have a physical effect or improvement, where the efficacy from both the patient and the doctor allows the patient to feel better. (Britannica, 1998). Furthermore, modern medical innovations such as the establishment of pharmacies, online prescription and different sources of medication or treatments for certain diseases have provided an ever-expanding way to prevent and cure diseases. Despite the countless lives innovations of medicine have saved, the invention has also taken the lives of million, due to the quick and easy access to medication with overdosing occurring through the misuse of medicine. According to the National Institute of Drug Abuse, a drastic increase from less than 20,000 deaths caused by overdosing to 107,941 deaths in 2022 can be seen as growth of medical inventions have increased (National Institute of Drug Abuse, 2022). The frequent rate of medical innovations have offered a wide range of drugs available for curing diseases, in which they now serve as a leading cause of deaths in the world, both from purposeful overdose (addiction) and simply wishing for the cure to a disease. The goal of this

paper is to use examples of medical conditions caused by the overuse of drugs to emphasize the importance of drug control under supervised and non-supervised conditions.

Figure 1. National Drug Overdose Deaths*, Number Among All Ages, by Sex, 1999-2022



*Includes deaths with underlying causes of unintentional drug poisoning (X40–X44), suicide drug poisoning (X60–X64), homicide drug poisoning (X85), or drug poisoning of undetermined intent (Y10–Y14), as coded in the International Classification of Diseases, 10th Revision. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2022 on CDC WONDER Online Database, released 4/2024.

Graph taken from National Institute of Drug Abuse.

Why do we take medications and why are they crucial in the world today?

The advancement in medications increases every day, allowing people to rely on medications to cure, prevent and ease the symptoms of diseases. As an example, when one faces the pain from a stomach, Tylenol is a common option for a quick treatment, while on the other hand, when facing an allergic reaction, Antihistamines is the best option for most who face the condition. However, medications can be served in two distinct ways, including self-medication, in which the medications are usually provided to people over the counter (OTC), while the other way of access to medication is through a prescription, from a licensed clinic (Oxford, 2022). Given the easy access to medications when necessary, medications become a popular source of curing as many today can freely access household medications, while easing the symptoms of diseases one may be facing.

Although the most obvious reason on why medications are so crucial in the world today is simply the advancement of medications allowing doctors to find a way in curing the diseases within a patient. Medicine has provided a profound effect on the society we live in today, both economically and scientifically. Although the costs of medications have gradually increased over the years, due to the rising demand for more medicine with the limitation of manpower and manufacturing efficiency. The technological advancements within medicine have allowed the overall value added to the U.S. biopharmaceutical industry, as more people choose to self-prescribe medications over the counter (OCT) for an easy and quick access to needed medications, the increasing usage of OTC medications in pharmacies have ultimately led to the

contribution to the U.S. gross domestic product (GDP), with the cost of impact being over 625 billions dollars, this thus accounts for 3.2% of the GDP (Techonomy, 2019). On the other hand, existing medications that are approved to treat certain diseases may find other/new curative uses that can be used to treat multiple other diseases, this process is called Repurposing (Australian Government Department of Health and Aged Care, 2024). Despite the complexity in the process of Repurposing, it has given the solution of cure to rare and neglected diseases with the base, existing medications have formed. In addition, Repurposing medications takes up 35% of the approved 'transformative' drugs, contributing to the advancement of medication we see today.

Antibiotic Resistance

Antibiotics is a drug used to treat bacterial infections within the human body, acting in the role of killing bacterias, preventing them from spreading (NHS Inform, 2024). Although this type of medication is commonly provided and prescribed by professional doctors, antibiotics are also commonly available over the counter, allowing anyone to self-prescribe and consume these medications. Despite the easy accessibility that brings great convenience to those who are ill, overconsumption of antibiotics usually occurs through those who are self prescribed. Many today prefer self prescription over consulting a doctor commonly because many lack the time and money to visit a clinic and get a professional prescription while some just simply do not trust doctors enough to heal them. As self-prescription becomes increasingly popular in modern society, cases of misuse and over-using medication gradually become commonly seen throughout the world. As a quote from the book 'Current Opinion in Psychology' states "Power not only implies opportunities to 'make things happen', but also responsibility to 'take care of things'." Self-prescription gives us the power to take medication, while the goal is to quickly and effectively heal the diseases we may have, yet many don't care for the consequences but only the result they hope for. As an example, one may take an overloading amount of antibiotic, in hopes of curing a strep throat (Streptococcal pharyngitis). Though one may heal from that one disease during the circumstance, the overconsumption of antibiotics can ultimately lead to the decrease of effectiveness from antibiotics in killing the bacterias within the human body. It is crucial that we do not simply take a large amount of antibiotics to speed up the process of healing, but also consider the consequences and long term result of taking an excessive amount of medication.

In the past years, more than 2.8 million people have been affected by antibiotic resistance infections in the United States, where more than 35,000 people die as a result of the infection each year (U.S. Centers for Disease Control and Prevention, 2019). When the overconsumption of antibiotics occur, the antibiotics resistance gene from one type of bacterial may be spreaded across different types of bacterias present within the human body, thus resulting in a variety of bacteria becoming resistant from that specific antibiotic used to treat the original bacterial infection while forming resistant to other antibiotics as well. Furthermore, when other bacteria become resistant to antibiotics, seeking treatment from antibiotics to an infection

in the future may be difficult, as the bacterias have become resistant where the antibiotic will no longer have the effect of killing the bacterias. This comes to show the long term effect on the misuse of antibiotics (usually self-prescribed) and how this may affect the human body when seeking healing to bacterial infections in the future.

Not only does the effect of antibiotic resistance lay a negative profound impact on the body of one self, the resistance also affects those around us. A simple cough or a sneeze could carry the bacterias that spread respiratory viral infections, and with the same concept, antibiotic resistant bacteria can, too, spread from one person to another. Although one may be seemingly healed from an infection, they can still carry antibiotic resistant pathogens caused by both the misuse or an adaptive and natural antibiotic resistance reactions, the carrying of these materials can be spread via unclean hands and contaminated items, ultimately leading to the transmit of resistant bacteria to another person, causing a serious and potential permanent antibiotic resistance within the human body (European Centre for Disease Prevention and Control, 2014). It is crucial that we withhold the responsibility of self prescription, especially with antibiotics, in which resistance can occur easily. It is equally as important that we don't take more than needed antibiotics just to speed up the process of healing and that we consider the permanent and long term consequences that come with unthought of as well as responsible consumption of a certain antibiotic (or any medication).

The Withdrawal Effect – Topical Steroids

The usage of steroids has grown rapidly around the world today, whether it's anabolic steroids (synthetic hormones for muscle growth), prednisolone (medication used to treat allergic reactions, blood disorders, infections, etc.) or topical steroids (a cream/ointments used to treat inflammatory diseases, typically eczema) (Geng, 2022). Despite risks intaking steroids may bring, like many medications, steroids are often available over the counters, with a quick and easy access to steroids anytime, anywhere. Though easy access and availability have greatly improved the economy and innovations of medicine, it has triggered uncountable cases of misuse of these “easy accessible medications”, resulting in a long term and permanent effect on the human body.

Topical steroids are best used to treat conditions that cause inflammation, redness and swelling on the skin, conditions include, eczema, like atopic eczema, contact dermatitis and psoriasis. Topical steroids are best known for their anti-inflammatory properties that reduce swelling and inflammation on the skin, being one of a well known treatment to improve skin conditions and the symptoms that come along with it. Topical steroids work as they make their way through the semipermeable membrane of the cell, binding to the receptors that will trigger the production of anti-inflammatory proteins and reduce the production of inflammatory proteins, these proteins allow the symptoms on the skin to be reduced and improved. However, there are different types of topical steroids, carrying a large range of potency (amount of active ingredients needed within the steroid to produce a desired effect) (TSW Assist, 2023), and the

wide range of potency in the variety of steroids determine how effective the medication will work on the wound.

As a person that has suffered from intense eczema since birth, the usage of topical steroids was crucial in the reduction of inflammation, as well as lessening the itchiness on the skin. Despite the good connotation behind the effects of topical steroids in the healing of wounds and treating skin conditions, it is important that we note the benefits and relieving effects only occur in a short-term usage, which in most cases of intense eczema, will not complete its job in completing healing the wounds and inflammation of the skin. Many, including myself, choose to take on the long-term path with topical steroids, typically in high dosages, due to the quick and easy healing we see at first. However, this particular treatment eventually leads to the withdrawal effect from topical steroids, when one stops the usage of the drug after a long, extensive period of time. According to WebMD, using topical steroids for 12 months or more puts many at the risk of the withdrawal effects, these side effects include: a recurrence of current condition, or potentially worsen, redness, burning or itching, peeling and pus-filled pores (Watson, 2024). It is extremely important for people, whether it's parents who put their children on the usage of topical steroids, or those who decide to use topical steroids, to understand the consequences that come as a result from irresponsible usage of any type of medicine, in this case topical steroids on the skin.

Conclusion

The quote, "With great power comes great responsibility" (Ditko, 1962) emphasizes the responsibility people should have when using medicine, whether they are a prescription from a doctor or simply a self-prescription. The technological and medical advancement our world has progressed to, eventually leads to the freedom and the increased availability of options we are exposed to in the field of medicine, whether it's self-prescription through pharmacies or online medical centers where we can easily get a hold of the medicines or drugs we need in order to heal yourself, at a quick and cheap manner. Many today, including myself, still wonder how the possibilities of side-effects on certain drugs can be eliminated, yet the reality we are faced with today presents the limited possibilities of this ever-lasting issue. We are the only hope in the depletion of these possibilities and it is through our awareness when consuming these drugs that will make a change in the society. It is extremely crucial that we do not take advantage of this freedom and power we obtain to the resources but consider the right in consuming medicine responsibly and the consequences that may result from unthoughtful choices regarding the usage of medicine within the human body.



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