

Impacts of Self-medication Among Students During COVID-19: A Comprehensive Review

By

Shovon Mitra

16346037

A thesis submitted to the Department of Pharmacy in partial fulfillment of the
requirements for the degree of
Bachelor of Pharmacy (Hons.)

Department of Pharmacy

Brac University

January 2021

© 2021. Brac University

All rights reserved.

Declaration

It is hereby declared that

1. The thesis submitted is my/our own original work while completing degree at Brac University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

Student's Full Name & Signature:

Shovon

Shovon Mitra
16346037

Approval

The project titled “Impacts of Self-medication Among Students During COVID-19: A Comprehensive Review” submitted by Shovon Mitra (16346037) of Summer 2016 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Bachelor of Pharmacy on 5th January, 2021.

Examining Committee:

Supervisor:



Easin Uddin Syed
Lecturer, Department of Pharmacy
Brac University

Program Coordinator:

Dr. Hasina Yasmin
Professor, Department of Pharmacy
Brac University

Departmental Head:

Professor Dr. Eva Rahman Kabir
Chairperson, Department of Pharmacy
Brac University

Ethics Statement

This study comprises no human or animal trial.

Abstract

The self-medication practice all around the world is a general clinical issue. In research studies, it is found that inappropriate self-medication results in adverse drug reactions, drug-drug interaction etc. The aim of the review is understand the impact of self-medication during COVID-19 by reviewing the data on risk elements, complications. The review is done based on relevant articles from various journals by searching from Google Scholar and PubMed. After that, reading 30 relevant articles from the website on Google Scholar and PubMed and take the information and recognize the data as needed. Moreover, it is found that the percentage of taking self-medicated drug among students is increased during the pandemic time because the relative encourage not to go doctor's chamber. Finally, it is recommended that students should not self-medicate because of side effects and other associated health complications.

Keywords: COVID-19, self-medication, advantages, health complications.

Dedication

I would like to dedicate my work to my parents for their love and support.

Acknowledgement

First of all, I would like to be thankful to God for providing me the capability to finish my project work during this pandemic.

During the pandemic, a few people helped me a lot to complete my task paper. I am obliged to my supervisor Easin Uddin Syed, Lecturer, Department of Pharmacy, Brac University, for his assistance and support to finish my project work. Without his help, it can't possible to complete my paper.

I should offer thanks toward Professor Dr. Eva Rahman Kabir, Chairperson, Department of Pharmacy, Brac University, for generating the topic and give me wonderful idea during the project. Also her guidance and support help me a lot to complete my paper successfully.

It was truly pleasure for me that I have done my project paper successfully with both of you.

Last but not least, I would like to express my greatest regards to my parents for their continuous support and unconditional love throughout my life.

Table of Contents

Declaration	ii
Approval.....	iii
Ethics Statement.....	iv
Abstract	v
Dedication.....	vi
Acknowledgement	vii
Table of Contents	viii
List of the table.....	x
List of Figures.....	xi
List of Acronyms	xii
Chapter 1 Introduction	1
1.1 Background.....	1
1.2 Rationale of the review	3
1.3 Aim of the review	3
1.4 Objective of the review	3
1.5 Methodology.....	4
Chapter2 Self-medication	5
2.1 Causes of self-medication	6
2.2 List of self-medicated drugs.....	7

2.3 Conditions treated by self-medication.....	8
2.4 The source of self-medication	10
2.5 Factors of self-medication.....	12
2.6 Percentage of drug use in self-medication.....	13
2.7 Worldwide percentage	15
2.8 Advantages and disadvantages of self-medication.....	16
2.8.1 Advantages	16
2.8.2 Disadvantages	17
2.9 Health complication associated with self-medication	18
2.10 Types of self-medication.....	19
Chapter-3 COVID-19.....	20
3.1 History	20
3.2 Symptoms.....	21
3.3 Prevention	22
3.4 Worldwide COVID-19.....	23
Chapter-4 Telemedicine.....	24
4.1 History	24
4.2 Telemedicine helps to decrease the rate of self-medication	26
4.3 Practice of telemedicine in Bangladesh	27
Chapter-5 Conclusion	28
References.....	29

List of the table

Table 1: The list of self-medicated drugs.....	7
Table 2: Condition treated by self-medication	10
Table 3: Source of self-medication	12
Table 4: Factors of self-medication	13
Table 5: Commonly use medicine	15
Table 6: Symptoms	22
Table 7: Word wide COVID-19	23

List of Figures

Figure 1: Reason for self-medication.....	6
Figure 2: Patient preference for OTC drug	9
Figure 3: The source of medication.....	11
Figure 4: Common drug use in self-medication	14
Figure 5: Worldwide self-medication percentage	16
Figure 6: Telemedicine.....	24

List of Acronyms

WHO: World Health Organization

OTC: Over The Counter

SARS-CoV-1: Severe Acute Respiratory Syndrome Corona Virus 1

SARS-CoV-2: Sever Acute Respiratory Syndrome Corona Virus 2

Chapter 1

Introduction

1.1 Background

The self-medication practice is a general clinical issue in all around the world. In research studies, it is found that inappropriate self-medication results in adverse drug reactions, drug-drug interaction, not accurately diagnosis of disease, enhance morbidity. This is a review of the self-drug, which can be characterized as the utilization of medication with no expert oversight. (Velavan & Meyer, 2020).

People do the self-medication practice because they want to get relief from disease without visiting a doctors. The most common self-medicated substrate are the over-the-counter drugs. (Velavan & Meyer, 2020). These drugs are available in supermarkets and convenience stores. (Esan et al., 2018). These drugs are normally risk free and also used for common treatment of health problem. The conditions wherein self-medicine is applied are fever, pain, allergy, headache, heart-burn (Onchonga, 2020).

The reason for self-medication, as shown in fig.1 utilized self-medication because of the lack of time 36.4%, cost-saving 50.35%, quick relief 31.5%, unavailability of doctor 24.1%, avoid the crowd in visiting doctor 15.4%, convenience 45.1%. By and by the self-prescription by individuals who don't have a lot of time to go to the doctor (Velavan & Meyer, 2020).

COVID-19 is an infectious respiratory disease resulting from a clinically compatible illness that leads to death. In this pandemic, millions of people are affected and died around the world. This disease transmit easily by sneezing, coughing when the affected person is in close contact with another person. WHO doesn't suggest any self-medicated drug to prevent the disease (Nasir et al., 2020).

The common symptoms of the disease are fever and dry cough. Sometimes shortness of breath, headache and diarrhea (Nasir et al., 2020). Moreover, the contagion may happen through tinier drops which could stay on the ground for a longer period, especially following certain clinical strategies. The indication can come out after three days (Z & JM, 2020).

There are some defensive measures to prevent the disease. They include washing hands, social distancing from affected people, masking, temperature checking. (Nasir et al., 2020).

1.2 Rationale of the review

The rationale of the review is to gather information about self-medication linked with the COVID-19 and the most significant risk factors, collecting information on this issue, awareness, personal carefulness practices, and treatment facilities among students and to proceed with some necessary steps and apply those scheme to decrease the growing range of outspread of this disease, its complications for the world-wide people.

1.3 Aim of the review

The purpose is to understand the impact of self-medication among students during the COVID-19 pandemic by reviewing the existing data on risk elements, complications, level of self-management awareness.

1.4 Objective of the review

The objectives of the review are-

- To gather current information concerning the prevalence and most significant risk factors, information on medication, the explanation behind giving wrong treatment, and accepting Self-medicine just as get all the data identified with COVID-19.
- To know the percentage of the student taking self-medication as well as the students who are not taking self-medication.
- To know the impact of self-medication
- COVID19 and self-drug worldwide
- Telemedicine decrease the self-drug

- Comparison of self-drug between before and during the pandemic.

1.5 Methodology

The review is done based on relevant articles from various journals by searching from Google Scholar and PubMed. While searching the articles the keyword included “self-medicated drug”, “benefits of self-medication”, “health complications” etc. After that, there are more than 100 articles were founded among them 30 articles have downloaded which is relevant to the topic. Furthermore, the information has been taken from those 30 articles and organize according to the necessity of the work.

Chapter2

Self-medication

The self-medication practice is a general clinical issue in all around the world. An investigation shown inappropriate self-medication achieves adversarial medicine reaction. In research studies, it is found that inappropriate self-medication results in adverse drug reactions, drug-drug interaction, not accurately diagnosis of disease, enhance morbidity. This is a review of the self-drug, which can be characterized as the utilization of medication with no expert oversight. It expects to discover the explanation of self-drug and make open mindful about its belongings and symptoms (Velavan & Meyer, 2020).

People do the self-medication practice because they want to get relief from disease without visiting a doctors. So that they can save money and time. But they fail to get rid of the disease and it can be life threatening. The most common self-medicated substrate are the over-the-counter drugs (Velavan & Meyer, 2020). These drugs are available in supermarkets and convenience stores. (Esan et al., 2018). These drugs are normally risk-free and also use for common treatment of health problem. The conditions wherein self-medicine is applied are fever, pain, allergy, headache, heart-burn (Onchonga, 2020).

Everyday several people do self-medication practice. They do it because of the influence of family members, friends etc. The main reason is availability of drug without prescription so that people go for self-medication. Because they don't need to visit a doctor's chamber so that they save their money and time. It is now convenient to the people (Velavan & Meyer, 2020).

2.1 Causes of self-medication

The main cause for self-medication is a mild illness, cost-saving, convenience, quick relief, lack of time, etc. According to WHO, self-medication can help to treat disease only when there is no need for a doctor's prescription or can use OTC drugs. These drugs are available in supermarkets and convenience stores. The purpose behind self-medicine, shown in fig.1 utilized self-medication because of the lack of time 36.4%, cost-saving 50.35%, quick relief, 31.5%, unavailability of doctor 24.1%, avoid the crowd in visiting the doctor 15.4%, convenience 45.1% (Velavan & Meyer, 2020) .

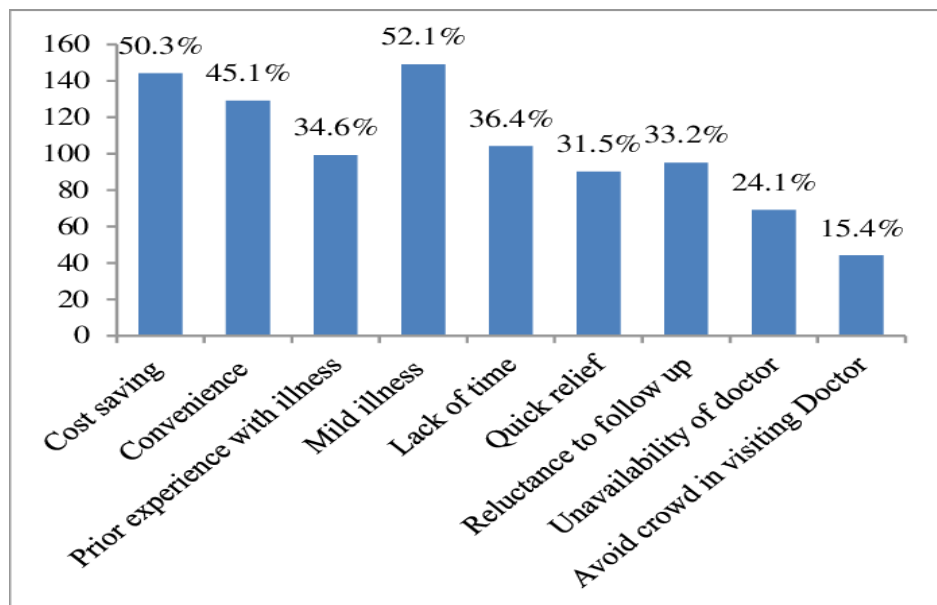


Figure 1: Reason for self-medication (Velavan & Meyer, 2020)

The percentage of cost saving is 50.35%. This is because of visiting doctor's chamber required money so that the tendency of cost saving is high among the students. Moreover every students have their own study to do as a result they are busy in their study. For this reason, they go for self-medication. The percentage is 36.4% among students. In case of self-medicated drug, it is

available in the market and save the time. For this reason, students go for quick relief and the percentage is 31.5%. Furthermore, it is easier to buy the medicine from the shop without prescription and that percentage is 45.1%. Students normally avoid the crowd when visiting doctor's chamber because their lack of interest and the percentage is 15.4%.

Now-a-days self-medication is common practice for several people. Because they have concern about the disease prevention, therapy and diagnosis. In some cases, self-medicated drugs will be taken if the symptoms is not severe, low illness etc. They can take self-medicated drug because they urge of self-care, lack of time, want quick relief, avoid the crowd when visiting a doctor's clinic. Several condition are treated by self-medication. Several people think that they can relief from the disease without visiting a doctor's chamber because of saving money and time. But they fail to get rid of the disease and it can be life threatening (Onchonga, 2020).

2.2 List of self-medicated drugs

Table 1: The list of self-medicated drugs (Nasir et al., 2020; Onchonga, 2020; Velavan & Meyer, 2020)

Analgesic	Saridon Disprin Nise Diclofenac
Antiseptic	Dettol Boroplus
Antipyretic	Paracetamol Ibuprofen Calpol Crocin
Antibiotics	Ciprofloxacin Norfloxacin Amoxicilin Cefadroxil
Others	Hajmola Dabur Chyawanprash

In the table 2.2, the major drugs use in self-medication are shown. These are the major drugs that used in self-medication because of availability of the drug so that it can easily purchase. For that reason time will save accordingly. Moreover, they are also cost saving drugs. Amoxicillin, tetracycline and metronidazole are widely used antibiotics among students. Furthermore, they usually take paracetamol because it is nontoxic and easy to purchase. In case of analgesic such as aspirin is widely used among the students. Moreover, hajmola is frequently used among students which stimulates the digestive power. Additionally, the antiseptic such as Dettol is frequently used among students word-wide. It has less side effect and doesn't need any kind of help in use of it.

2.3 Conditions treated by self-medication

WHO emphasized that self-medication can help to prevent or treat diseases only when there is not required a doctor's consultation or can be used as OTC drugs. These drugs are available in supermarkets and convenience stores. These drugs are normally risk-free and also use for the common treatment of health problems. The conditions wherein self-medicine is applied are fever (60-70%), pain (40-50%), allergy (10-20%), headache (20-30%), heart-burn (10-20%) and so on (Onchonga, 2020) .

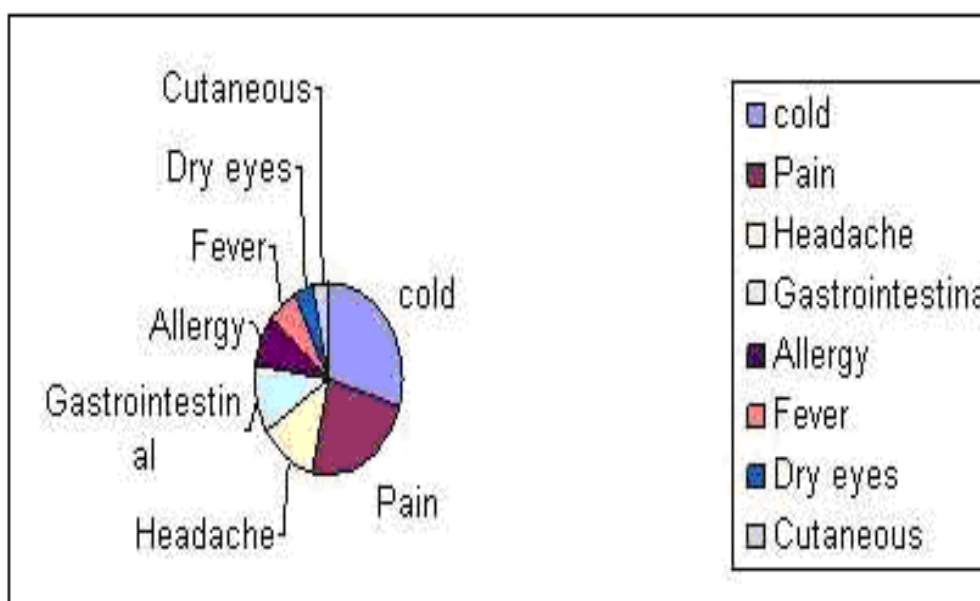


Figure 2: Patient preference for OTC drug (Onchonga, 2020)

In the case of fever, the percentage is high because self-medicated drugs are widely used to treat fever such as Napa. Whenever someone has a fever they go to the shop and buy the medicine without a doctor's consultation. Furthermore, antibiotics are widely used in case of pain. Amoxicillin, tetracycline, and metronidazole are widely used antibiotics among students. This is because of the availability of antibiotics in the market. Additionally, antibiotics can easily purchase with a previous prescription. The percentage is 40-50%. The percentage of using a self-medicated drug is low in case of allergy because it has some side effects and the percentage is 10-20%. Another condition could be a headache (20-30%) because the self-medicated drug is used to treat headaches such as paracetamol. It has non-toxic and fewer side effects. Furthermore, some people face the problem of heartburn (10-20%) and the problem is treated by self-medicated drugs. The percentage is low because the medicine has some side effects and most of them don't have the proper knowledge of the medicine. Every day several people do self-medication practice. They do it because of the influence of family members, friends, etc. The main reason is the availability of drugs without prescription so that people go

for self-medication. Because they don't need to visit a doctor's chamber so that they save their money and time. It is now convenient to the people (Velavan & Meyer, 2020).

Several conditions are treated by self-medication. Several people think that they can relief from the disease without visiting a doctor's chamber because of saving money and time. But they fail to get rid of the disease and it can be life-threatening (Onchonga, 2020).

Table 2: Condition treated by self-medication (Nasir et al., 2020; Onchonga, 2020; Velavan & Meyer, 2020)

Conditions	Percentage
Fever	60-70
Cold	50-60
Pain	43-47
Headache	10-15
Heartburn	20-25
Allergy	15-20
Dry eyes	6-10

2.4 The source of self-medication

The source of self-medication plays an important role in taking the self-medicated drug. The main source of self-medication is family members (34-37%). Because people learn things from their family. Though the family members don't have any proper knowledge about self-medication they tend to practice it. Another source of self-medication is the availability of drugs (40-45%). Here the percentage is high because it saves time and money as they are available in the market. Additionally, self-decision (25-30%) could be another source in the case of self-medication. Furthermore, there is a tendency to buy medicine using the previous prescription of doctors (14-18%). It saves money and time because the person doesn't need to

visit a doctor's chamber. As a result, the person goes to the shop and easily buy the medicines. (Onchonga, 2020). In figure '3' the percentage of the source of self-medication is shown.

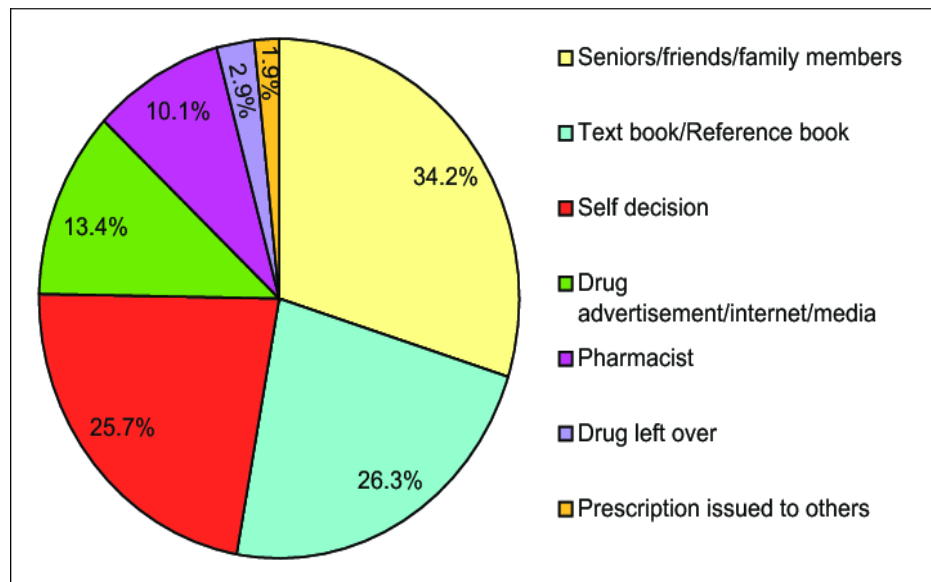


Figure 3: The source of medication (Oyediran et al., 2019)

Another source would be the drug leftover (10-12%). The percentage is low because there is an issue with the expiry date of that medicine. These medicines have so many side effects so that the percentage is low. There would be another source that is friends (15-20%) because sometimes friends will suggest taking the self-medicated drugs. It's not frequently happened so that the percentage is low.

Family, friends, relatives, and the information of drugs from the internet. But this can leads to a life-threatening condition. Because they don't have proper knowledge about the adverse effect of self-medication. Sometimes, they collect information from the internet and will face life-threatening conditions.

Table 3: Source of self-medication (Harapan et al., 2020; Nasir et al., 2020; Onchonga, 2020; Velavan & Meyer, 2020)

Source	Percentage
Family	32-37
Availability of drug	40-45
Previous prescription	14-18
Relatives	32-37
Drug left over	2-7

2.5 Factors of self-medication

Several factors are present in the case of self-medication. Among them, the influence of relatives (18-23%) and family (25-30%) is more important. After that, the unsuccessful treatment (13-18%) is more affecting in self-medication. Because sometimes doctors could not find the correct disease and prescribe medicine. By doing this. It leads to a life-threatening condition. The previous doctor's prescription (14-19%) is helping to go for self-medication. Because if any disease will come out when they go to the shop and buy medicines. Most of the time, they use the previous prescription for buying antibiotics. (Harapan et al., 2020).

Table 4: Factors of self-medication (Harapan et al., 2020; Nasir et al., 2020; Onchonga, 2020; Velavan & Meyer, 2020)

Factor	Percentage
Influence of relatives	18-23
Unsuccessful treatment	13-18
Lack of time	20-25
Family	25-30
The previous doctor's prescription	14-19
Distance between school and clinic	30-35

The most frequent factors are lack of time, family, and distance between school and clinic and their percentage are high because they have a busy schedule so that they have not enough time to visit the doctor's chamber so that the students go for self-medication practice. Family, friends, relatives, and the information of drugs from the internet. But this can leads to a life-threatening condition. Because they don't have proper knowledge about the adverse effect of self-medication. Sometimes, they collect information from the internet and will face life-threatening conditions.

2.6 Percentage of drug use in self-medication

There are so many drugs that are used as self-medication. But among them, some common types of drugs are there. They are antibiotics 30-50%, analgesic 20-40%, antipyretic 20-40%, antiseptic 40-60% and antacid 6-11% (Harapan et al., 2020).

These drugs are easily available in the market. Too much using the drug lead to different side effects. This is available in the market. Some are taking drugs without prescription. Taking frequently these drugs leads to side effects (Harapan et al., 2020).

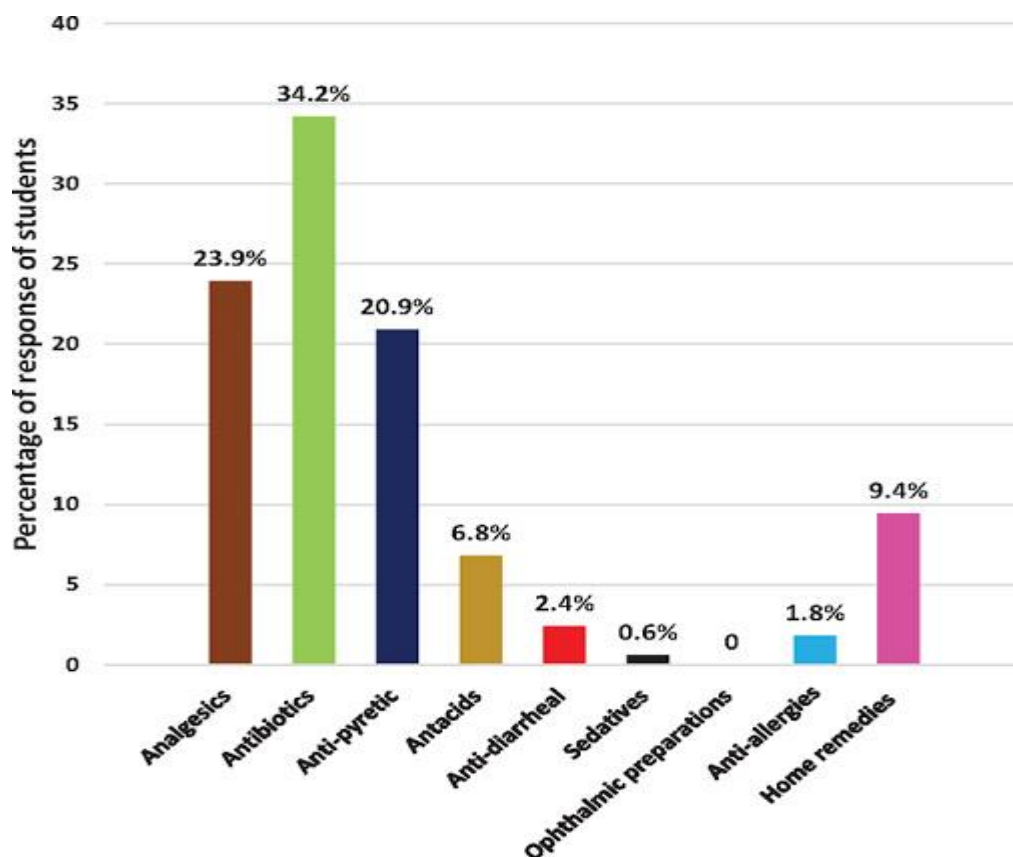


Figure 4: Common drug use in self-medication (Harapan et al., 2020)

Table 5: Commonly use medicine (Harapan et al., 2020; Nasir et al., 2020)

Name	Percentage
Antibiotics	30-50
Analgesic	20-40
Antipyretic	20-40
Antacid	6-11
Antiseptic	30-50
Anti-allergy	1-5
Home remedies	9-15

The difference in the percentage could be a result of side effects. In this table 5, the percentage of antiseptic is high because there is no side effect. On the other hand, the percentage of analgesics is quite less than antiseptic because it has some side effects. There could be more reasons for the high use of antibiotics among them one could be the previous prescription by which they buy the antibiotics.

2.7 Worldwide percentage

Self-medication is being used all over the world. People think that if you are sick then go for medicine with the help of friends, family, relatives, etc. In this pandemic, students are also taking self-medication drugs. Different countries have different percentages of taking self-medication. United States 13%, Australia 11%, Germany 11%, Spain 9%, UK 9%, Mexico 8%, Italy 8% (Harapan et al., 2020). The percentage difference because of the country's drug law and the effectiveness of the drug regulating committee that without a doctor's prescription no one can buy medicines.

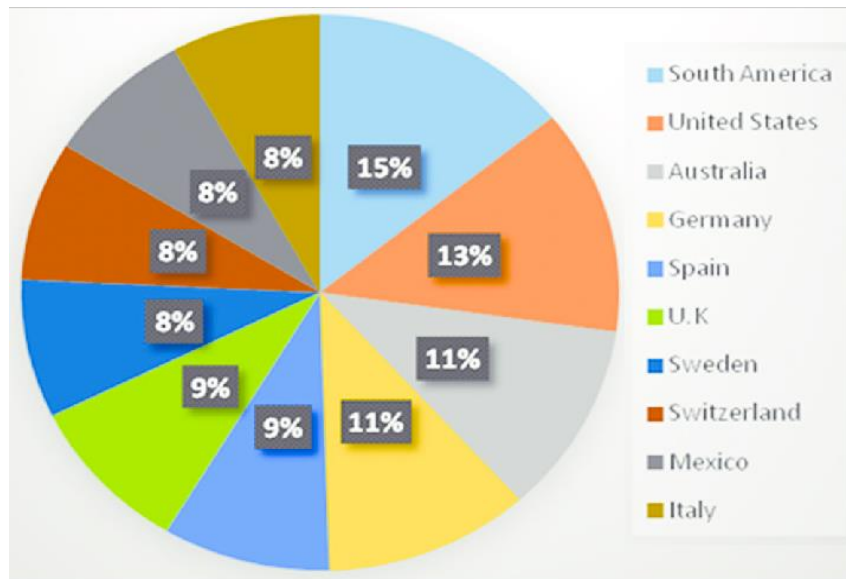


Figure 5: Worldwide self-medication percentage (Harapan et al., 2020)

2.8 Advantages and disadvantages of self-medication

2.8.1 Advantages

Anticipated clinical benefit from self-prescription depends on the superficial property of self-drug. These benefits alter into long-suffering and purchaser well-being & efficiency, the monetary step-up for businesses to medicinal services payment through reduced therapeutic cost and decreased physician visits. These circumstances centering on the well-being of taking self-cured medications (Dnyanesh Limaye et al., 2017; Harapan et al., 2020; Onchonga, 2020).

- It helps to prevent and treat symptoms where a doctor's consultation is not needed.
- It is convenient.
- It is self-reliance that helps to prevent minor symptoms.
- The condition is treated without a doctor's help.
- Health care personnel are not adequate to bring down the workload on medical service.

- Minor conditions are treated by self-medication such as fever, headache, etc.
- It helps to save the money which is given as a doctor's visit fee.
- It helps to save time to go and visit a doctor.

This kind of advantage help to save time and easily find the medication without giving a visit to doctors. This leads to saving money and also time (Harapan et al., 2020).

2.8.2 Disadvantages

Despite the advantages, self-medication has disadvantages too. The current time medication has become consumed rapidly into the close pattern in every country, their distributive conveyance, misused for a broad range of medicine (Harapan et al., 2020; Jain, 2011; Nasir et al., 2020; Velavan & Meyer, 2020).

- Inaccurate self-diagnosis.
- Unfortunate to recognize the exact medication.
- Inaccurate selection of therapy.
- Excessively prolonged use.
- Food and drug interactions.
- The incorrect route of administration.
- Grow dependence.
- Abuse of the drug.
- Dangerous drug interactions.
- Incorrect dose.

2.9 Health complication associated with self-medication

Self-medication is widely practiced worldwide and can cause both benefit and harm at a time. As a result of harm, self-medication can bring many unexpected and health-hazardous states. Self-medication leads to dependency on medicines (Khan, 2018). It can cause unintentional self-harm. People taking it as the availability of the drug. By taking too many self-medicated drugs lead to different health complications. The complications are- adverse drug reactions, the resistance of pathogens, physical dependence, misdiagnosis, antibiotic resistance, risk of dependence, insomnia, depression, weak immune system, kidney failure, liver cirrhosis, etc. If the drug is not prescribed by a doctor's then it leads to life-threatening conditions. Self-medicated drugs produce different side effects if a person takes them frequently such as produce drug addiction, resistance to microorganisms. Sometimes, it produces an immune system weak if the person consumes too much caffeine and alcohol. So self-medication could be taken if the illness is not severe (Dnyanesh Limaye et al., 2017; Harapan et al., 2020; Onchonga, 2020).

2.10 Types of self-medication

Self-medication occurs when someone wants to get relief from the disease without visiting doctors. So that they can save money and time. But they fail to get rid of the disease and it can be life-threatening. The most common self-medicated substrate are the over-the-counter drugs (Velavan & Meyer, 2020). These drugs are available in supermarkets and convenience stores (Esan et al., 2018). There are different types of self-medication such as self-medication with alcohol and self-medication with caffeine. For example, someone suffering from depression and assumed that if he takes a cup of coffee it will feel better for him. In this way, the person can be self-medicated. On the other hand, the person can be assumed that consuming alcohol feels better for him. This is also referred to as self-medication (Esan et al., 2018).

Chapter-3

COVID-19

3.1 History

COVID-19 is a powerful disease brought about by severe acute respiratory disorder Corona Virus 2 (SARS-CoV-2). On 17 August 2020, all 21.8 million individuals are influenced, complete 773,032 individuals are passed on (Z & JM, 2020).

The disease is outspread broadly from small globules made by coughing, breathing, and speaking. The globules generally tumble to the ground or onto surfaces as opposed to experiencing air over significant distances. In any case, those staying in closeness may take in these dots and become contaminated. Individuals may similarly get the disease by the movement of the affected area (Singhal, 2020).

Moreover, the contagion may happen through tinier drops which could stay on the ground for a longer period, especially following certain clinical strategies. The indication can come out after three days (Z & JM, 2020).

In December 2019, the COVID-19 was initially titled SARS-CoV-2 by the expert in Wuhan, China. At the start of December 2019 Chinese experts have differentiated human being cases point. Furthermore, the laborers, the marketplace owners and the customers who came into the market were the first affected people (Velavan & Meyer, 2020).

On 1 January 2020, the first affected people were found from the marketplace so that the market was shut down (Onchonga, 2020).

It was recognized at the start of 11-12 January. It has the action of various taint fragmented from the cases of China. Each open verification nowadays recommends a trademark from the beginning stage which has anything but controlled contamination (Harapan et al., 2020). If it

was made in the laboratory, its genome would have shown a mix of known segments (Z & JM, 2020).

SARS-CoV-1, the explanation behind the SARS erupt in 2003, was furthermore solidly connected to various COVID detached from bats. They are the same in the case of the origin which is bats (Nasir et al., 2020).

On December 31, there are confirmed 27 people affected by the disease that is adequate for the examination (Velavan & Meyer, 2020). The initial COVID-19 affected case was found in Beijing. On June 12 there were more cases are confirmed in which more affected people visit Xinfadi Wholesale Market (Singhal, 2020).

3.2 Symptoms

Indications of this disease are varied from others. The most common indication is fever. Individuals who have a comparative tainting and some indication may alter after a couple of periods (Harapan et al., 2020).

Fever is the common sign of COVID-19. There may be high or low fever. Moreover, every people have a high or low fever and also has a headache (Z & JM, 2020).

Around 40% of the population unexpectedly loss the sense of smell and undergo alteration in food taste (Nasir et al., 2020).

Several groups undergo different kinds of signs like the loss of appetite, headache, nausea, a sore throat, etc (Harapan et al., 2020).

Table 6: Symptoms (Singhal, 2020; Velavan & Meyer, 2020; Z & JM, 2020)

Symptoms	Percentage
Fever	80-90
Cough	70-80
Loss of appetite	40-50
Fatigue	60-70
Meanness of breath	30-40
Muscle pain	15-25
Gastrointestinal symptoms	5-7

3.3 Prevention

There are so many ways to prevent the disease. They are-

- Clean hands frequently by using chemical and water, or an alcohol-based hand rub.
- Keeping distance from the affected people.
- Wear a cover when physical eliminating is silly.
- Do not touch the eyes, nose, or mouth.
- Masking, the nose and mouth close by the contorted elbow after you hack or wheeze.
- Stay at home when feeling sick.

(Singhal, 2020; Velavan & Meyer, 2020)

3.4 Worldwide COVID-19

According to WHO on 05 January, 2021, the total case find in 89.7M and total death 1.9M as well as the total recovered 49.8M word wide

Table 7: Word wide COVID-19 (Singhal, 2020; Velavan & Meyer, 2020)

Total case	89.7M
Total death	1.9M
Total recovered	49.8M
Active cases	9,493,447
Serious cases	80,323

Chapter-4

Telemedicine

4.1 History

The chance of telemedicine began with the introduction of communication trades headway, the strategies for sending data over a segment as electromagnetic signs. In advance kinds of media exchanges promotion joined the message, radio, and phone. In the late nineteenth century, the radio and phone were basically to make as feasible correspondence drives. In 1887, the telephone was authorized by Alexander Graham Bell. A blueprint was published in a magazine by Dr. Hugo Gernsback which is called “Teledactyl” (Ohannessian et al., 2020).



Figure 6: Telemedicine (Ohannessian et al., 2020)

Many years sometime later, in the 1950s, a few facility structures and school-based clinical centers investigating various roads concerning how to join the thought of telemedicine. Clinical staff at two assorted prosperity environments in Pennsylvania around 24 miles isolated imparted radiologic pictures by methods for the telephone. In the 1950s, a Canadian master dependent on this development into a teleradiology structure that was used in and around Montreal. By then, in 1959, Doctors at the University of Nebraska had the choice to convey Neurological evaluations to clinical understudies across grounds by methods for a two-way natural TV (Ohannessian et al., 2020).

4.2 Telemedicine helps to decrease the rate of self-medication

Telemedicine can help treat a range of medical conditions. It is most successful when a person seeks care from a qualified physician and provides clear details about their symptoms. It can reduce the self-medication level by given points.

- **Lower costs:** Telemedicine cuts down the cost of a visit to a doctor's. Some assessment suggests that people who use Telemedicine put less cost in the crisis moment , giving Cost Savings (Contreras et al., 2020).
- **Improved access to care:** Telemedicine makes it less complex for people with handicaps to get the chance to mind (Contreras et al., 2020).
- **Preventive care:** Telemedicine may make it more straightforward for people to get preventive thought that improves their drawn-out prosperity. This is especially substantial for people with financial or geographic impediments to quality thought (Ohannessian et al., 2020).
- **Convenience:** Telemedicine gives individuals to get to the consideration of the comfort and privacy of their own homes. (Ohannessian et al., 2020).
- **Slowing the spread of infection:** Going to the doctor's office implies being around individuals who might be sick, often close with other people. This can be especially risky for individuals with underlying conditions or weak immune systems. Telemedicine helps to minimize the risk of getting a disease at the doctor's office. (Contreras et al., 2020).

In telemedicine, the process is simpler to speak with the doctors, it additionally set aside time and money. In the ongoing time, it's hard to go to the doctor's chamber and get treatment (Ohannessian et al., 2020).

4.3 Practice of telemedicine in Bangladesh

Telemedicine is a process by which one can get treatment from a doctor's by using technology. It is an easy process to get health care service. To prevent the spread of COVID-19 from Bangladesh the Ministry of Health has launched telemedicine collaborate with private sector to give the health care service. For this reason, Praava Health was first established by the government's to give 24 hours health care service. To get the service call 333 that is called telemedicine hotline. Moreover, Praava encourage the people to go for telemedicine. Additionally, they created group on facebook, what's app so that the people can easily communicate with the doctors. There are also a website for getting health care service. Here the people can ask question and get the answers. To implement the telemedicine successfully adequate data, well trained staff and clear management are required.

Chapter-5

Conclusion

Self-medicine practice is high among students worldwide. A few research suggest that the methodology must be taken to keep this issue from raising which would include (i) awareness and education regarding the implications of self-medication (ii) strategies to prevent the supply of medicines without prescription by pharmacies (iii) strict rules regarding pharmaceutical advertising and (iv) strategies to make receiving health care. Several students don't have any information about self-medication practice. Every day several people do self-medication practice. They do it because of the influence of family members, friends, etc. The main reason is the availability of drugs without prescription so that people go for self-medication. Because they don't need to visit a doctor's chamber so that they save their money and time. It is now convenient to the people (Velavan & Meyer, 2020). Self-medication creates many health complications such as improper self-diagnosis, delays in seeking medical advice, insomnia, depression, abdominal uneasiness, weakness of the immune system, kidney failure, liver cirrhosis, etc (Onchonga, 2020).

References

- Esan, D. T., Fasoro, A. A., Odesanya, O. E., Esan, T. O., Ojo, E. F., & Faeji, C. O. (2018). Assessment of Self-Medication Practices and Its Associated Factors among Undergraduates of a Private University in Nigeria. *Journal of Environmental and Public Health*, 2018. <https://doi.org/10.1155/2018/5439079>
- Pal, B., Murti, K., Gupta, A. K., Choudhury, U., Rastogi, M., Pandey, H., Lal, C. S., Pandey, K., & Das, P. (2016). Self Medication with Antibiotics among Medical and Pharmacy Students in North India. *American Medical Journal*, 7(2), 7–12. <https://doi.org/10.3844/amjsp.2016.7.12>
- Khan, A. (2018). Health Complications Associated with Self-Medication. *Journal of Physical Fitness, Medicine & Treatment in Sports*, 1(4), 2–5. <https://doi.org/10.19080/jpfmts.2018.01.555566>
- Dnyanesh Limaye, Vaidehi Limaye, Gerard Krause, & Gerhard Fortwenge. (2017). A Systematic Review of the Literature to Assess Self-medication Practices. *Annals of Medical and Health Sciences Research*, 7(1), 1–15. <https://www.amhsr.org/articles/a-systematic-review-of-the-literature-to-assess-selfmedication-practices.pdf>
- Pavel, O. F. (2017). Assessing the Knowledge on Self-Medication Among Medical Students of Bangladesh. *World Journal of Pharmaceutical Research*, October, 27–33. <https://doi.org/10.20959/wjpr201710-8914>

Jain, S. (2011). Concept of Self Medication: A Review. *International Journal of Pharmaceutical & Biological Archive*, 2(3), 831–836. <http://www.ijpba.info/ijpba/index.php/ijpba/article/view/274>

Alam, N., Saffoon, N., & Uddin, R. (2015). Self-medication among medical and pharmacy students in Bangladesh. *BMC Research Notes*, 8(1), 0–6. <https://doi.org/10.1186/s13104-015-1737-0>

"Naming the coronavirus disease (COVID-19) and the virus that causes it". *World Health Organization (WHO)*

Syed, S, Waqar, R., Zubairi, S. J., Vaqar, A., Shaikh, T., Yousaf, M., Shahid, W., & Saleem, S. (2008). Self-medication amongst university students of Karachi: prevalence, knowledge and attitudes. *Journal of the Pakistan Medical Association*, 58(4), 214–221. http://ecommons.aku.edu/pakistan_fhs_mc_chs_chs

Oyediran, O. O., Ayandiran, E. O., Olatubi, M. I., & Olabode, O. (2019). Awareness of risks associated with Self-medication among Patients attending General Out-patient Department of a Tertiary Hospital in South Western Nigeria. *International Journal of Africa Nursing Sciences*, 10(March), 110–115. <https://doi.org/10.1016/j.ijans.2019.03.001>

Onchonga, D. (2020). A Google Trends study on the interest in self-medication during the 2019 novel coronavirus (COVID-19) disease pandemic. *Saudi Pharmaceutical Journal*, 28(7), 903–904. <https://doi.org/10.1016/j.jsps.2020.06.007>

Karmacharya, A., Uprety, B. N., Pathiyil, R. S., & Gyawali, S. (2018). Knowledge and Practice of Self-medication among Undergraduate Medical Students. *Journal of Lumbini Medical College*, 6(1), 21–26. <https://doi.org/10.22502/jlmc.v6i1.174>

Alam, N., Saffoon, N., & Uddin, R. (2015). Self-medication among medical and pharmacy students in Bangladesh. *BMC Research Notes*, 8(1), 4–9. <https://doi.org/10.1186/s13104-015-1737-0>

Author-Dr Vidyavati, C. S. (2016). Self-Medication -Reasons, Risks and Benefits. *International J. of Healthcare and Biomedical Research*, 04, 21–24.

Hughes, C. M., McElnay, J. C., & Fleming, G. F. (2000). The benefits and risks of self-medication. *WHO Drug Information*, 14(1), 1–2.

Ohannessian, R., Duong, T. A., & Odone, A. (2020). Global Telemedicine Implementation and Integration Within Health Systems to Fight the COVID-19 Pandemic: A Call to Action. *JMIR Public Health and Surveillance*, 6(2), e18810. <https://doi.org/10.2196/18810>

Singhal, T. (2020). A Review of Coronavirus Disease-2019 (COVID-19). *Indian Journal of Pediatrics*, 87(4), 281–286. <https://doi.org/10.1007/s12098-020-03263-6>

Harapan, H., Itoh, N., Yufika, A., Winardi, W., Keam, S., Te, H., Megawati, D., Hayati, Z., Wagner, A. L., & Mudatsir, M. (2020). Coronavirus disease 2019 (COVID-19): A literature review. *Journal of Infection and Public Health*, 13(5), 667–673. <https://doi.org/10.1016/j.jiph.2020.03.019>

Interventions, P. (2020). *crossm. May*, 1–13.

Contreras, C. M., Metzger, G. A., Beane, J. D., Dedhia, P. H., Ejaz, A., & Pawlik, T. M. (2020). Telemedicine: Patient-Provider Clinical Engagement During the COVID-19 Pandemic and Beyond. *Journal of Gastrointestinal Surgery*, 24(7), 1692–1697. <https://doi.org/10.1007/s11605-020-04623-5>

Nasir, M., Chowdhury, A. S. M. S., & Zahan, T. (2020). Self-medication during COVID-19 outbreak: a cross sectional online survey in Dhaka city. *International Journal of Basic & Clinical Pharmacology*, 9(9), 1–6. <https://doi.org/10.18203/2319-2003.ijbcp20203522>