EXPLORING THE IMPACT OF ONLINE INFORMATION IN INFLUENCING SELF MEDICATION PRACTICES AMONG YOUNG ADULTS IN NIGERIA.

BY UWANA VICTORY NYAH

A research dissertation submitted in partial fulfilment of the requirements for the degree of MSc in Pharmaceutical Business and Technology (QQI)

Innopharma Faculty of Pharmaceutical Sciences
Griffith College Dublin

Dissertation Supervisor: Martin Conneely.

AUGUST 2024.

GRIFFITH COLLEGE DUBLIN

Assignment Cover Sheet

Learner name(s): UWANA VICTORY NYAH [redacted]

Assignment Type: **Individual:** YES **Group:**_____

Course: PHARMACEUTICAL BUSINESS AND TECHNOLOGY (MSC.) **Stage/year:** 2024

Module: DISSERTATION **(MSCPT-D/Dub/FT)**

Study Mode: Full time YES Part-time _____

Lecturer Name:

Assignment Title: EXPLORING THE IMPACT OF ONLINE INFORMATION IN INFLUENCING SELF MEDICATION PRACTICES AMONG YOUNG ADULTS IN NIGERIA.

No. of pages: 80 PAGES

Uploaded to Moodle: Yes **YES** No _____

Additional Info:

Date due: 26TH AUGUST 2024

plagiarism disclaimer:

I understand that plagiarism is a serious offense and have read and understood the college policy on plagiarism. I also understand that I may receive a mark of zero if I have not identified and properly attributed sources that have been used, referred to, or have in any way influenced the preparation of this assignment or if I have knowingly allowed others to plagiarize my work in this way.

I hereby certify that this assignment is my work, based on my personal study and research, and that I have acknowledged all material and sources used in its preparation. I also certify that the assignment has not previously been submitted for assessment and that I have not copied in part or whole or otherwise plagiarized the work of anyone else, including other students.

I have also not used any third parties, AI tools or websites to generate any parts of my assignment.

Signed & dated: **26th August 2024**

CANDIDATE DECLARATION

I, Uwana Victory Nyah with student number 3124459, hereby declare that the work presented in this thesis titled **Exploring the Impact of Online Information in Influencing Self Medication Practices among young adults in Nigeria** is entirely my own, except where otherwise acknowledged. This work has not been submitted, either in whole or in part, for any other degree or qualification at this or any other university. All sources used or referred to in this thesis have been properly cited and acknowledged.

I also acknowledge that my supervisor, Martin Conneely has reviewed and provided guidance on this thesis.

Candidate's Signature: 

Date: 26th August 2024

Supervisor's Name: Martin Conneely.

Supervisor's Signature:

Date: 26th August 2024

ACKNOWLEDGEMENTS

I am forever grateful to God for the gift of life, blessings of family, and good health he gave me to successfully complete my dissertation.

I am grateful to my wonderful supervisor Martin Conneely for his patience and guidance during the dissertation period. I appreciate all your efforts.

This dissertation is particularly dedicated to both my parents Mr and Mrs Nyah who pushed hard for me to be here I appreciate all your sacrifice on my education, life and prayers. I am glad I made you proud.

My sincere gratitude goes to my Elder brother Nsikak Mathew Nyah for your fatherly role here in Ireland, guidance, academic support. I really appreciate you.

I want to also extend a sincere gratitude to my Elder sister Mrs Ememm Onatemowo thank you for your support, guidance and to all my friends, I appreciate the love and encouragement.

My deepest gratitude goes out to all the Nigerian participants who made out time to fill my survey forms despite their busy schedules. I hope this study will contribute to a safer and more effective medication use environment in Nigeria.

Additionally, I would like to express my gratitude to the entire team at Griffith College Dublin, Department of Pharmaceutical Business and Technology, from whom I have gained knowledge during the MSc program for providing the academic platform and resources necessary to conduct this research, creating a conducive learning environment.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

SM: Self Medication

PPMVS: Patent and Proprietary medicine vendors.

WHO: World Health Organization

MRSA: Methicillin resistant *Staphylococcus aureus*

AMR: Antimicrobial resistance

OTC: Over the counter drugs

OND: Ordinary national diploma

HND: Higher national diploma

ADR: Adverse Drug Reactions

AR: Antibiotic resistance

NAFDAC: National Agency For Food And Drug Administration And Control

PCN: Pharmaceutical Council of Nigeria

NITDA: National Information Technology Development agency

NDPR: Nigerian data protection regulation

ABSTRACT

Self-medication which is a form of irrational use of drugs is fast becoming a global issue, and affecting individuals worldwide. This study explores the impact of online information in Influencing self-medication practices among young adults in Nigeria. The research addresses several key questions such as what are the likely solutions that can improve existing regulations and enforcement, why do individuals self-medicate and what are the implications for the health care sector, pharmaceutical industries and patient safety?

A mono method approach was used for the purpose of this research involving a quantitative survey distributed to a total of 170 adults, aged 18-40 years and above.The study assesses consumer perceptions, self-medication practices, primary sources of health information found online, types of medications used and consumer awareness on risks associated with self-medication. The survey results indicate that approximately 43.5% of participants engages in self-medication based on online information, with social media platforms, health blogs, and google as the highest search engine used.

The research study also showed that participants often find online information more accessible but express concerns about the credibility and accuracy of the sources. Additionally, convenience, a perception that the condition is not serious and cost saving are prominent factors influencing their decision to self-medicate.

Based on this findings, the study suggest a pressing need for public health initiatives aimed at improving digital health literacy and implementation of robust regulatory frameworks to ensure that online health Information is accurate. Strengthening the collaboration between healthcare professionals and digital health platforms could also enhance the quality and reliability of online health information available to young adults in Nigeria.

Key words: *Self-medication, online Information, medications, Nigeria, Influencing, irrational., digital health literacy*

CHAPTER 1: INTRODUCTION.

1.1 OVERVIEW

According to the WHO, “self-medication is the selection and use of medicines by individuals to treat self-recognized illnesses or symptoms”. (Popoola *et al.*, 2024)

Self-medication is increasingly being advocated as a therapeutic choice for minor diseases, especially to prevent and manage mild symptoms, since it has demonstrated efficacy as a treatment alternative in recent times. Nevertheless, the abuse or overuse of self-medication can have detrimental consequences on people’s health, particularly when it involves the misuse of some legally available over-the-counter opioid painkillers (such as caffeine, acetaminophen, or acetylsalicylic acid), antihistamines, and laxatives. (Nguyen *et al.*, 2023). Self-medication also refers to the practice of using medications without a prescription from a physician or supervision from a medical health organisation. This include herbal or chemical remedies, previously given medication for similar illnesses and any other medicines stored at home. It also includes the distribution of already prescribed medications to family, acquaintances or anyone within one's social network. Certain medications are administered without discrimination as long as the noticeable signs do not improve, resulting in the overuse and abuse of these medications. Abuse and misuse of medication can obscure the underlying symptoms and signs, which can complicate the medical condition and potentially lead to drug resistance and delayed diagnosis. (Popoola *et al.*, 2024). Self-medication is a prevalent issue in countries that are underdeveloped and poses a significant public health risk on a global scale. During the COVID-19 epidemic in Nigeria, almost 41% of the population engaged in self-medication. The primary motivation for self-medication was the fear of being stigmatised and discriminated against. This phenomenon has been attributed to the increase of unregulated accessibility of drugs without the requirement of a prescription. (Popoola *et al.*, 2024) Other factors that have been reported as motivations for self-medication include the convenience, limited availability of time, and cost saving. Oftentimes, individuals obtain these self-administered medications without a prescription, directly from pharmacist who administer drugs through chemists located within the local community, commonly referred to as community pharmacies. In Nigeria, these merchants are referred to as Patent and Proprietary Medicine Vendors (PPMVs). Despite their lack of formal pharmacy training, PPMVs in Nigeria are recognised and regulated by the Pharmacy Council of Nigeria. They are authorised to offer drugs for common ailments on a retail basis to the Nigerian population.

The problems caused by self-medication involve irrational drug usage, inefficient allocation of healthcare resources and increased susceptibility of microorganisms to antimicrobials. Other significant health risks include severe medication responses and long-term morbidity. Despite the harmful effects of self-medication, it is prevalent in several countries including Nigeria. Adolescents and young people, due to their limited understanding of the risks associated with drug use and their unrestricted access to social media are more likely to engage in self-medication. The presence of unverified medical information on social media further encourages their actions. They are also prone to engage in this activity due to the accessibility of over-the-counter drugs and their high level of education, which is accompanied by a broad spread of health-related information on media platforms. The availability of road side drug hawkers and over-the-counter pharmacy has been associated to the problem of self-medication among individuals in this demographic, particularly in poor and middle income countries. (Popoola *et al.*, 2024).

Below is a diagram showing a road side vendor in markets selling drugs to the general public. It is important to note that this vendor is not a pharmacist authorised to sell medications. Such occurrences are frequently observed in markets or along roadsides in Nigeria.

Figure 1 : An Open drug Market in Nigeria (David, 2018)

1.2 STATEMENT OF THE PROBLEM

The problem associated with self-medication are substantial and should not be underestimated in terms of their impact. The reason for this is because self-medication poses significant social and economic challenges, not only for individuals but also for society as a whole. (Oluyemi *et al.*, 2015). However, this issue needs immediate attention from several sources due to the consequences it might have if not properly resolved. Self-medication typically provides only short relief for illnesses, rather than offering a lasting solution. It achieves this by suppressing symptoms, only for the illness to resurface at a later period. Furthermore, engaging in self-medication lead to the development of drug resistance to illnesses and may potentially result in drug addiction, particularly when practiced regularly. In addition, self-medication can potentially lead to a delay in diagnosing a disease, as the underlying reason may remain unknown without a comprehensive medical evaluation. Regular consumption of non-prescription medications can result in organ damage, particularly when the drugs are not administered correctly or when taken in excessive amounts The regular intake of paracetamol, for a headache without a correct diagnosis, might lead to liver damage that could potentially be fatal. (Atohengbe, 2013).

It is important to note that self-medication might impact the use of medical services available to support the health of individuals in society. The insufficient utilisation of healthcare in society can occur when government and private sector such hospitals, clinics are neglected in favour of more easily accessible options like pharmacies and drug hawkers. Based on the information provided, it is clear that self-medication is a significant issue in society. Its impact is severe and generally leads to negative outcomes for societal development. Therefore it is important to research and identify the different factors that influence this practice. (Oluyemi *et al.*, 2015).

A research conducted by the World Health Organisation in 2006 revealed that the doctor to patient ratio in Nigeria is significantly low, with just 28 doctors per 100,000 patients. This discusses the reason why patients face significant durations in hospitals, awaiting the attention of doctors and other healthcare practitioners. Unfortunately, the patients waiting time is a reliable measure of the level of service provided by hospitals and a significant element that impacts the usage of healthcare services. However, this goes against the advice of the Institute of Medicine (IOM) which states that at least 90% of patients should be seen within 30 minutes of their planned appointment time.

In most developing countries, research have indicated that patients often wait for a minimum of 2-4 hours in the out-patient departments before receiving medical attention from doctors. The waiting time length differs not just across nations and regions, but also between different hospitals. (Oluyemi *et al.*, 2015). In Nigeria, the city of Benin in Edo State had an average waiting time of around 173 minutes, while the University College Hospital in Ibadan, Oyo State, had a mean waiting time of 1 hour 13 minutes.

1.3 NIGERIA'S CURRENT SITUATION WITH REGARD TO SELF MEDICATION.

The prevalence of self-medication in Nigeria is a major public health concern that has the capacity to hinder the efficacy of treatments and result in severe health problems (Danraka, 2022). For instance, the prevalence of multiple antibiotic resistance (MAR) among bacterial isolates causing urinary tract infections (UTIs) in Southwest Nigeria is considerably higher than in any other country. Furthermore, the frequency of severe bacterial infections, including community acquired methicillin-resistant *Staphylococcus aureus* (MRSA), is increasing in Africa due to the improper and excessive use of antibiotics, which is an important factor contributing to the development of antimicrobial resistance. Research is necessary to assess the unique patterns of antibiotic consumption that are widespread in developing countries in order to develop and carry out treatments. (Sapkota *et al.*, 2010). Nigeria lacks stringent regulations on the marketing and promotion of antimicrobials, which leads to the spread of false information and misconceptions that contribute to the incorrect use of antibiotics. Limited access to quality and effective medical care is hindered by inadequate hospital infrastructure, high service costs, poverty, hunger, and illiteracy. The patronage of Quacks providing unusual and unhygienic medical care, commonly becomes accepted as the norm. Under this framework, the act of self-medication, as previously described by The World Health Organisation, is extensively encouraged, among educated individuals, as a means of conserving the limited resources of qualified doctors and other medical staff.

1.4 HISTORY OF SELF MEDICATION

Reflecting on history, self-medication has frequently been regarded as a means of achieving independence. It has been viewed as a fundamental human entitlement which is directly related with the freedom to refuse professional healthcare services. Due to the various consequences of different medications, they may be utilised for different reasons. In order to provide an explanation, a hypothesis was established and referred to as the "Self-Medication hypothesis" (SMH), which was first introduced in publications authored by Edward Khantzian and Mack Schatzberg.

1.4.1 SELF MEDICATION HYPOTHESIS

It states that, the selection of a certain medicine by an individual is not random, but rather influenced by their psychological state. The chosen drug is believed to relieve symptoms associated with the individual's specific condition. According to Khantzian, the Self-medication hypothesis states that drugs alleviate psychological problems and an individual's choice of a certain drug is influenced by its psychopharmacological effects. (Halappa, 2016). The Self-Medication Hypothesis (SMH) model also suggests that there is an underlying factor that motivates an individual to utilise medications. It is crucial to acknowledge that individual with mental health conditions are not the only individuals who have embraced or developed an addiction to this beliefs. Each medicine possesses positive as well as negative effects. Therefore, it is crucial to recognise that some diseases, such as mental illness, depression, anxiety, and posttraumatic stress disorder, pose a concern when individuals attempt to self-medicate. (Pragathi and Divya, 2021)

Drugs that come under threat for Self-Medication are:

- CNS depressants (Central Nervous system)
- Psychostimulants
- Opiates
- Cannabis
- Drugs used for infectious disease, i.e. antibiotics.

The literature emphasises the negative consequences of inappropriate self-medication and the ability of these consequences to mask progressive diseases. However, a thorough search reveals that the prevalence of these consequences is more prevalent with the improper use of psychoactive drugs/antibiotics (overuse or abuse), which results in bacterial resistance.

1.5 FACTORS INFLUENCING THE PATTERN OF SELF MEDICATION PRACTICE

The global adoption of the notion of self-medication, which promotes individuals taking care of minor diseases is widespread. There is a prevailing belief that medicine should be utilised whenever there is any illness or suffering. (Afolabi, 2008).

In the United Kingdom, over 50% of healthcare is provided by self-medication. The government promotes self-reliance, while organisations like the World Health Organisation (WHO) urge individuals, families, and communities to actively participate in primary healthcare. Inadequate diagnostic skills, along with a limited understanding of proper treatment, lead to a rise in self-medication and a low incidence of healthcare use. This demonstrates that the practice is universal, cultural, gender, health, social position, racial, occupational and other demographic boundaries. Many individuals opt for self-care instead of seeking assistance from professional healthcare providers due to extended hospital waiting times, minor health issues, financial constraints, the desire to save time and money, limited accessibility, scarcity of doctors, or a perception that their condition is not serious. Some individuals engage in self-administration of drugs using drug identification. Trade names were commonly used for identification by generic names, colour, form, and general usage names were less frequently employed. Possible sources of drug information include the social media, family and friends, pharmacists, pharmaceutical industries, general and private medical practitioners, as well as individuals who frequently interact with the public.

Within the younger demographic, individuals get information about drugs from several sources, including family members, particularly the mother, peer groups, and the illicit market. The social context has a significant role in shaping an individual's self-care practices when ill which in turn influences the type and quantity of healthcare services utilised. The sociodemographic determinants encompass several factors such as age, gender, employment, educational level, marital status, religion, location of residence, race, income, and culture. Although self-medication has gained attention, there is few knowledge on its primary factors, particularly in poorer countries. Research on the determinants of this behaviour should be of

interest to public health professionals because to its potential harmful consequences, particularly in communities with high rates of illiteracy. (Afolabi, 2008)

1.6 THESIS OUTLINE.

The thesis is organised into five chapters to offer a thorough examination of the influence of internet information on self-medication practices in Nigeria.

Chapter One is as an introductory section that presents the research subject, elucidating the reasoning for the study and its importance within the realm of public health and research. The text outlines the research objectives and purposes, emphasising the crucial importance of comprehending the consequences of self-medication behaviours, including its definition and historical context.

After the introduction, Chapter Two, known as the literature Review part, will explore the current body of knowledge about drug categorisation, regulations, and the irrational use of drugs. This section will examine the variables that contribute to irrational drug use, the role of regulatory frameworks in resolving these concerns, and any comparative studies on drug regulation in Nigeria. The analysis will be based on scholarly sources and empirical evidence.

Chapter Three, titled "Research Methodology," discusses the specific methodology and strategies used to carry out the study. The text outlines the process of choosing appropriate research methodologies to successfully fulfil the study's objectives and effectively address the research questions. This chapter provides a comprehensive overview of the techniques employed in the process of data gathering, analysis and interpretation.

Chapter Four shows the analysed data and offers insights into the responses collected from the participants. The report provides a comprehensive analysis of the collected data, showing individual response to various parts of the research and dissecting them to derive valuable insights.

In Chapter Five, titled "The Discussion," a thorough analysis is conducted to evaluate the study's findings and their significance within the framework of current research. The study examines the extent to which the research findings are consistent with other studies and tackles the research enquiries raised in the study. In addition, this chapter provides a concise overview

of the main discoveries, proposes suggestions for future investigation and ends the study by emphasising its contributions to the area.

1.7 PURPOSE OF RESEARCH

This research "Exploring the impact of online information in influencing self-medication practices among young adults in Nigeria" serves multiple important purposes. With the rise of digital health resources, there is a need to understand how this information influences decision making, especially in a context like Nigeria, where healthcare systems may be difficult to access. This research could uncover the types of online information that are most commonly accessed and trusted by young adults, such as social media platforms, health blogs or online forums and how this information guides their self-medication practices. Additionally, it seeks to evaluate the accuracy and reliability of the online sources used as misinformation which could lead to inappropriate or harmful self-medication practices, such as incorrect dosage, usage of unapproved medications or delayed professional medical consultation.

Moreover, the study could explore the underlying reasons why young adults in Nigeria opt for self-medication instead of seeking professional healthcare. Understanding these factors can help in developing targeted interventions to promote safer health practices, including improving digital literacy, encouraging critical evaluation of online health information and enhancing public awareness about the risks of self-medication.

1.8 THE STUDY SIGNIFICANCE

This study will be valuable for examining the difficulties associated with self-medication practices in Nigeria. It will contribute to both theoretical and practical applications and serve as a foundation for future research in this field. Hence, this study will have significance in the subsequent approach. The objective is to raise awareness about the possible risks associated with unverified internet health information and self-medication practices in Nigeria's public healthcare system. Additionally, it aims to emphasise the need for collaborative efforts to enhance the regulatory framework. The study has the capacity to generate findings that may be utilised by public health authorities to explore approaches for enhancing the effectiveness of current methods employed to regulate the sale, manufacturing, and availability of pharmaceutical medications in Nigeria. By identifying the extent to which online sources influence their decisions, this study can reveal gaps in knowledge, misconceptions, and the potential dangers posed by misinformation.

1.9 AIMS AND OBJECTIVES.

This research aims to investigate the factors influencing individual decision making processes when self-diagnosing ailments and purchasing of drugs based on online information. The findings could inform public health strategies, guide the creation of more accurate and accessible online health content and ultimately contribute to safer self-care practices among young adults in Nigeria.

1.9.1 PROPOSED RESEARCH OBJECTIVES

(i) To quantify the extent and motivations of self-medication practices among adults in Nigeria.

(ii) To Identify the primary online sources and how it influences self-medication practices.

(iii) To evaluate the level of consumer awareness regarding the risks associated with self-medication practices.

(iv) To access the effectiveness of existing regulations on the sale of OTC drugs and online pharmaceutical Information.

(v) To ascertain the depth of the possible challenges faced by young adults that can possibly lead to self-medication.

1.9.2 SPECIFIC RESEARCH QUESTIONS

The research questions that the present study will be seeking answers for are as follows:

i. What are the likely solutions that can improve existing regulations and enforcement?
ii. Why do individuals Self diagnose/medicate?
iii. What are the implications for the health care sector, pharmaceutical industries and patient safety?
iv. What is the depth of challenges faced generally in accessing a health care system in Nigeria?
v. How can the possible challenges facing self-medication process be effectively addressed to enhance patient safety?

CHAPTER TWO LITERATURE REVIEW.

2.1 OVERVIEW

Online social networks are transforming interpersonal relationships due to the widespread availability and increasing adoption of the Internet. Young individuals from many cultural backgrounds subscribe to and access a wide range of information via these sites. By engaging in networking and exchanging information, knowledge is created and may be utilised according to the discretion of individuals or group members. The rapid dissemination of knowledge and its potential consequences for people and society are extremely daunting. Consequently, certain countries have advocated for censorship and limited access, while others have supported unlimited access. (Obasola and Agunbiade, 2016). When it comes to the impact of diseases, young individuals are affected across different social groups. One potential consequence is the necessity for individuals to engage in self-care activities and actively seek out health information, particularly for socially stigmatised disorders such as sexual and mental health.

The study on information seeking behaviour among undergraduates at a Nigerian University revealed that the average daily Internet usage was 33.7%. (Obasola and Agunbiade, 2016). Similarly, a study conducted by Escoffery et al. among college students in the United States found that over 70% of the participants had utilised online health information. The prevalence of self-medication varies significantly depending on the research methodology and the country in which it is conducted. During a six-month period in the United States of America (USA), 71% of males and 82% of females reported engaging in self-medication at least once. According to reports, 41.5% of individuals in the United Kingdom and Northern Ireland used medications without a prescription. In Spain, 27% of those experiencing pain engaged in self-medication. (Meysam *et al.*, 2020). The prevalence of self-medication with antibiotics in Africa ranges from 12.1% to 93.9%, with an average occurrence of 55.7%. In Western nations, the rate might reach up to 70%. (Popoola *et al.*, 2024).

In the 1990s, the global internet user was1%, however now it has increased to encompass 90% of the world's population. Across the globe, individuals engage in self-medication, with prevalence rates ranging from 53% to 75% in different countries. Previous studies suggest that between 15% to 19% of individuals engage in self-medication through the use of the internet. Excessive trust in pharmacological knowledge, a favourable mindset towards taking care of oneself, and the inclination to engage in self-medication and drug misuse contribute to this issue. These drugs are acquired through expired prescriptions, without a valid prescription and others are obtained from acquaintances.

2.2 WHY DO PEOPLE SELF MEDICATE?

Consumers desire to have more control over their own health and are often capable of managing simple chronic and recurring illnesses after receiving a proper medical diagnosis and occasional professional guidance. For example, they may use histamine H2 receptor blockers, topical corticosteroids, antifungal medications and oral contraceptives. They are naturally reluctant to endure the hassle of visiting a doctor for a condition they believe they can handle on their own with sufficient information. (Baracaldo-Santamaría *et al.*, 2022)

Research on self-medication has demonstrated that the rise in self-medication can be attributed to various factors, including socio-economic factors, lifestyle choices, easy availability of drugs, the ability to treat certain conditions through self-care, and the wider availability of medicinal products in the market. Other significant characteristics that influence self-medication are the patient's composure with the healthcare professional, extended waiting periods, prescription expenses, educational attainment, age and gender. A prevalent cause for engaging in self-medication is the exorbitant prices associated with private medical consultations. The situation is particularly higher in rural or remote areas, where the population faces social, economic, and educational deprivation, as well as illiteracy and insufficient access to healthcare. Another research found that the most commonly stated cause of self-medication were prior acquaintance with the condition and the perception that it was not serious.

In a research done in Nigeria, it was shown that the patient's perception of his ailment as being not serious was identified as one of the main variables contributing to self-medication. (Shayam and Chouhan, 2016). Moreover, there is a belief held by certain individuals that self-medication yields quicker results and lacks any adverse effects on their well-being. In Nigeria, this is especially prevalent among individuals who rely on traditional medicine, such as the indigenous remedy known as "*Agbo,"* which is commonly used by the Yoruba tribe. Some individuals choose this alternative to medicine prescribed by doctors due to the belief that it provides faster results and lacks any adverse effects. This supports the findings of a study conducted by (Oluyemi *et al.*, 2015) on the utilisation of herbal medicine among urban sellers in Lagos State. The study revealed that a significant number of respondents who use herbal medicine believe that traditional Yoruba concoctions have a quicker effect on them and are less likely to cause adverse effects.

2.3 DRUG CLASSIFICATION

The classification of medications into Over-the-Counter (OTC) and prescription-based groups is a crucial element of pharmacology that has significant consequences for patient safety, efficient utilisation of healthcare resources, and the avoidance of irrational use of drugs. (Leelavanich et al., 2020). Drugs are classified based on certain features, with important elements that influence this categorisation being the type of diseases and the safety profiles of the drugs. This categorisation often leads to the categorisation of medications into prescription and non-prescription categories, with the former primarily intended for severe disorders and the less serious conditions. OTC (Over-the-Counter) medications sometimes referred to as nonprescription drugs are medications that may be bought without a prescription. These products are deemed to be safe and efficacious for use by the general population without the direct oversight of a healthcare professional. Over-the-counter (OTC) medications are commonly available for purchase on shop shelves, allowing customers to obtain them without the need for physician consultation. Typical examples are pharmaceutical analgesics (such as acetaminophen and ibuprofen), antacids, antihistamines. Although over-the-counter (OTC) medications are usually considered safe when used as instructed, it is important for users to adhere to the authorised dose and use them responsibly, as advised by the Medicines and Healthcare products Regulatory Agency (MHRA, 2023). The use of nonprescription drugs, including over-the-counter (OTC) pharmaceuticals, is crucial in improving access to healthcare and enabling patients to manage minor health issues on their own.

2.3.1 COMMONLY ABUSED OTC DRUGS IN NIGERIA. (Adeseun, 2024)

INDICATION	DRUGS USED
Analgesic	Paracetamol (Acetaminophen)
Antibiotics	Ciprofloxacin, amoxicillin, ampicillin also known as ampliclox
Antimalaria	Amatem, Lonart
Contraceptive	Levonorgestrel (Postinor)
Nonsteroidal Anti Inflammatory drugs (NSAID)	Ibuprofen, aspirin and naproxen.

Table 1: Commonly abused drugs in Nigeria

2.4 MULTIPLE DRUG USE AND RISK OF INTERACTIONS.

A drug interaction is the alteration of a drug's influence as a result of the previous administration of another drug. It is projected that the risk of adverse drug-drug interactions will rise exponentially as the number of drugs a patient consumes continuously increases. The elderly are particularly susceptible to potential drug interactions due to a variety of physiological factors. Consequently, patients over the age of 65 experience adverse drug reactions at a rate that is two to three times higher. Elderly patients have a 100% likelihood of experiencing an adverse drug reaction when they are taking ten medications concurrently. (Ruiz, 2010). The findings of a cross-sectional study done by the US National Council on Patient Information and Education on a sample of 1011 American individuals indicate that over-the-counter (OTC) drugs are often misunderstood as being insufficient in potency to induce adverse health effects. The study conducted by Sleath et al. examined primary care medical visits and revealed that 50% of patients who had utilised over-the-counter (OTC) analgesics, which are the most often used OTC medicine, disclosed this usage to their physician within 30 days prior to the appointment. However, physicians enquired about the intake of OTC medications in only 37% of the visits. It is anticipated that the degree of transparency pertaining to complementary and alternative medications, such as herbal medicines, would be comparable or potentially lower, therefore limiting doctors from identifying potential adverse interactions and implementing appropriate preventative measures.

The issue regarding polypharmacy in developing nations, which are characterised by inadequate drug use regulation, inadequate implementation of existing restrictions, and poorer health literacy levels undoubtedly the most severe. The study conducted by (Chagas Bortolon et al.) used a cross-sectional descriptive approach where a structured survey was given to women aged 60 years were receiving assistance at the University Hospital of the Catholic University Brazil. Within the sample of 218 women who took part in this study, it was found that 30.8% acknowledged engaging in self-medication. In self-medication practices, the therapeutic categories that were most commonly utilised were analgesics, gastrointestinal tract drugs, vitamin or mineral supplements, Cardiac medications, and antiallergic.

2.5 POTENTIAL RISKS OF SELF MEDICATION.

(1) **Progression of the Disease:** When individuals self-medicate, they may only address the symptoms rather than the root cause of a disease. This can allow the disease to progress. For example, someone might take painkillers to manage chronic pain without realizing that the underlying issue, such as arthritis or a serious infection is worsening. Over time, this can lead to more severe health issues that are harder to treat. (Pragathi and Divya, 2021)

(2) Inappropriate Selection of Drug Choice: Choosing the wrong medication is a common risk in self-medication. Without proper medical knowledge, individuals might pick a drug that is not suitable for their condition. For instance, using an over-the-counter pain reliever for chest pain might temporarily reduce discomfort but won't address the potential underlying cause, such as a heart attack. This inappropriate drug choice can lead to ineffective treatment and a delay in receiving proper care.

(3) Inappropriate Diagnosis: Self-diagnosis often leads to errors because many health conditions share similar symptoms. For example, a cough might be a symptom of anything from a common cold to pneumonia or even a heart condition. If someone misdiagnoses their condition, they are likely to choose an ineffective or even harmful treatment, which can exacerbate the problem.

(4) Chances of Adverse Reactions: Medications can cause side effects and without professional guidance, individuals may not be aware of these risks. Adverse reactions can range from mild symptoms like drowsiness, an upset stomach to severe reactions such as allergic reactions or organ damage. The risk of experiencing such reactions increases when medications are taken without considering individual health factors like age, pre-existing conditions or other medications being used.

(5) Inaccurate Dosing and Frequency: Determining the correct dose and frequency of medication requires careful consideration of various factors like the patient's age, weight and overall health. Self-medication often leads to dosing errors which can render the treatment ineffective. For example, taking too much acetaminophen can cause liver damage, while taking too little of an antibiotic might not fully eradicate an infection.

(6) Risk of Dependency and Abuse : Certain medications, particularly those for pain relief or anxiety have the potential for misuse. When individuals self-medicate with these drugs, there

is a significant risk of developing a dependency. This can lead to a cycle of abuse where an Individual takes increasingly larger dose to achieve the same effect eventually leading to physical and psychological addiction.

(7) Drug Interactions: Medications can interact with each other in ways that might reduce their effectiveness or cause harmful side effects. For example, combining blood tonics with certain pain relievers can increase the risk of bleeding. People who self-medicate may not be aware of these potential interactions, leading to unintended and potentially dangerous consequences. (Shayam and Chouhan, 2016)

(8) Chances of Arising Complications : Self-medication can lead to complications that might not have occurred if the individual had sought professional care. For example, using over-the-counter nasal decongestants for an extended period can lead to rebound congestion, where symptoms become worse than before. Similarly, inappropriate treatment of chronic conditions like diabetes or hypertension can lead to serious complications such as organ damage or cardiovascular events.

(9) Pathogen Resistance Due to Usage of Inappropriate Antibiotic Therapy: Misuse of antibiotics is a significant concern in self-medication. When antibiotics are used inappropriately such as for viral infections or when the full course is not completed bacteria can develop resistance. This means that the next time an infection occurs, the standard antibiotics may no longer be effective, making it much harder to treat infections and leading to the spread of resistant bacteria.

(10) Excessively Prolonged Use : When individuals self-medicate, they might continue using a medication longer than necessary, either because they believe it's still needed or because they fear the return of symptoms. Prolonged use of certain medications can lead to serious health issues, such as gastrointestinal bleeding from long-term use of NSAIDs (like ibuprofen) or kidney damage from prolonged use of certain pain relievers. Continuous use without monitoring by a healthcare provider can lead to chronic side effects and other health problems. Each of these risks highlights the dangers of self-medication and underscores the importance of seeking professional medical advice when dealing with health issues.

2.5.1 Below is a table showing the comparison of potential benefits and risk of self-medicating.

POTENTIAL BENEFITS		POTENTIAL RISKS
Active role in one's own health care	Scarce medical resources are saved from being wasted on minor situations	Incorrect self-diagnosis
Self-reliance in preventing minor symptoms	Lowering cost of community funded health program	Incorrect choice of medication
Education opportunities on specific health issues	Reduced absenteeism from work	Rare but severe adverse effects
Economical	Reduced pressure on medical services	Inadequate or excessive dosage
	Health care availability enhanced.	Risk of dependence

Table 2: Potential benefits and risk of self-medication. (Shayam and Chouhan, 2016)

2.6 PREVENTION OF POTENTIAL RISKS ASSOCIATED WITH SELF MEDICATION

Health care professionals has the potential role in preventing risks of self-medication. Because they work on the three main therapeutic aspects of professionalism in daily practice:

(i) Information

(ii) Therapeutic advice

(iii) Education.

Whenever health professionals are prescribing drugs, It is expected that they provide patients with thorough guidance and illustrate the prescription for medications in order to facilitate their comprehension and independence in making decisions. In both acute and chronic treatments, therapeutic compliance is a significant issue that is indicative of an inadequately understood or incomplete description of the treatment objectives. For instance, patients are provided with a set of guidelines that will assist them in the proper use of the medication in the present and the future, such as the dose, frequency of intake, treatment course, and method of administration. Patients will only be able to reduce inappropriate and erratic self-medication, as well as a lack

of compliance, if they are informed and comprehend the rationale behind the advice they are given. Regularly adopting an educational attitude can have a significant impact on a significant portion of the population, who in turn may directly influence their friends and family.

2.6.1 Roles of a Pharmacist.

Pharmacists play a crucial role in teaching their consumers about the appropriate usage of medications for treatment purposes. In order to achieve it, it is important to undertake the appropriate measures in training and practice. (Shayam and Chouhan, 2016). Pharmacists have a crucial role in recognising, resolving, and avoiding issues linked to medication in order to get the best possible results for patients and improve their quality of life. Pharmacists should advise their clients to seek the guidance of a physician before self-administering any drug.

Role 1: Communicator : To effectively manage the patient's condition, the pharmacist must enquire about crucial facts and provide necessary instructions (such as medication administration and safety precautions) to the patient.

Role 2: Quality drug supplier : The pharmacist is responsible for verifying that the items acquired are from reliable sources and meet high quality standards.

Role 3: Trainer and supervisor: In order to do this, a pharmacist must establish guidelines for community health workers who are responsible for the management and dispensing of medications.

Role 4: Collaborator: Pharmacists must establish high-quality collaborative partnerships with other healthcare professionals, national professional bodies, the pharmaceutical industry, governments, and the general public.

Role 5: Health promoter: As a member of the healthcare team, the pharmacist is responsible for engaging in health screening to identify health problems and individuals at risk in the community. They also participate in health promotion campaigns to increase awareness of health issues and disease prevention. Additionally, they provide guidance to individuals to assist them in making well-informed decisions regarding their health. (Shayam and Chouhan, 2016)

Fig. 2: Strategic framework medication (Shayam and Chouhan, 2016)

2.7 REGULATORY FRAMEWORK IN NIGERIA

Currently, the regulatory framework in Nigeria is predominantly supervised by the National Agency for Food and Drug Administration and Control (NAFDAC). NAFDAC has a vital function in the regulation of drugs, with the objective of guaranteeing the excellence, safety, and effectiveness of pharmaceutical goods (NAFDAC, 2017) by notwithstanding regulatory endeavours and concerns associated with drug abuse/misuse. (Jatau et al., 2021). There is growing concern about the abuse of over-the-counter (OTC) drugs, which has led to enquiries into how common it is and the specific types of people who are affected. It is crucial to establish a clear differentiation between prescription drugs and over-the-counter (OTC) drugs, particularly in Nigeria where self-medication is prevalent (Akinnawo et al., 2021).The classification of medications in Nigeria is outlined in the Drug and Related Products Registration Regulations established by (NAFDAC, 2021).

In Nigeria drugs are divided into two primary classifications: Over-the-Counter (OTC) drugs and Prescription drugs. The registration of a product as an OTC drug is contingent upon meeting particular requirements.

Established Efficacy and Safety: Prior to being approved as an over-the-counter (OTC) medication, a product must provide evidence of proven effectiveness and safety within the appropriate target demographic. This guarantees that the drug is appropriate for use.

Absence of Safety Concerns: There are no particular safety issues that would restrict its safe usage without medical treatment.

Easily Diagnosable Indications: The indication for the medication's usage should be readily identifiable and self-restricting, if relevant. This guarantees that clients may precisely evaluate their health and ascertain the appropriateness of the drug for their requirements.

Appropriate Packaging: The packaging of the drug should be customised to match the authorised duration and recommended usage, in order to provide customers with explicit instructions on how to take the medication in a safe and efficient manner. Moreover, the transition of a product from being exclusively available with a prescription to being accessible as an over-the-counter medication is prohibited unless it is authorised by NAFDAC. This measure ensures that drugs are not reclassified without a thorough evaluation of their safety and effectiveness for over-the-counter usage. In order to get OTC status for a drug product, the applicant must provide comprehensive information in a specified format, which must demonstrate that the medication is usually safe, effective, and properly marked to be used without a prescription. Moreover, a pharmaceutical product can be authorised for over-the-counter (OTC) sale in a particular nation provided it has been consistently promoted as such for at least five years and fulfils the specified quantity criteria established by the regulatory authority. (NAFDAC, 2021)This law enables the acknowledgement of globally recognised over-the-counter (OTC) pharmaceuticals, guaranteeing Nigerian customers' access to verified and secure items.

2.8 INTERNET REGULATIONS IN NIGERIA

The internet offers an extensive range of advantages and by providing various options, it has enabled individuals in several ways. For instance, individuals have the capacity to sustain social connections and have access to a greater amount of knowledge than in previous times. Some of the primary advancements in cyberspace are social networking platforms, news websites, online pharmacies, online booking platforms, and remote learning. (Adeoye, 2020). A significant number of Nigerians has expressed concern over the absence of law on data protection in Nigeria. As a developing economy aiming to be on par with economically advanced nations, Nigeria must have robust legislation to safeguard information, particularly in the realm of electronic trade (Online Pharmacies). Currently, Nigeria lacks any data protection law that is equivalent to the ones implemented in other nations such as South Africa, India, and the United States, Canada, European Union countries.

The National Information Technology Development Agency's Draft Guidelines on Data Protection are the closest thing Nigeria has to a data protection legislation. It is intriguing to observe that the draft guidelines are not more than they purport to be, they are merely "draft guidelines" with little to no evidence of legislative authority or deliberation. (Akomolede, 2015). The National Information Technology Development Agency (NITDA) is responsible for a variety of functions, including the establishment of a framework that encompasses the planning, research, development, standardisation, implementation, coordination, monitoring, evaluation, and regulation of information technology practices and systems in Nigeria.

The Nigeria Data Protection Regulation (NDPR), 2019 Issued by the National Information Technology Development Agency (NITDA) aims to protect personal data and ensure the privacy of Nigerian citizens. The Nigerian government has made several attempts to regulate social media, citing concerns about fake news, hate speech, and national security but has not been able to ensure stricter laws on this challenges. (Akomolede, 2015).

The Draft Guidelines are organised into three primary sections. The preamble, the authority upon which the guidelines are founded, the scope and application of the guidelines, and the purpose and definition of terms are all addressed in section one. Section two addresses topics such as data protection guidelines, data processing guidelines, data access guidelines, and data security officer guidelines. The principles of data protection guidelines are delineated in Section three, which are consistent with the data protection principles outlined in the European Data Protection Directive and have been incorporated into the data protection laws of other nations that have enacted similar legislation.

GAPS IN LITERATURE:

In literature, "gaps" refer to missing information or elements within a narrative that are not explicitly stated or described by the author. These gaps can be intentional or unintentional and can occur in various forms, such as plot details, character motivations, background information. The concept of gaps is closely related to the reader's role in interpreting a text and filling in these gaps with their own understanding. In this study the literature used had some gaps, there was no detailed theory or literature on self-medication majorly more on case studies and quantitative survey, which made it difficult gathering and discussing on the research topic. Secondly, it was observed that most literatures on self-medication were repeating the same thing like copying each other, further research on peered reviewed journals was done. The Influence of mobile health technologies such as apps and telemedicine platforms on self-

medication practice in Nigeria is an emerging area with limited research. Understanding how these technologies are used and their impact on self-medication is a key area for future research.

2.9 CONCEPTUAL FRAME WORK

A conceptual framework is a theoretical structure that systematically presents and arranges the fundamental concepts, variables, connections, and ideas that form the foundation of a research investigation. A research framework is crucial as it offers a systematic method for comprehending the relationships between various aspects and assists researchers in visualising their study by demonstrating the logical structure and interaction of essential components. (Tamene, 2016). The study's conceptual approach facilitates a systematic exploration of the many facets of online information influence on self-medication habits among people in Nigeria. It provides guidance for the research report, ensuring that the study thoroughly investigates the components, their relationships, and aids in identifying prospective topics for future research. (Tamene, 2016). Ensuring patient safety is not simply a result of regulatory choices, but also a factor that influences the regulatory process. Another prominent subject is the economic considerations and examines the impact of regulatory choices on pharmaceutical companies and the general economy of each nation.

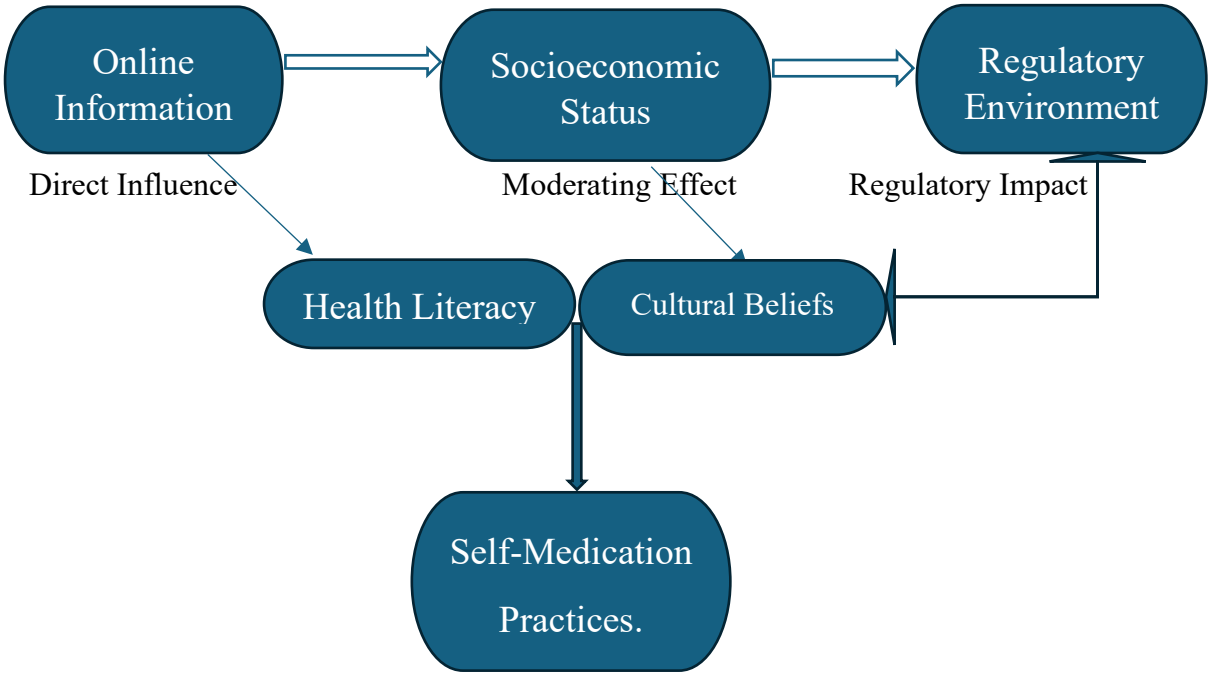

Figure 3: Conceptual Frame work.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 OVERVIEW

This chapter discusses the research approach used in this dissertation study. This include the research philosophy, methodology, approach, data gathering technique, data analysis, and research ethics. Table 3 provides a concise overview of the research methodology used in this study.

Section No	Stages	Research
1	Philosophy	Positivism
2	Approach	Deductive Analysis
3	Strategy	Quantitative Research
4	Data Collection Method	Survey
5	Time horizons	Cross sectional
6	Techniques and Procedures.	Sampling methods, questionnaire design, data collection methods, data analysis techniques

Table 3: Research Methodology and Primary Data Collection (Dissanayake, 2023)

3.2 PHILOSOHICAL PARADIGM

According to (Cohen *et al.*, 2019) there are three philosophical paradigms: interpretivism, positivism, and pragmatism. However, most research investigations may be categorised into two main research philosophies: interpretivism and positivism. Interpretivism is closely linked to the qualitative research approach, whereas positivism is primarily related with the quantitative research technique. Positivism primarily embodies the philosophical position of a natural scientist. Knowledge is acquired by the process of seeing and identifying patterns in events, which are grounded in causal, law-like, and functional relationships. (Saunders *et al.*, 2019). Thus, in this research, positivism is aligned since it implies the predictability and controllability of the future. Future predictions are made by analysing current and previous patterns of occurrences, using functional relationships to accurately calculate future events through extrapolation. Positivism generates research enquiries and hypotheses that may be assessed and studied. Positivism can be utilised to quantify and elucidate general knowledge about the world. Interpretivism is an epistemological paradigm that is grounded on subjectivist principles. It posits that the world we see is socially produced and can only be studied through

the lens of social constructions such as consciousness or language (Dissanayake, 2023). Reality is a product of social construction and is continually changing. As a result, knowledge and facts are relative and subjective. The ongoing criticism of the strong dichotomy between the positivist and interpretivist positions revolves upon the boundary between the scientific and social sciences. Positivist philosophy, which acknowledges the existence of phenomena like ideas or social structures as independent of human people, fails to consider the influence of individuals in shaping social reality. On the other hand, interpretivists argue that the concept of the world existing without human cognition and experience is not viable

3.3 RESEARCH APPROACH

In the realm of scientific research, there exist three distinct research philosophies that serve as fundamental frameworks for describing all research studies found in the literature. Similarly, there are also three research techniques that align with these philosophies. The three types of research discussed are inductive research, deductive research, and abductive research (Saunders *et al.*, 2019). Interpretivism is the research philosophy that informs the inductive research approach, while positivism and pragmatism are the research philosophies that inform the deductive and abductive research techniques, respectively. In this study, the deductive strategy is appropriate as it involves formulating a hypothesis based on an existing theory and then designing a research approach to test it. (Dissanayake, 2023). The deductive approach is closely associated with the positivist approach, since it allows for the creation of hypotheses and the statistical testing of predicted outcomes with a predetermined degree of probability. The method is described as progressing from the general to the specific: first, a general theory and knowledge foundation is built, and then specific information obtained from the research process is compared to it (Kothari, 2004).

Nevertheless, qualitative research approaches can also employ a deductive approach, but with a distinction in the formulation of expectations compared to hypothesis testing based on pre-existing research. The deductive technique use questionnaires to develop an understanding of observations, enabling the comparison of diverse perspectives through empirical evidence. The collected data serves to validate or invalidate the hypothesis, and the procedure may be replicated. The inductive research strategy is a logical procedure in which a collection of data is utilised to deduce or establish a general principle. Inductive researchers might use unique study findings or observations to establish larger generalisations. The conclusion of an inductive argument is likely to be true, based on the available information, but it is not certain.

This is in contrast to deductive reasoning, where the conclusion is certain if the premises are valid. The validity of using inductive reasoning to research has been called into doubt. In deductive research, the validity of the conclusion is dependent on the veracity of the premise. Conversely, in inductive research, there is a level of ambiguity when the conclusion is derived from the inductive premise. Hence, the justification for inductive reasoning or argumentation can only be derived through the use of inductive methods. (Copi *et al.*, 2019). Nevertheless, several writers have contended that the inductive research technique offers researchers significant control and may be effectively utilised across a wide array of subjects, making it very versatile for exploring any issue. In addition to its flexibility, the inductive research technique has additional advantages such as facilitating the development of new theories and paying great attention to the study.

3.4 RESEARCH DESIGN AND STRATEGY.

The fourth layer of the research onion is referred to as the research choice. The research methodologies proposed by (Saunders *et al.*, 2016) include experiment, survey, case study, grounded theory, and narrative inquiry as the primary methods for doing research. Nevertheless, research methodologies in the domain of futures studies might be differentiated in a somewhat other approach. A research strategy is a broad approach that assists researchers in selecting the primary techniques or sets of procedures for data collecting to address the research question and achieve the research objectives. (Tengli, 2020)

The two primary research approaches in futures studies are quantitative and qualitative. The research will utilise Quantitative research due to its complimentary characteristics. Quantitative approaches offer a comprehensive approach to comprehending the extent and arrangement of self-medication. Additionally, it would provide a thorough comprehension of the results linked to self-medication activities. Quantitative and qualitative research methodologies can be differentiated into exploratory and normative categories based on their characteristics. Exploratory techniques focus on the examination of many potential outcomes and the investigation of potential developments. On the other hand, normative approaches are intended to influence and shape a future that is considered desirable or undesirable, by constructing the necessary steps or sequence of events to achieve it. In the field of futures studies, these various methodologies can be employed to achieve specific study goals, such as accurately describing future development patterns, recommending a series of measures to

achieve a desired future, and investigating the potential progression of future events. (Melnikovas, 2018)

3.5 METHOLOGICAL CHOICE

According to (Saunders *et al.*, 2019) the research onion presents three distinct options: Mono, Mixed, and Multi method research choices or approach. The Mono approach, which is aligned with quantitative research, will be utilised for this study.

(i) **Mono Method:** when using this method, it is necessary to collect a certain sort of data, which may be done using either quantitative or qualitative research

(ii) **Mixed Method:** This approach allows for the integration of both quantitative and qualitative methodologies in a research study, resulting in a more accurate and comprehensive dataset. (Melnikovas, 2018) states that the mixed approach involves the integration of several methods to form a unified dataset, whereas the multi method involves dividing the study into segments, each generating a distinct dataset.

(iii) **Multi-Method:** This method is similar to the mixed method as it integrates both quantitative and qualitative methodologies in a research. While they share similarities, they also possess distinct characteristics. While mixed methods include the integration of several methodologies to gather a certain collection of data, multi-method does not.

3.6 TIME HORIZON

The time horizon describes the required time for the completion of the project work. The types of time horizons are specified within the research onion: the cross sectional and the longitudinal (Melnikovas, 2018). For this research, the cross sectional time horizon would be used because for this study a specific time is required to complete the research.

(i) Cross Sectional

The cross-sectional time horizon refers to the predetermined period during which data collection must take place. This method is employed when the inquiry focusses on the examination of a single occurrence during a certain timeframe.(Melnikovas, 2018).

(ii) Longitudinal

A longitudinal time horizon for data collection involves the systematic and repetitive gathering of data over an extended duration. This approach is employed when the study objective is to analyse and understand changes that occur over time.

3.7 ANALYSIS AND DATA COLLECTION.

This is the sixth layer of the research onion and the innermost layer of Saunders' research onion. The overall reliability and validity of the study are considerably enhanced by the procedure employed at this stage of the research (Saunders *et al.*, 2016). The methodological approach employed in the research determines the collection and analysis of the data. The source of data, the research design, the sample, the sample size, sample ethics, sample limitations, and the research reliability and validity are also explained. The data collected may be classified as either primary or secondary. Primary data is direct data, as it is obtained directly from the source, whereas secondary data is indirect data. Primary and secondary data will be employed in this investigation. Primary data is defined as data that is obtained directly from the source. This can be accomplished through the utilisation of a variety of methods, including questionnaires, oral or written interviews, and so forth. Secondary data is derived from the work or opinions of other researchers. (Melnikovas, 2018).

3.8 TECHNIQUES AND PROCEDURES

By adhering to the sequential process of the research onion, the final step involves using certain methodologies and procedures to facilitate the gathering and analysis of data in the study design. The selection of prior options influences the specific methods used for gathering and analysing fundamental data, which in turn contribute to addressing the research issue, such as:

(i) The general population and specific subgroups e.g. frequent users of OTC medications
(ii) Sample size
(iii) Data collection through survey monkey, google forms, via email or social media e.g. WhatsApp and Linked in.

3.8.1 SAMPLE SIZE CALCULATION

The total number of participants for the study will be determined using a well-established method for calculating sample size. This will guarantee the accumulation of a enough amount of data in order to get statistically accurate results.

In July 2024, Nigeria's population was predicted to be around 229.5 million (Doris Sasu, 2024) Using the method depicted in Figure 5, with a confidence interval of 95% and a margin of error of 5%, the desired sample size was 385 individuals. Although precise data on the exact number of adults in the population was not accessible for this study, the overall population of Nigeria was utilised as a reference point for determining the desired sample size.

However, due to dissertation time limitations and the challenges of reaching a representative sample across a large and diverse population, the actual sample size achieved for this study was lower than the calculated target at 170 responses. This limitation is acknowledged and may impact the generalizability of the findings to the entire Nigerian population. Future research with greater resources and a more extensive sampling strategy may be needed to overcome this limitation.

$$\text{Sample size} = \frac{\frac{z^2 \times p\,(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p\,(1-p)}{e^2 N}\right)}$$

Figure 4: Sample size calculation (Survey Monkey, 2024)

- Where N = population size
- e = Margin of error (percentage in decimal form)
- z = 1.96 for a 95% confidence level.
- P = standard deviation = 0.5

3.8.2 DATA COLLECTION METHOD

Surveys are a very effective and cost-efficient research method. The survey questionnaire was generated and disseminated with Google Forms, a digital survey instrument that enables the production of online surveys with many question formats, such as multiple-choice, ranking, and open-ended questions. Google Forms was used for this research due to its effective data collecting capabilities. Participants were encouraged to complete the survey digitally via email invites, social media platforms, and other online ways. This method enabled the broad dissemination and prompt gathering of feedback from several cohorts of participants. (Bryman and Bell 2011). The survey questionnaire was created to collect information on their medication habits, attitudes, and views. The survey encompasses enquiries on demographics, knowledge of various drugs, sources of pharmaceutical information, self-administration behaviours, and variables that influence the choice to self-medicate. Additionally, it investigates consumers comprehension of the distinctions between over-the-counter (OTC) and prescription drugs, as well as their assurance in the safety of OTC meds in comparison to prescription prescriptions. The data obtained Includes:

(i) Demographics: Age (18-40 years above), Both genders, education.
(ii) Self-medication practices: Types of medications used, reasons for medication, frequency.
(iii) Sources of Information : What type of online sources are used to self-medicate, the company website, google or social media.
(iv) Health Outcomes: Was self-medicating effective or non-effective, side effects experienced.

3.8.3 STATISTICAL ANALYSIS:

Descriptive statistics analyses data, while inferential statistics is used to identify significant relationship and predictors of self-medication behaviour. The Primary data would be analysed and presented by:

Quantitative data analysis:

(i) Descriptive statistics
(ii) Demographics e.g. age, gender, education.
(iii) Self-medication practices: frequency, prevalence and types of medications.

3.8.4 DATA PRESENTATION

The Quantitative data would be presented through graphs and charts such as bar charts, pie charts, line graphs, tables or info graphs.

3.9 ETHICAL CONSIDERATIONS.

Consent and confidentiality are two fundamental ethical concerns that must be taken into account in any research endeavours. (Kothari 2004) This research will be conducted with a strong ethical framework and will strictly adhere to the highest ethical standards for thorough investigation. Consequently, confidentiality will be upheld during the process of data collecting and analysis, as well as before doing the research. This study is under the jurisdiction of the Griffith College Ethics Committee (GCEC). Prior to commencing this study, the GCEC granted approval for the research topic, consent, and survey form. The researcher has successfully overcome the initial ethical obstacle. As per the requirements of the GCEC, every participant who agrees to participate in the study will be required to read and provide their permission to a form that contains a synopsis of the research's purpose and goals. Only individuals who willingly provide their agreement to take part in the study will be eligible to participate in the survey. The participants will get a guarantee of the utmost secrecy and privacy about their information and comments, particularly in the electronic format. The data, including survey replies, will be securely kept in an electronic format on devices that are password secured and in encrypted cloud storage. Only the researcher, the supervisor, and I will have restricted access to these files as necessary. The storage and handling of the study data will adhere to applicable data protection rules, such as GDPR, institutional policies, and ethical guidelines.

3.9.1 CONCLUSION.

This chapter has discussed the research technique to demonstrate the logical process used in doing the research investigation. The research philosophy, approach, design, and strategy were discussed, and the rationale for selecting each of these for the current study was offered. The current research has chosen the quantitative research technique primarily because it is capable of answering the research questions while also offering in-depth analysis, contextual understanding, and many data possibilities. This has the capacity to broaden the scope of study and the current body of literature, offering both theoretical and practical advancements.

CHAPTER FOUR
DATA ANALYSIS AND FINDINGS

4.1 OVERVIEW

In Chapter 4, the data obtained from surveys conducted in Nigeria was analysed. The main purpose of this chapter is to present and explain the findings obtained from the data analysis, providing a clear understanding of the important insights gained from the research process. The surveys were distributed to 170 individuals through LinkedIn and several social media networks. This chapter will evaluate the results of the findings gathered from the participants.

4.2 DATA VISUALISATION

The strategy behind analysing the feedback from consumers was very important for understanding the real-world implications of drug categorization in Nigeria. By collecting data directly from consumers, I sought to gain insights into their experiences with self-medication practices, including the prevalence of self-medication, the frequency of experiencing side effects, and the reasons behind self-medication without prescription.

4.2.1 DEMOGRAPHICS

The table below illustrates the demographics of the respondents in total, there were 118 female respondents and 53 male respondents. The majority of respondents were also within the age range of 25-30 with females constituting the largest portion of this group.

AGE	RESPONDENTS
18-24years	35
25-30 years	95
31-35years	18
36-40years	17
Above 40 years	6
GENDER	
Male	53
Female	118

Table 4: Demographics of respondents.

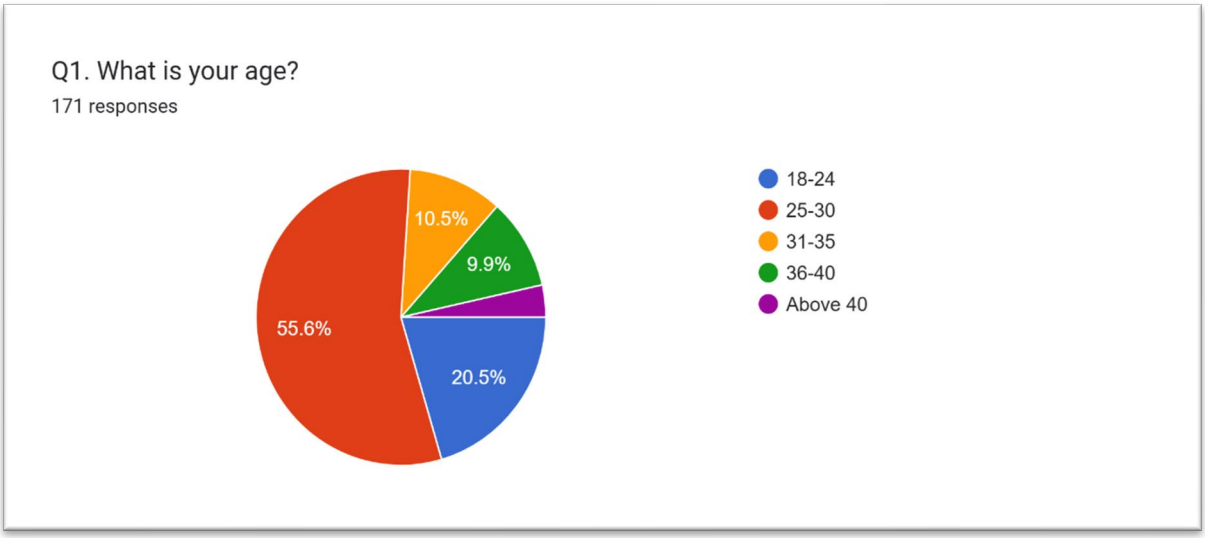

Figure 5: Age Distribution of respondents

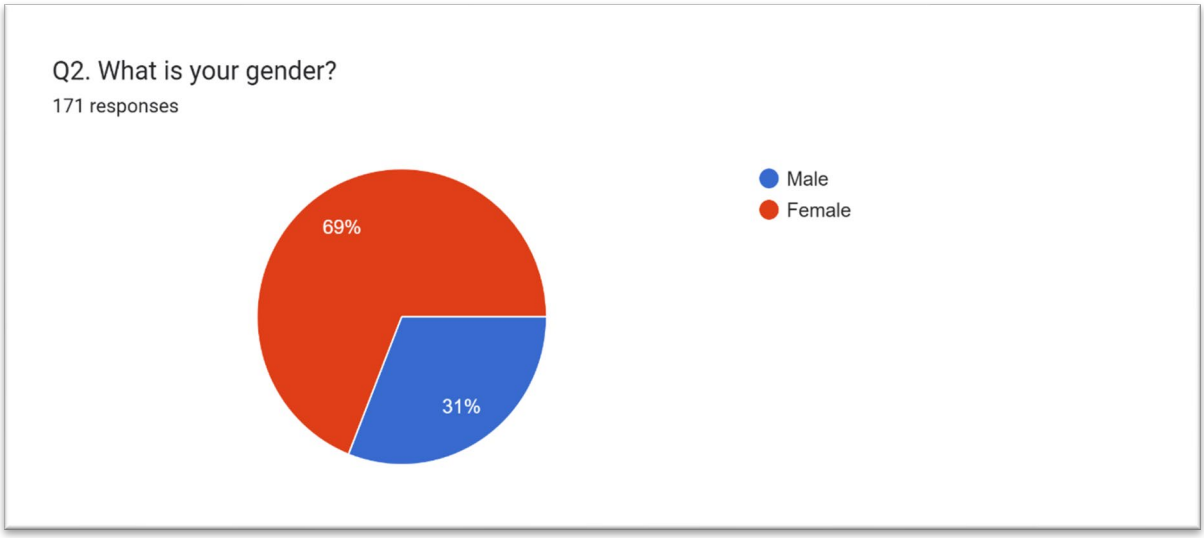

Figure 6: Gender Distribution of respondents

The above pie charts illustrates the Age and Gender distribution of all respondents from 18-40years and above. With ages ranging from 18-24 (20.5%), 25-30years (55.6%), 31-35years (10.5%), 36-40years (9.9%) and above 40years (3.5%). While for the gender distribution the male gender was rated at (31 %) and female gender at (69%). In order to follow Ethical and Legal Considerations individuals younger than the age of 18 did not participate in this survey.

4.2.2 EDUCATION LEVEL OF RESPONDENTS.

The table below Illustrates the education level of respondents. Majority of individuals have a bachelor's degree (100) and Master's degree (60) from several different courses constituting the largest portion of this group.

EDUCATION LEVEL	RESPONDENTS
Secondary school	3
Bachelor's degree	100
Master's degree	60
Doctoral degree	2
Professional	1
Higher National diploma (HND)	3
Associates degree	1
Ordinary National degree (OND)	1

Table 5: Education Level of respondents.

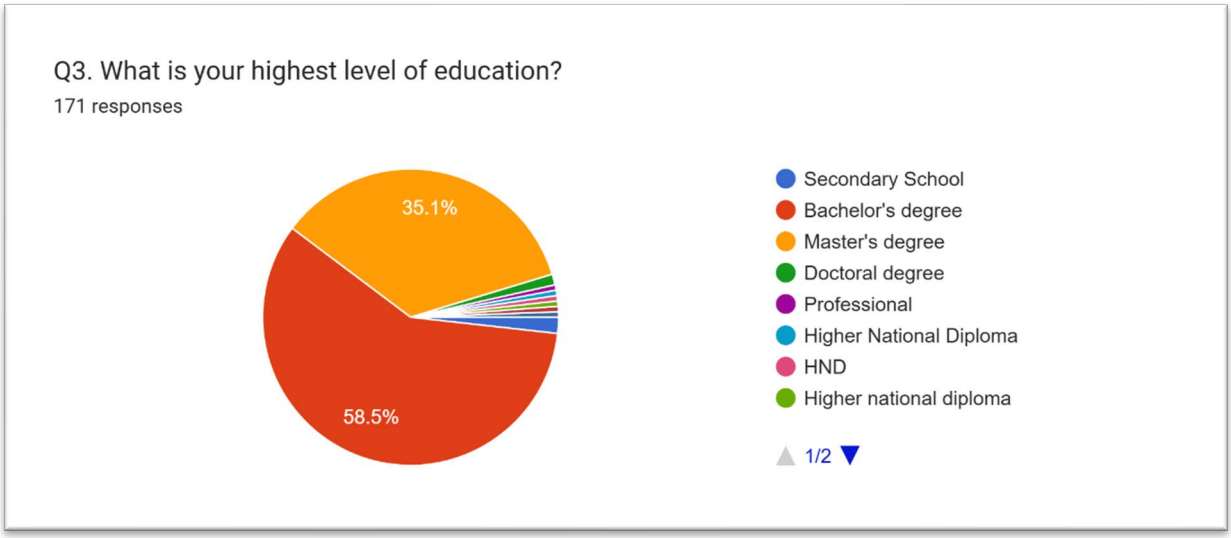

Figure 7: Education Level.

This question was asked to know the participants highest level of education to depict their awareness of self-medication which is a critical factor ensuring that research, analysis and communication strategies are accurate, effective and relevant. The pie chart above demonstrates different education levels in Nigeria starting from Secondary school to PHD levels. Most of the participants ranged in the level of Bachelor's degree (58.5%), Master's degree (35.1%) and least from Secondary school (1.8%), Higher national diploma HND

(1.7%), Doctoral degree (1.2%), Professional (0.6%), Associates degree (0.6%), Ordinary national degree OND (0.6%).

4.2.3 CURRENT OCCUPATION

The table below Illustrates the current occupation of the participants. A total of 102 respondents were employed and 42 respondents were students constituting them as the largest portion of this group.

OCCUPATION	RESPONDENTS
Student	42
Employed	102
Self Employed	21
Unemployed	3
Intern	1
Both employed and self employed	1
Currently undergoing business mentorship	1

Table 6: Current Occupation of respondents.

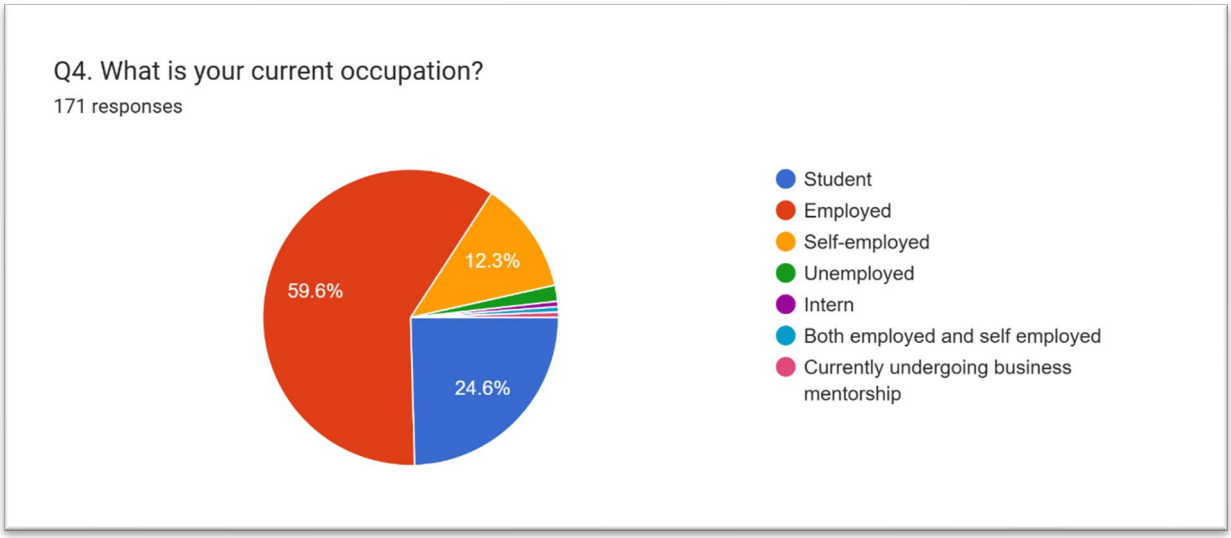

Figure 8: Current Occupation of respondents

Occupation is a key indicator of Socio economic status, which can be linked to other factors such as Income, education and lifestyle. The pie chart above demonstrates the current occupation of participants rating from Student to Unemployed. 59.6% of respondents were employed, 24.6% were students, 12.3% are self-employed, 1.8 % unemployed, 0.6% of individuals are undergoing an internship and business mentorship.

4.2.4 VISUALISATION AND ANALYSIS OF SURVEY RESPONSES ON THE USAGE OF THE INTERNET

The question was asked to check the rate at which each participant has access to the internet and their usage. Although a majority of them access the internet on a daily basis. The pie chart below demonstrates the usage of the internet rated from "Daily" to "Never". Almost all the participants ranged in category of daily usage 168 (98.2%) Interestingly, weekly 1(0.6%), Monthly 1(0.6%) and surprisingly Never 1 (0.6%). From this data it shows that almost all participants have access and exposure to online information daily. The more frequently an individual uses the internet, the more likely they are exposed to health related verified and unverified misleading information or inaccurate health advice.

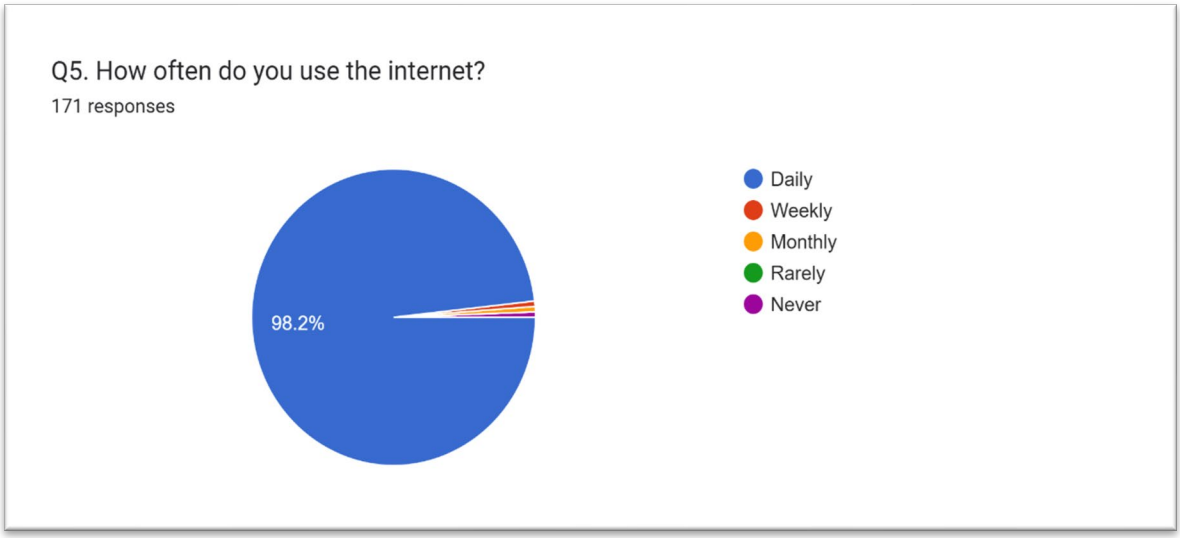

Figure 9: Usage of Internet

4.2.5 DEVICES USED TO ACCESS THE INTERNET

The pie chart below demonstrates different devices used to access the Internet. 165 individuals use a smart phone rated at 96.5%, 2 individuals use a tablet rated at (1.2%), Laptop 3 (1.8%), Desktop (0), all of the above (1) 0.6%. From the data varying levels of accessibility of online information, smartphones are widely used by young adults in Nigeria based on their affordability and portability making them a primary source of internet access. Understanding the devices used also helps in accessing the digital literacy of the participants. This provides insights into accessibility, user behaviour and potential disparities in information quality.

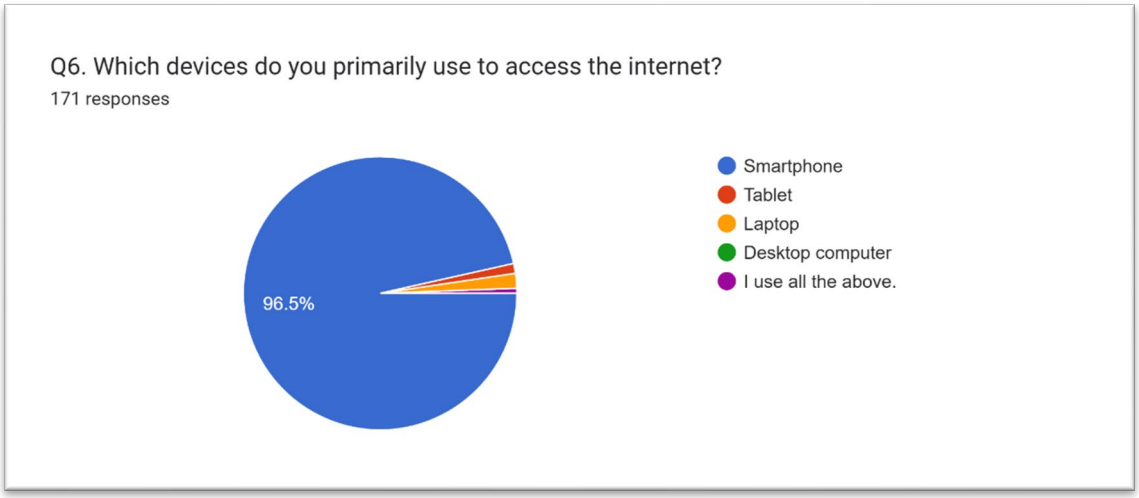

Figure 10: Devices used to access the internet

4.2.6 FAMILIARITY OF ONLINE HEALTH INFORMATION.

The pie chart below demonstrates the familiarity of health Information online among participants rated form "Strongly disagree" to "Strongly Agree". 72 participants agreed to search for health related Information at 42.1%, Strongly agree 47 (27.5%), Slightly agree 26 (15.2%), Neutral 19 (11.1%), Strongly disagree 5 (2.9%), Slightly disagree 1 (0.6%) and lastly disagree 1 (0.6%). Familiarity with online health Information was important to ask participants to find out if they seek health related information online and to also confirm if the impact is minimal or non-existent. By asking this question, it can paint a clearer picture of the relationship between online Information and self-medication practices.

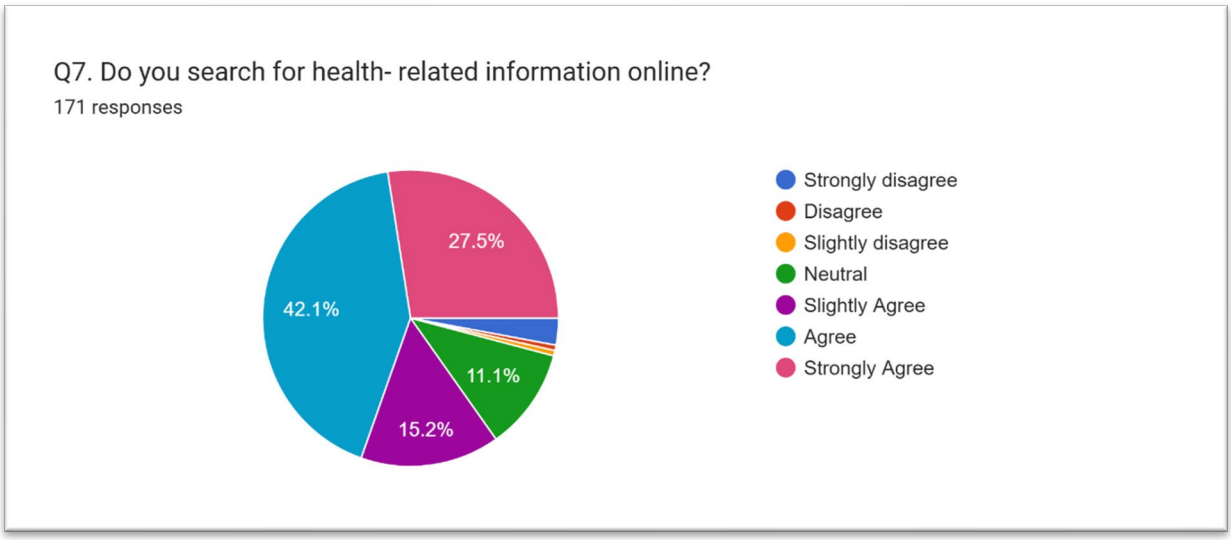

Figure 11: Familiarity of online health Information.

4.2.7 FREQUENCY SEARCH OF HEALTH RELATED INFORMATION.

The Question was asked to know how frequently participants search for health related Information online. The pie chart below demonstrates the frequency of search rated from "Daily" to "Never". Daily 23 (13.5%), the highest among the group was weekly 70 (40.9%), Monthly 39 (22.8%), Rarely 38 (22.2%) and Never 1 (0.6%). Frequent searches may suggest a reliance on online sources for health guidance which can correlate with higher rates for self-medication. This is critical in understanding the role of online Information in their decision making processes regarding medication.

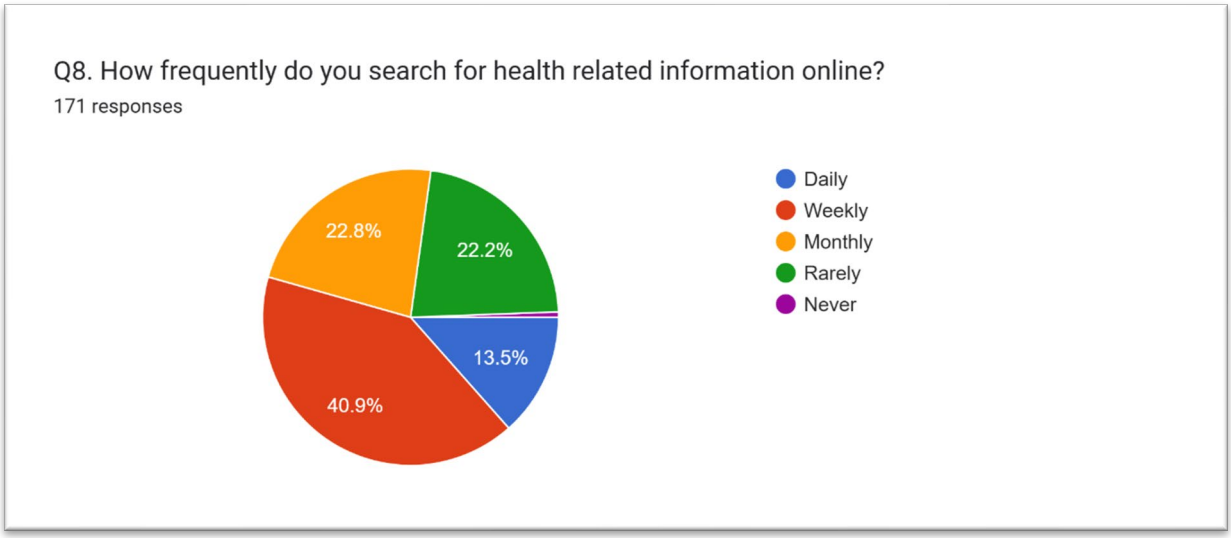

Figure 12: Frequency search of health related Information online.

4.2.8 PRIMARY SOURCES OF HEALTH RELATED INFORMATION.

The question was asked to check the primary sources of health information used. The pie chart below illustrates and shows the highest search engine from this group was Google at 133 participants rated at 77.8%, Health websites 23 (13.5%), Social media 11 (6.4%), Online forum 1 (0.6%). The sources of online health Information varies widely in credibility, accuracy and reliability. By identifying the primary sources young adults use, I can access whether they are trustworthy on medical websites. From this data 23 participants out of 171 respondents use health websites. This is a critical question because it aids understanding the potential for misinformation that could lead to harmful self-medication practices.

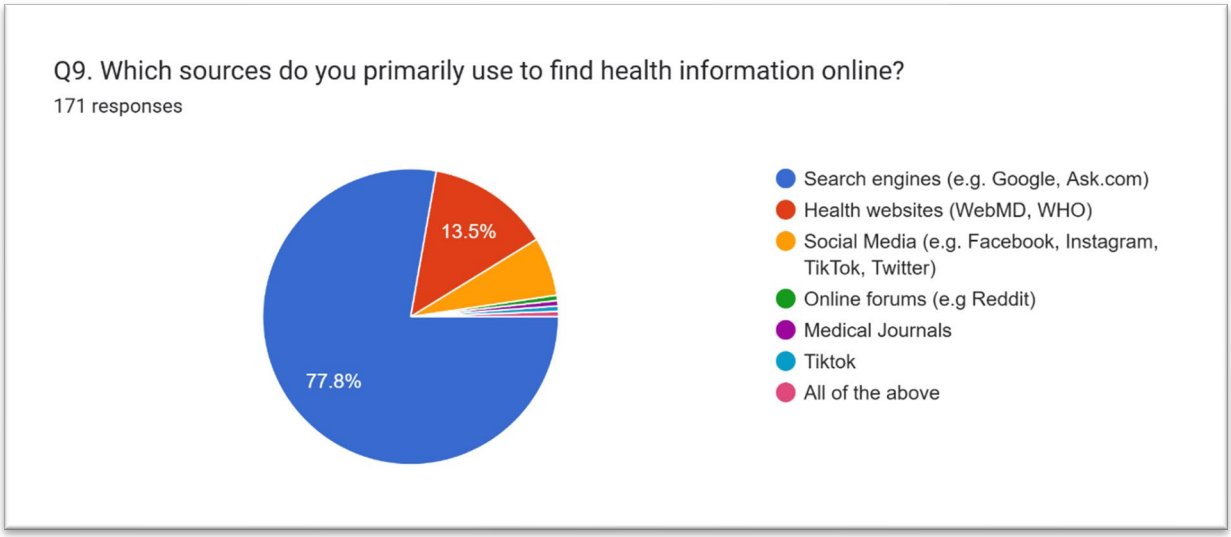

Figure 13: Sources of health related Information

4.2.9 SELF MEDICATION BASED ON ONLINE INFORMATION

This question was asked to explore the impact of online Information has on adults who self-medicate in Nigeria. The Pie chart rated from "Strongly disagree" to "Strongly agree". It illustrates that majority of the participants agreed to this at 35.1% (60 individuals), Slightly agree 36 (21.1%), Neutral 19 (11.1%), Strongly agree 15 (8.8%), Disagree 24 (14%), Slightly disagree 9 (5.3%) and Strongly disagree 8 (4.70%). Understanding the scope Influence provides how widespread the practice of self-medication based on online Information among young adults are in Nigeria. This gives essential data for understanding and addressing the risks associated with self-medication.

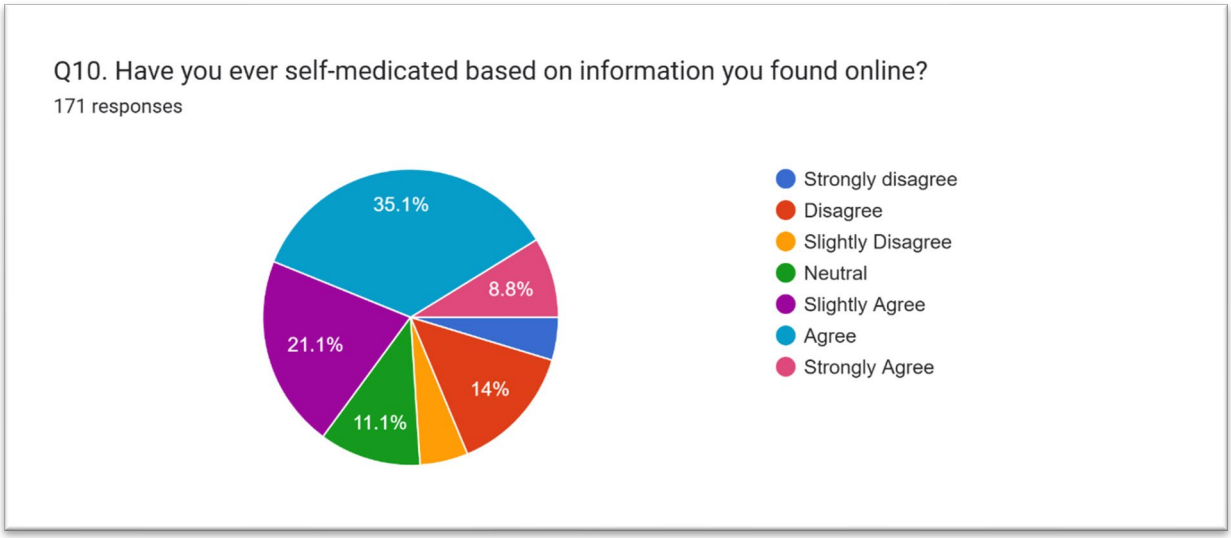

Figure 14: Self-medication based on online Information.

4.3 RATE AT WHICH PARTICIPANTS SELF MEDICATE.

This question was asked to check the frequency or rate at which participants self-medicate based on online Information. Although a majority of participants were found to sometimes and rarely. The Pie chart below demonstrates the frequency of self-medication based on online Information among participants rated from "Always" to "Never". Most participants ranged in the category of rarely 68 (39.8%), sometimes 64 (37.7%), often 19 (11.1%), Interestingly never 13 (7.6%) and 7 (4.1%) participants always self-medicate.

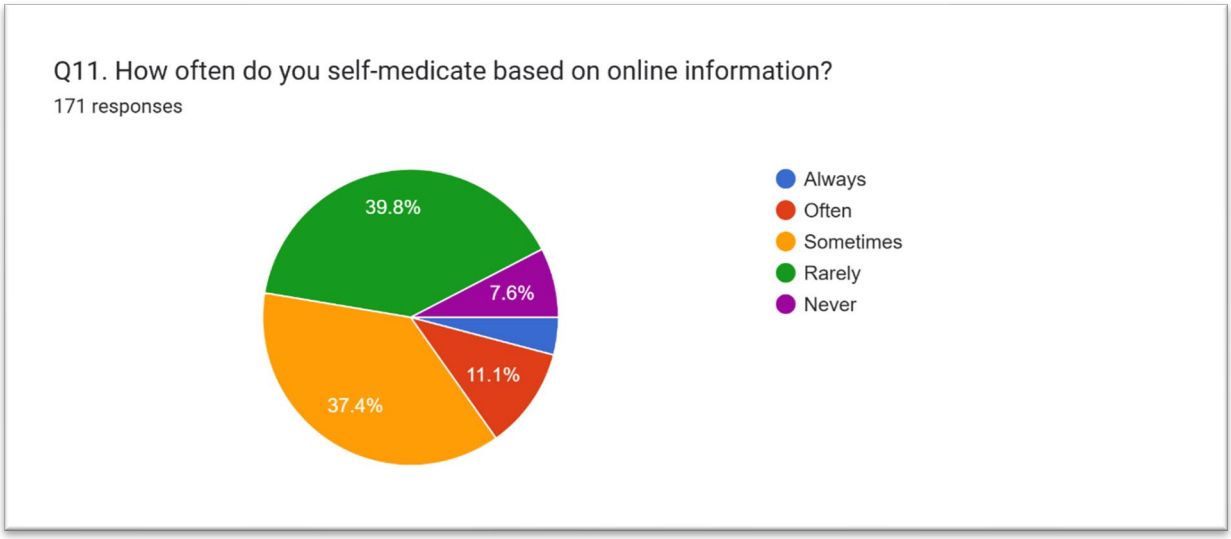

Figure 15: Rate at which participants self-medicate.

4.3.1 TYPES OF MEDICATIONS COMMONLY USED TO SELF MEDICATE.

The bar chart presented below shows respondents high use of over the counter drugs (OTC) and Prescription drugs in Nigeria. 77 participants self-medicate with OTC drugs at the rate of 45%, 59 participants at the rate of 34.5% self-medicate with supplements, 32 participants self-medicate with herbal remedies at the rate of 18.7%, 20 participants use prescription drugs rated at 11.7% and interestingly only 7 participants at the rate of 6.6% don't self-medicate. Lastly one participant self-medicate using home remedies rated at 0.6%. This shows how over the counter drugs are easily accessible in Nigeria. This question was asked to check the medications individuals in Nigeria use to self-medicate based on online health information.

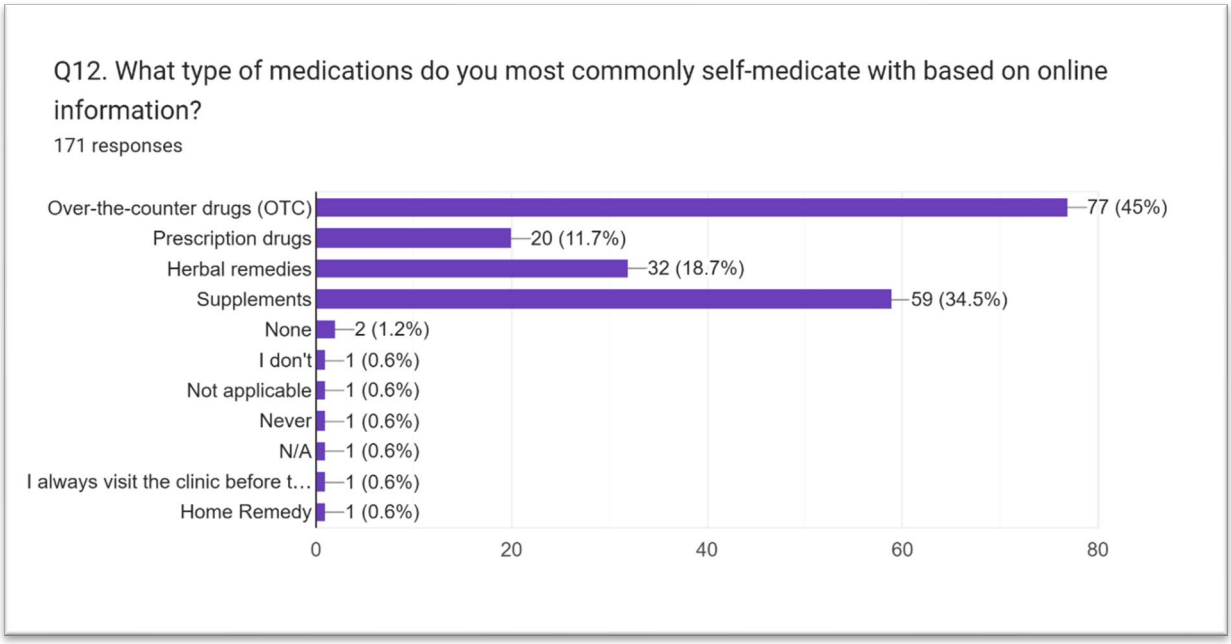

Figure 16: Types of medications commonly used to self-medicate.

4.3.2 REASONS FOR SELF MEDICATING BASED ON ONLINE INFORMATION.

When analysing in understanding the factors Influencing consumers decision to self-medicate based on online information, Convenience emerged as a significant factor Influencing self-medication decisions with 55.6% of respondents stating it as a reason. Similarly, cost saving and previous positive experience is highlighted by 27.5 % (47 participants). These findings suggest a reliance on self-medication due to the ease of access in Nigeria and time constraints faced by individuals seeking medical advice. Interestingly, 25 participants trust in online health Information rated at (14.5%). On the other hand, 70 participants at 40.9% perceive that the condition is not serious enough to seek medical professional advice or to warrant doctor's visit. This indicates a cultural perception towards self-management of minor health issues without professional intervention. Additionally, 24 participants rated at 14% find it difficult in accessing the health care services due to delay in getting appointments from doctors or long wait queue in hospitals. Lastly, a participant reason was for business promotional reasons and 4 (2.4%) of respondents don't self-medicate based on online Information.

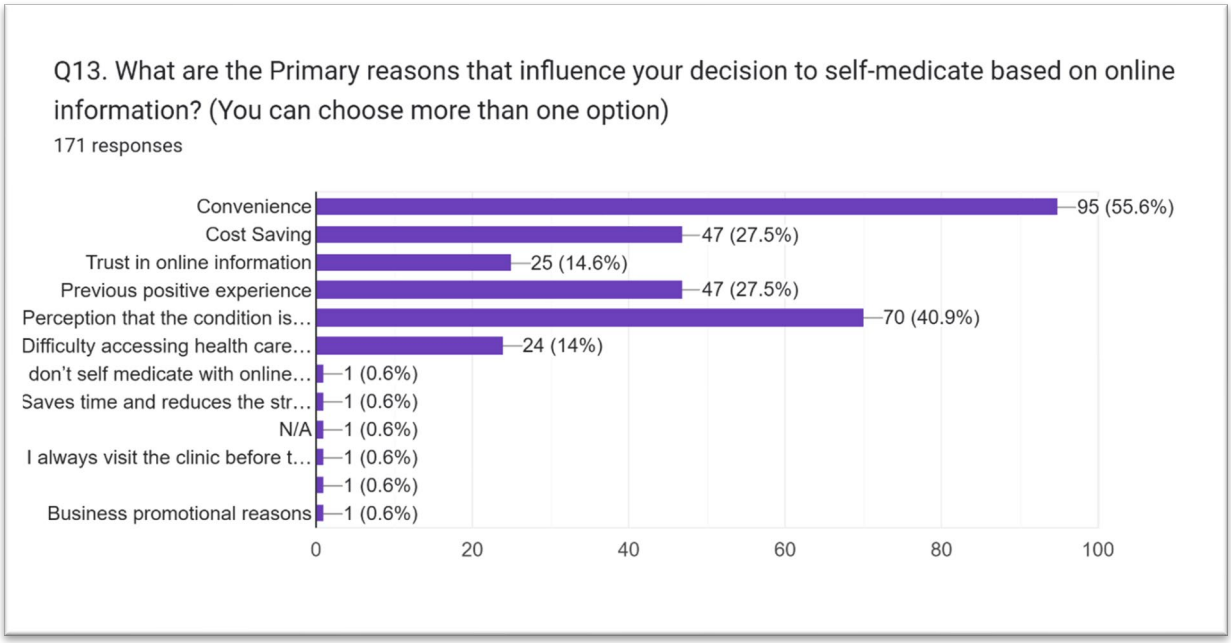

Figure 17: Reasons for Self-medicating based on online Information

4.3.3 ADVERSE EFFECTS FROM SELF MEDICATION

The Misuse of medications can lead to adverse health and side effects from taking drugs without consulting a health care professional. In analysing the data shown in the pie chart below 158 participants (94%) had no side effects and 8 participants (48%) agreed to having side effects. This suggests that self-medication practices in Nigeria may be associated with higher risk of adverse health outcomes.

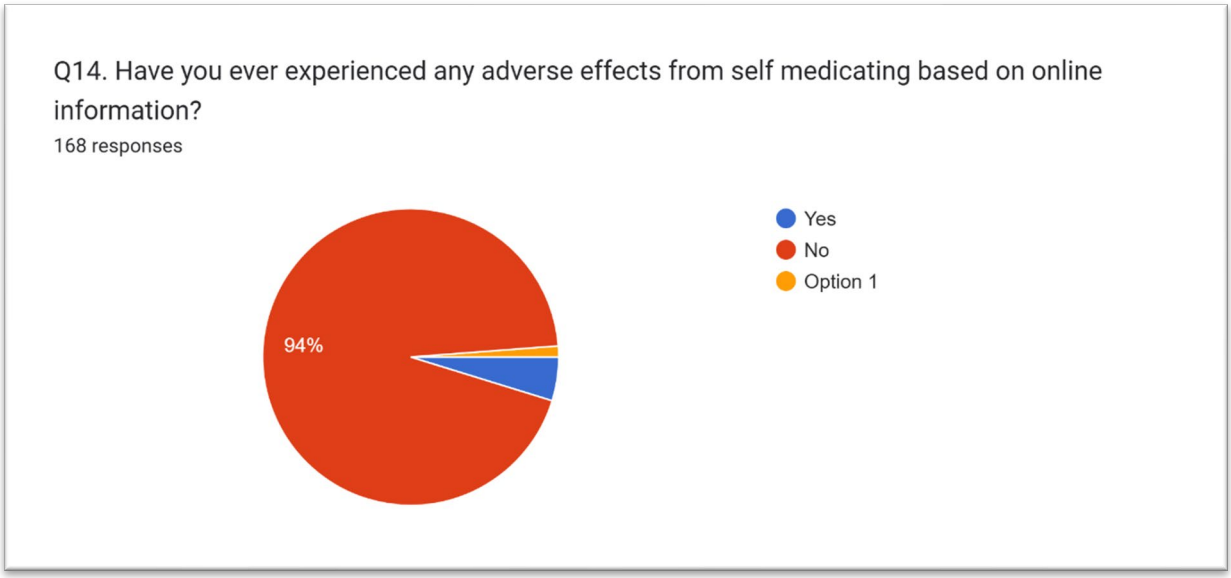

Figure 18: Experience of adverse health outcomes.

They were a total of 8 responses on the side effects experienced and the bar chart below illustrates this.

(i) Allergic reactions
(ii) Fatigue and dizziness
(iii) Itching and swollen eye
(iv) Malaria
(v) Nausea
(vi) Became extremely sick due to wrong dosage
(vii) Case got worse

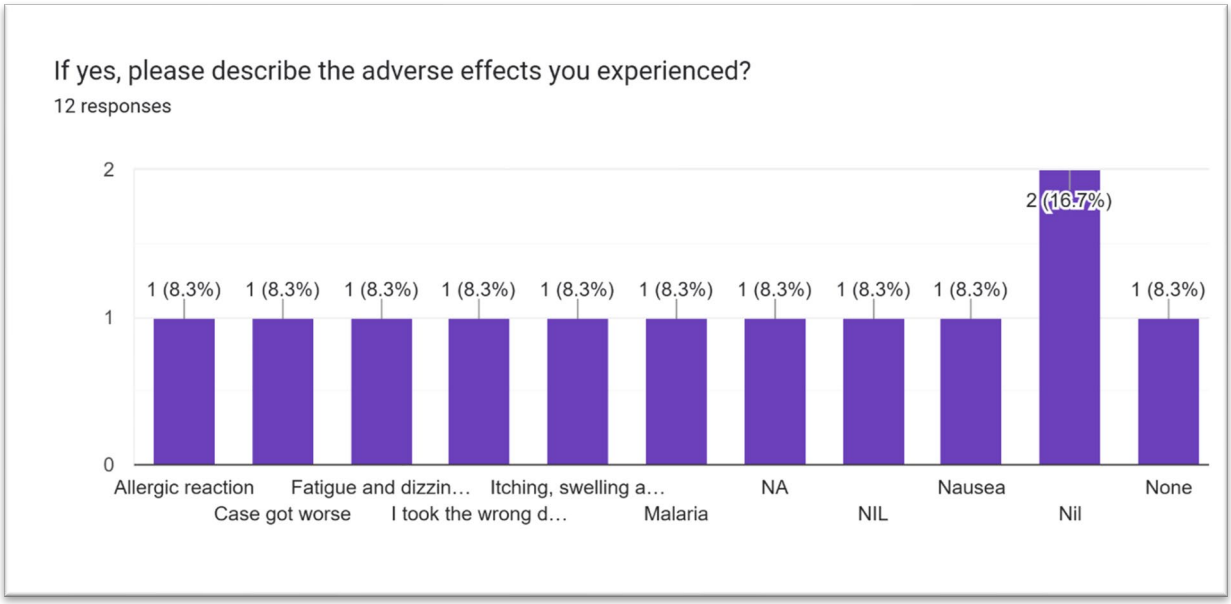

Figure 19: Adverse effects experienced from self-medication.

4.3.4 ACCURACY OF HEALTH INFORMATION FOUND ONLINE.

This question was asked to check if the participants are familiar on the accuracy of health information found online. Although majority of participants were found to be confident. The pie chart below demonstrates each participant confidence in using health information rated from “Very confident" to “Not Confident”. Most of the participants ranged in the category of some what confident 104 (63%), Very Confident 16 (9.7%), interestingly not very confident 37 (22.4%). They were 37 (22.4%) participant not very confident with it’s accuracy and 8 (4.8%) participants not confident at all. From this data it aids to understand how accurate adults in Nigeria perceive health information which can significantly influence their health decisions. From the response “Some what confident” 104 participants believe the information is either

accurate or not accurate which could cause them to likely rely on it, which underscores the importance of ensuring the credibility of sources used.

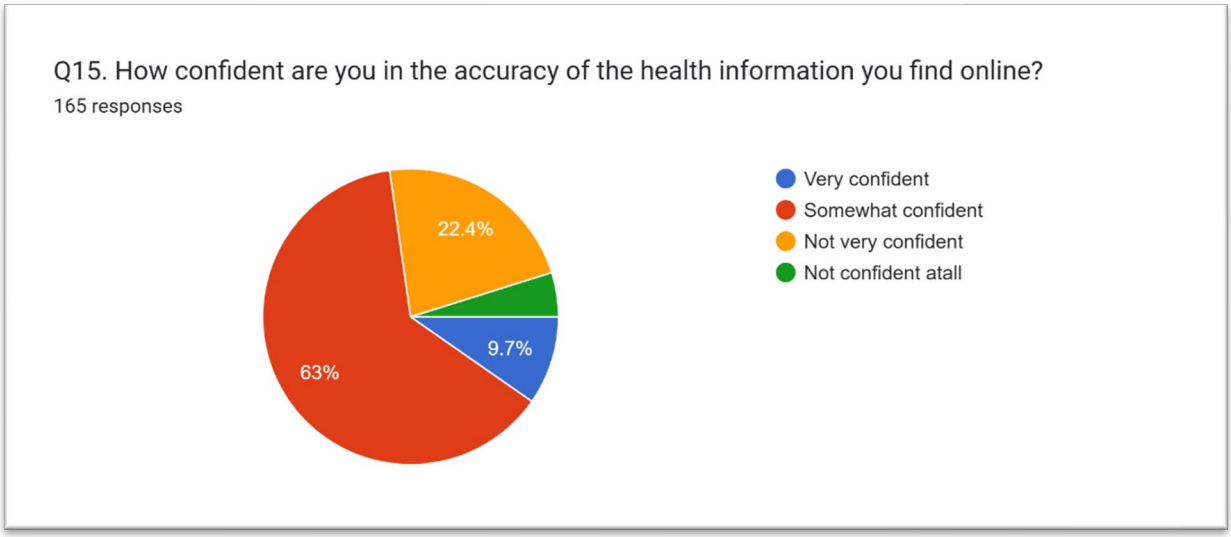

Figure 20: Participants response on the accuracy of health information found online

4.3.5 VERIFICATION OF HEALTH RELATED INFORMATION

The Pie chart data illustrates if participants verify any online health Information sources, Majority of participants 72 (43.6%) always verify, 25 (15.2%) participants verifies often, 44 participants verify sometimes 26.7%, Interestingly 19 participants (11.5%) don't verify and 5 participants (3%) never verifies what they watch online. This question was asked to find out if respondents are aware of misinformation risks which informs public health strategies and supports the development of Interventions to improve health literacy among adults in Nigeria.

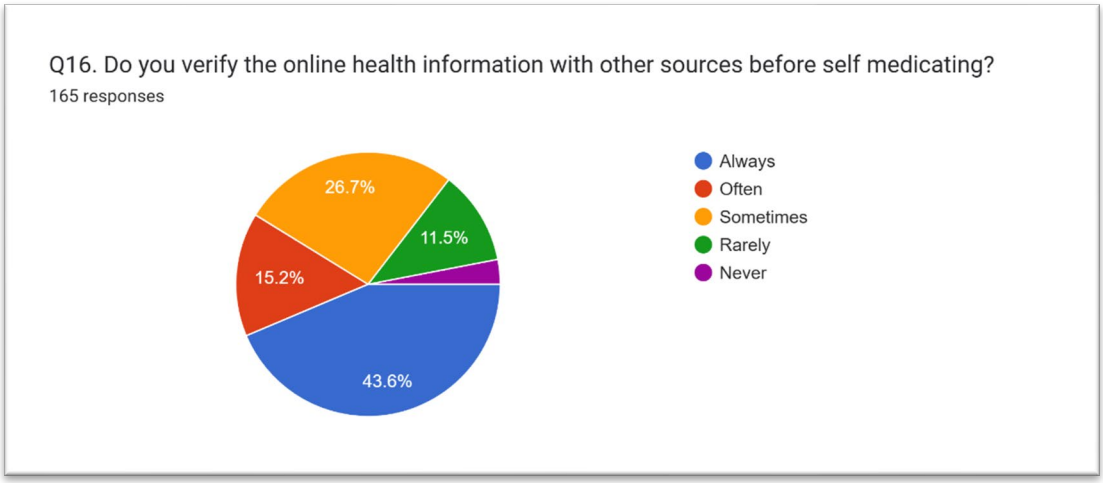

Figure 21: Verification of health related information.

4.3.6 VISUALISATION OF ONLINE HEALTH INFORMATION; A SUBTITUTE FOR PROFESSIONAL MEDICAL ADVICE.

The pie chart below demonstrates if participants see online health information as a substitute for Professional medical advice rated from "Strongly disagree" to "Strongly agree". Most of the participants ranged in the category of Disagree 34 (20.7%). Strongly disagree 27 (16.5%), almost an equal number of participants responded to Slightly agree 26 (15.9%), Agree 24 (14.6%), Neutral 25 (15.2%), Interestingly 19 participants slightly disagreed (11.6%) and 9 participants strongly agreed (5.5%). This data shows that majority of participants do not agree that online health information is a reliable substitute for professional medical advice although some agreed to it.

However, this question explores if participants have trust in health care professionals versus online sources understanding this balance is crucial for developing Interventions that encourage responsible use of online health resources while emphasizing the importance of professional advice.

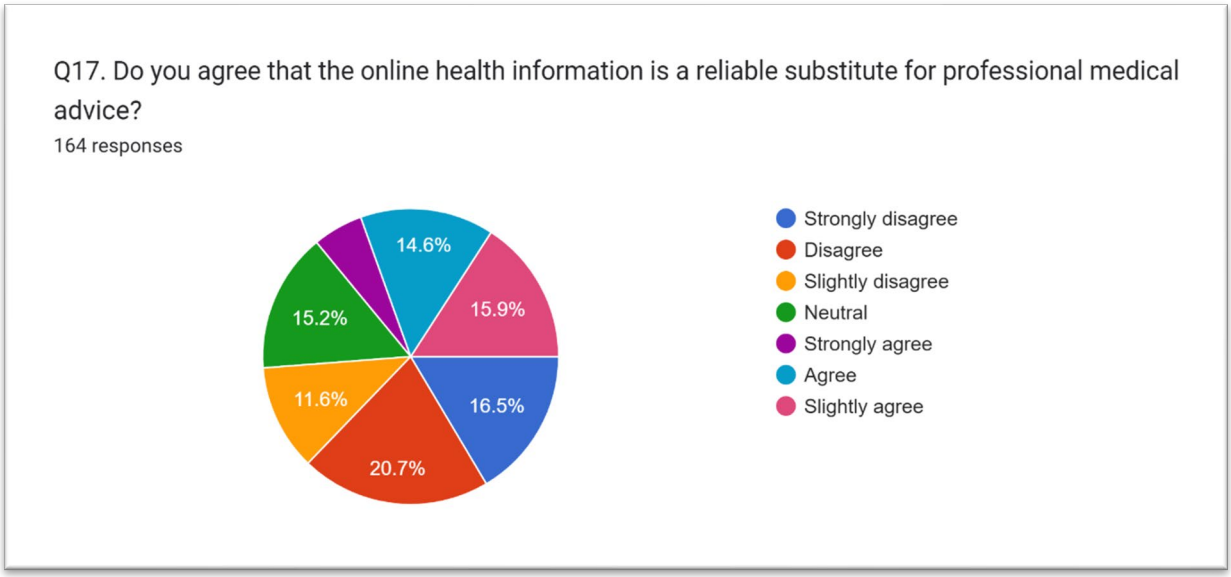

Figure 22: Visualisation of online health information

The pie chart below demonstrates if participants would prefer to consult a health care professional rather than self-medicate if it was more accessible and affordable. Majority of participants (88) 53.7% strongly agreed to this. Now this is the major challenge faced by adults in Nigeria which is the affordability and accessibility of health care systems. This is another reason why it is easier for an individual to walk into a pharmacy and purchase OTC drugs readily accessible. Additionally 44 participants (26.8%) and 14 participants (85%) also agreed to this. However 10 participants were on the bench with neutral (6.1%) and there was no response on the open end option "Disagree". But surprisingly 6 (3.6%) and 2 (1.2%) participants strongly and slightly disagreed.

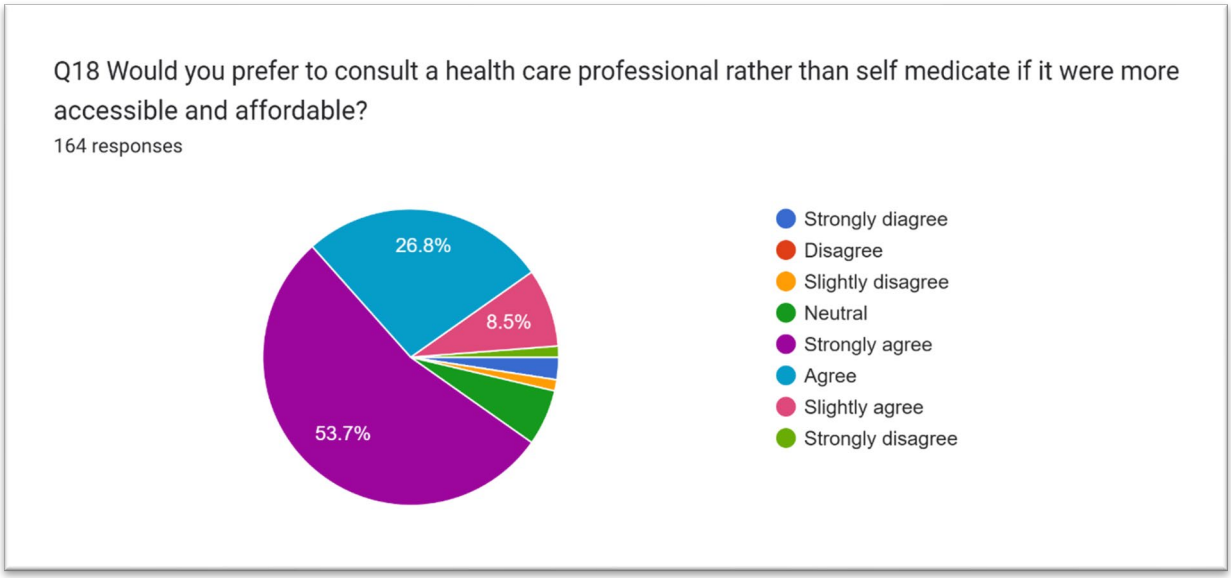

Figure 23 : Preference of participants in accessing health care services or self medication.

4.3.7 RISK OF ONLINE INFORMATION.

This question was asked to explore and find out if participants know or are aware that the information online carries risk of misinformation. Majority of the participants 60 (37%) agreed to this, 38 participants slightly agreed (23.5%) and 26 participants (16%), strongly agreed to this. Interestingly, 22 participants were on the neutral option (13.6%) and lastly 6 (3.7%), 8(4.9%), 2 (1.2%), strongly and slightly disagreed to this. It is important to know that the internet carries a lot of false Information and also good Information and verify information before accessing.

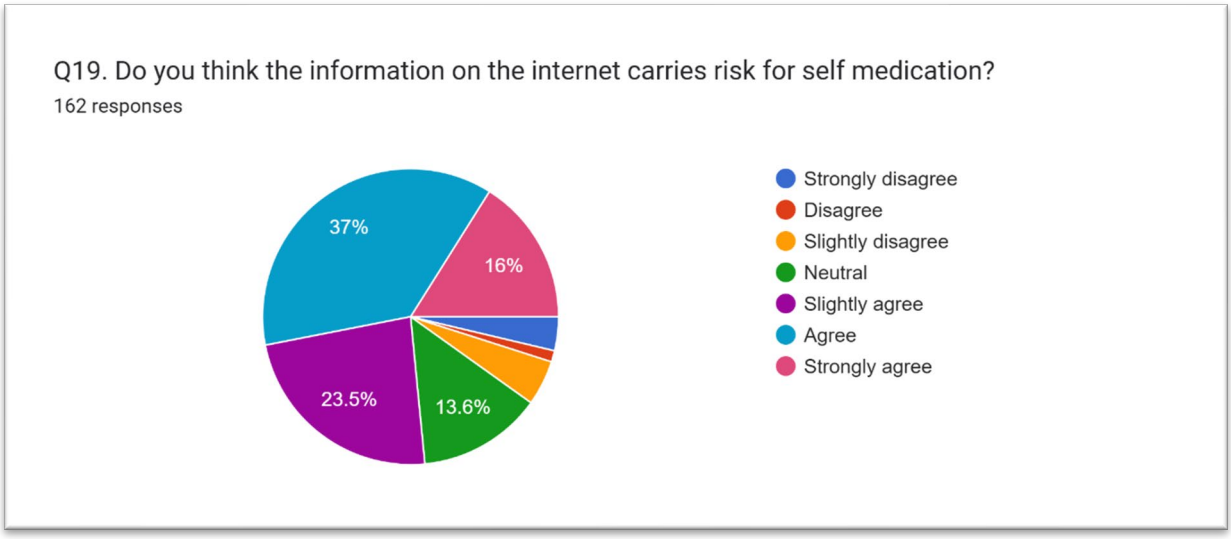

Figure 24: The Risk of Internet Information

4.4 SUGGESTIONS FOR IMPROVEMENT BY PARTICIPANTS.

Open ended responses from the public emphasized the need for grass roots education on self-medication. Concerns raised by some respondents were how expensive the health care system is in Nigeria to why they sort to self-medicate. Another was lack of trust in health care system from misdiagnosis by a health professional now these concerns are consistent with challenges faced by young adults in Nigeria.

Nigeria can work towards a more robust and effective health care system that prioritizes patient safety and medication effectiveness. However in each questions and responses, it was seen that they were participants who agreed that self-medication is good, bad or should be avoidable.

Some of the recommendations includes:

(i) More access to medical professionals

(ii) Accurate Information should always be provided

(iii) There should be more verified websites on health Information

(iv) Some participants agreed that the social media network "Instagram" of some health care professionals are good to check for information.

(v) Finally some participants also added that "Reddit" is a good source of information when dealing with minor symptoms.

4.5 DISCUSSION OF FINDINGS

This section discusses the major findings from the analysis above in relation to the objectives and questions of the research from different perspectives of young adults in Nigeria. This section integrates the quantitative survey results and existing literature review to provide comprehensive discussion.

4.5.1 Objective 1:

The first objective was to **quantify the extent and motivations of self-medication practices among young adults in Nigeria**. This would be achieved by answering the research question

(i) Why do Individuals Self-medicate?

(ii) What are the implications for the health care sector, Pharmaceutical Industries and patient safety?

Self-medication among young adults in Nigeria is a prevalent and complex issue driven by so many factors. To quantify the extent this study reveals that self-medication is wide spread with a prevalence rate of 35.1% respondents agreed to this and 4.7% participants strongly agreed.

The medication most frequently used for self-medication includes pain relivers such as paracetamol, Ibuprofen, antibiotics, antimalaria which is highly used by Nigerians and herbal remedies. From the survey question “What type of medications do you most commonly self-medicate with” Over the counter drugs (OTC) was the highest used at 45%, 43.5% of participants self-medicated with supplements and 18.7% with herbal remedies. A significant portion of these medications are obtained without a prescription in Nigeria, which raises concerns about drug misuse and potential for antibiotic resistance.

Now the extent has been quantified for the motivations to self-medicate, in this study it was found out that the reason “Convenience” was the highest at 55.6% while other reasons were Cost saving (27.5%) and Perception that the condition is not serious at 40.9%. Now this is the worst motivation because some individuals don’t show full blown symptoms when sick called “Asymptomatic”. An Individual could be seriously sick and perceive that it is just a simple sickness conditions like headaches, colds, or minor pain are often self-treated using readily available medications but it could be a serious illness that requires attention.

Motivations that causes an individual to Self-medicate:

(i) Cost Saving: Over the counter drugs (OTC) are easily accessible in Nigeria with many pharmacies selling medications without a prescription. The cost of visiting a healthcare professional is expensive, leading adults to opt for cheaper options.

(ii) Previous positive experience: Adults often rely on previous experiences with illnesses and medications. If a certain medication worked for them in the past they are most likely to use it again without consulting a health care provider.

(iii) Peer Influence and Social Media: In this study 14.6% agreed to trust in online health Information in which peer recommendations and Information from social media play a significant role in influencing self-medication practices. Young adults are more likely to try medications suggested by friends or what seen on social media.

The Implication of self-medicating based on online information causes health risk including adverse drug reactions, drug dependency, masking of underlying serious conditions and development of antibiotic bacteria. (Popoola *et al.*, 2024). While self-medication may seem cost effective in the short term, it can lead to higher healthcare cost in the long run if complications arise that require more intensive treatment.

4.5.2 Objective 2:

The second objective was **to identify the primary online sources and how it influences self-medication practices.**

In this study, the survey question was asked “which sources do young adults primarily use to find health information online”? Google as a search engine was the highest option chosen with a rate of 77.8%. The influence of google is that it gives quick answers. Many people turn to google to quickly search symptoms and potential treatments. This search engine often returns results from various sources , Including blogs, forums and unverified health websites which can lead to self-medications.(Akomolede, 2015b)

Social media (e.g. Facebook, Instagram, TikTok, Twitter) was rated at 6.4%. Social media platforms serve as a major contributor to peer to peer recommendations. Young adults often share health experiences, Including the use of specific medications for certain conditions. These platforms allow Information whether accurate or not to spread rapidly Influencing others to try similar treatments. In social media posts, comments and videos shared by individuals or Influencers discussing their experiences with certain medications can persuade others to self-

medicate. Another source is health website and in this study 13.5% of adults use it. Examples of health websites are Nigerian health journal, Naija health, personal wellness blogs. Blogs often offer advice on managing health conditions, sometimes without adequate medical backing which could cause misinformation.

4.5.3 Objective 3:

The third objective was **to evaluate the level of consumer awareness regarding the risks associated with self-medication practices**. This would be achieved by the survey question "Do you think the Information on the internet carries risk for self-medication".

In this research study, to evaluate the level of awareness of participant concerning the risks of self-medication, 37% of all participants agreed to this and 16% strongly agreed to this. In this study, It shows that there is a level of awareness of the risk of self-medication.

The General risks Includes: (Bustanji *et al.*, 2024)

(i) Antibiotic Resistance: There is a growing awareness of antibiotic resistance as a public health issue, driven by global and local health campaigns. However, the understanding of how personal misuse contributes to this problem is often limited. Many young adults are aware that overuse of antibiotics can lead to resistance but may not fully grasp the implications of improper dosing.

(ii) Adverse Drug Reactions (ADRs): Many young adults may not be fully aware of the specific symptoms of ADRs or the long-term risks associated with chronic misuse of medications like painkillers.

(iii) Drug Interactions: The awareness of drug interactions, especially between over-the-counter (OTC) drugs and prescribed medications, is generally low. Many young adults do not consider the potential for harmful interactions when combining different OTC drugs or when mixing OTC drugs with herbal remedies. (Shayam and Chouhan, 2016)

While there is some level of awareness about the risks associated with self-medication among young adults in Nigeria, For this study 3.7% of individuals still believe the internet does not carry any risk of self-medication and 23.5% are on the bench of "Slightly agree" (Not sure). However, addressing these challenges requires targeted education, better regulation of Information sources and improved access to professional healthcare services in Nigeria.

4.5.4 Objective 4:

The fourth objective was **to access the effectiveness of existing regulations on the sale of Over the counter drugs (OTC) and online pharmacies Information**. This can be achieved with the research question "What are the likely solutions that can improve existing regulations and enforcements"?

Assessing the effectiveness of existing regulations on the sale of over-the-counter (OTC) drugs and the dissemination of online pharmaceutical information in Nigeria requires a multi-faceted approach. It involves evaluating the current regulatory framework, its enforcement, and the gaps that exist.

Regulatory Bodies: The primary regulatory authority for drugs in Nigeria is the National Agency for Food and Drug Administration and Control (NAFDAC, 2017).

(1) NAFDAC Act: This law mandates NAFDAC to regulate and control the manufacture, distribution, advertisement, sale and use of food, drugs, and other regulated products. NAFDAC's guidelines require that certain medications, especially antibiotics and other potentially dangerous drugs, only be sold with a prescription. (NAFDAC, 2017). Despite these regulations, enforcement is often weak. Many drug vendors and pharmacies, especially in rural settings, sell prescription drugs without requiring prescriptions. The proliferation of unregistered and unregulated drug outlets exacerbates this problem. Secondly, Corruption within regulatory agencies and among law enforcement officers can hinder effective regulation.

(2) Online Pharmaceutical Information: The regulation of online pharmaceutical information is still underdeveloped in Nigeria. While NAFDAC has the authority to regulate the advertisement of drugs, the specific guidelines for online platforms are not well-defined or enforced. Online platforms, including social media, blogs, and e-commerce sites, frequently host inaccurate or misleading information about drugs. (Akomolede, 2015)

Likely Solutions to Improve Existing Regulations and Enforcement:

(1) Strengthening Regulatory Frameworks: NAFDAC and other relevant bodies should develop specific regulations for the online sale of drugs and the dissemination of pharmaceutical information. These guidelines should address the unique challenges of digital platforms, including social media, e-commerce, and blogs. Secondly**,** Introduce mandatory verification and certification for online pharmacies and platforms that provide pharmaceutical information. This would ensure that only licensed and credible platforms can operate. (Eruaga *et al.*, 2024)

(2) Upgrade Existing Law: The NAFDAC Act and PCN regulations should be updated to include stricter penalties for the unauthorized sale of prescription drugs and for spreading misinformation online. Penalties should be significant enough to deter violations.

(3) Public Awareness and Education: Launch nationwide campaigns to educate the public on the risks of self-medication, the importance of purchasing drugs from licensed outlets, and how to identify credible online information.

While Nigeria has a regulatory framework in place for the sale of OTC drugs, its effectiveness is undermined by weak enforcement, resource limitations, and the lack of specific regulations for online pharmaceutical information. To improve the situation, it is necessary to strengthen the regulatory framework, enhance enforcement mechanisms, use technology for monitoring, and increase public awareness. Continuous evaluation and adaptation of these measures will be crucial to keeping pace with the evolving landscape of drug sales and information dissemination in Nigeria. (Erhun *et al.*, 2013)

4.5.5 Objective 5:

The Fifth and last objective was **to ascertain the depth of the possible challenges faced by young adults that can possibly lead to self-medication**. This would be achieved by answering the research questions:

"What is the depth of challenges faced generally in accessing a health care system in Nigeria?

"How can the possible challenges facing self-medication process be effectively addressed to enhance patient safety"?

Young adults face a variety of challenges as they transition from adolescence to adulthood. These challenges are multifaceted, affecting their personal, professional, social, and mental well-being. Some of the key challenges include: (Adarighofua Ugboduma, 2024)

1. Mental Health and Emotional Well-being: The pressure to succeed academically, professionally and socially can lead to significant stress and anxiety. This is often compounded by uncertainty about the future and life decisions. Young adults may experience depression due to factors such as loneliness, academic or career-related stress, relationship issues, or financial difficulties which can lead to self-medication.

2. Education and Career: Finding a job that aligns with their qualifications and aspirations can be difficult. Many young adults experience unemployment, where they are working in jobs that do not fully utilize their skills or education. Now the high rate of unemployment in Nigeria can cause adults to opt for cheaper means of medications when ill.

3. Financial Challenges: Many young adults graduate with significant student loan debt, which can be a heavy burden as they start their careers and attempt to achieve financial independence. The high cost of living, particularly in urban areas makes it challenging for young adults to afford housing, healthcare and other essential expenses. (Adarighofua Ugboduma, 2024)

Accessing the healthcare system in Nigeria presents a variety of challenges which can be linked as a possible challenge faced by young adults causing them to self-medicate. Some of the primary challenges include: lack of adequate healthcare facilities, the cost of healthcare can be prohibitive for many Nigerians, particularly those without insurance or those in lower income brackets. There can be frequent shortages of essential medicines, particularly in rural areas,

which can impede timely treatment and management of health conditions resulting to self-medication. (Uzochukwu *et al.*, 2015)

Addressing these challenges requires a comprehensive approach, including increased investment in healthcare infrastructure, improved health insurance coverage, enhanced training and support for healthcare professionals and efforts to reduce corruption. Raising awareness about the risks associated with self-medication and the importance of consulting healthcare professionals before starting any treatment is very important. Educational campaigns can provide information on the potential dangers of over-the-counter drugs, supplements.(Mutair *et al.*, 2021) By implementing these strategies, it is possible to address the challenges facing self-medication and enhance patient safety.

CHAPTER FIVE

5.1 CONCLUSION

This study has examined the contributing factors to the prevalence of self-medication among young adults in Nigeria using the quantitative research strategy for data collection. This last chapter identifies the contributions to the literature and concludes the study with recommendations. In conclusion, this study underscores the profound influence of online information on self-medication practices among adults in Nigeria, revealing both opportunities and risks. While the internet provides convenient access to health-related content, it also exposes young adults to the dangers of misdiagnosis, improper drug use, and potential health complications. The findings highlight a critical gap in digital health literacy, where the ability to discern credible sources from misinformation is lacking, leading to potentially harmful self-medication behaviours. Furthermore, the study points to the need for enhanced regulation of online health information, ensuring that the content accessible to the public is accurate, reliable, and easily understandable. Healthcare professionals and public health institutions must collaborate to develop educational initiatives that does not only raise awareness about the risks of self-medication but also encourage a culture of consulting qualified healthcare providers before making health-related decisions. As digital information continues to shape healthcare behaviours, it is essential to address these challenges through targeted interventions that safeguard the health of young adults while empowering them with the knowledge to make informed decisions. Lastly the findings underscore the need for increased digital health literacy and the implementation of robust regulatory frameworks to ensure that online health information is accurate and that young adults are guided towards safer self-medication practices.

5.2 RECOMMENDATIONS

Based on the findings of the study, several key recommendations can be made to address the impact of online information on self-medication practices among young adults in Nigeria:

1. Enhance Digital Health Literacy Programs: Implement nationwide digital health literacy campaigns targeting young adults. These programs should focus on teaching how to critically evaluate online health information, identify credible sources, and understand the risks of self-medication. Schools and University should also Integrate digital health literacy into educational curricula to ensure that young adults are equipped with the skills needed to navigate online health information responsibly.

2. Strengthen Regulation of Online Health Information: This would establish regulatory bodies to ensure monitoring and certifying online health content. Websites and platforms providing health information should be required to adhere to strict guidelines to ensure accuracy and reliability. Also, Partnering with tech companies with search engines and social media platforms to flag or remove misleading health information and promote reliable sources. This can help reduce the spread of misinformation that contributes to harmful self-medication practices.

3. Promote Involvement of Healthcare Professionals in Online Spaces: Expand the availability of telemedicine services to provide young adults with direct access to qualified healthcare professionals online, reducing the reliance on self-diagnosis and self-medication. There should also be licensed healthcare providers to actively engage on social media platforms to disseminate accurate health information, answer common medical questions, and discourage unsafe self-medication practices.

4. Develop Public Health Campaigns on the Risks of Self-Medication: More Awareness Campaigns should be Launched and targeted on public health campaigns that highlight the dangers of self-medication, particularly the risks of misusing antibiotics and other medications without professional guidance.

5. Encourage Research and Data Collection: The government has to support continuous monitoring for ongoing research to monitor trends in self-medication practices among young adults and the role of online information. This data will be critical for developing and refining

interventions over time. By implementing these recommendations, stakeholders can mitigate the risks associated with self-medication influenced by online information and promote safer health practices among young adults in Nigeria.

5.3 LIMITATIONS

There were several limitation for this study. These includes:

(1) The Sample Size and Representation: A major constraint of this study was the sample size and its ability to accurately reflect the population. The data acquired predominantly relied on a limited sample size from certain demographic groupings inside Nigeria. This might potentially restrict the applicability of the results to the wider population of each respective country. For future research, it is recommended to aim for larger and more diverse samples in order to improve the overall generalisability and application of the results.

(2) Time constraint: Another limitation of the study was the time constraint. The research was done within a specific time frame, which significantly limited the data collecting and processing procedure. This also affected many facets of the study, such as the extent of data gathering, the meticulousness of data processing, and the chance for further enquiries or more research. Although attempts were made to optimise efficiency and prioritise essential research goals, the study's comprehensiveness and rigour were regrettably affected by the time limitation. To get more understanding of the incidence of self-medication and opinions of regulatory efficacy, it would be beneficial to employ qualitative research approaches, such as conducting interviews or focus groups with stakeholders.

(3) Data Collection Method: The reliance on self-reported data through surveys poses another limitation. Respondents may not accurately recall their experiences, knowledge, or attitudes related to self-medication. Additionally, social desirability bias may have influenced their responses, as individuals may tend to provide answers they perceive as socially acceptable or desirable, rather than their true opinions or behaviours.

REFERENCES

Abdelwahed, A.E. *et al.* (2023) 'Prevalence and Influencing Factors of Self-Medication during the COVID-19 Pandemic: A Multinational Cross-Sectional Study'. *BMC Public Health*, 23(1), p. 180. DOI: 10.1186/s12889-023-15025-y.

Abubakar, M. *et al.* (2023) 'Self-Medication and Its Impact on Human Health'. *Pakistan Journal of Public Health*. Available at: https://www.semanticscholar.org/paper/Self-medication-and-its-Impact-on-Human-Health-Abubakar-Arif/277ceaad44a275951554260d5d9998ff54f198d3 (Accessed: 5 July 2024).

Adarighofua Ugboduma, E. (2024) *Prioritising Young Adults in Nigeria: Can Social Innovation Provide Youth- Centric Solution?* DOI: 10.13140/RG.2.2.10353.49768.

Adeoye, F. (2020) (3773010) DOI: 10.2139/ssrn.3773010.

Adeseun, B. (2024) *Commonly Abused Over-the-Counter (OTC) Drugs in Nigeria and Their Side Effects*. *Telemedicine Service Provider | Online Doctor*. Available at: https://healthconnect247.com/2024/06/27/commonly-abused-over-the-counter-otc-drugs-in-nigeria-and-their-side-effects/ (Accessed: 26 August 2024).

Afolabi, A.O. (2008) (3) 'Factors Influencing The Pattern Of Self-Medication In An Adult Nigerian Population'. *Annals of African Medicine*, 7(3), pp. 120–127.

Agbesanwa T. *et al*. (2024) *Prevalence, Practice, Determinants and Adverse Effects of Self-Medication among Young People Living in a Suburban Community of Ekiti, Nigeria: A Community-Based Cross-Sectional Study*. DOI: 10.1177/20503121241261002.

Akande-Sholabi, W., Ajamu, Amen.T. and Adisa, R. (2021) 'Prevalence, Knowledge and Perception of Self-Medication Practice among Undergraduate Healthcare Students'. *Journal of Pharmaceutical Policy and Practice*, 14(1), p. 49. DOI: 10.1186/s40545-021-00331-w.

Akinnawo, E.O. *et al.* (2021) (2) 'Self-Medication with Over-the-Counter and Prescription Drugs and Illness Behavior in Nigerian Artisans'. *International Journal of High Risk Behaviors and Addiction*, 10(2). DOI: 10.5812/ijhrba.107221.

Akomolede, T.I. (2015a) 'REGULATIONS OR LEGISLATION FOR DATA PROTECTION IN NIGERIA? A CALL FOR A CLEAR LEGISLATIVE FRAMEWORK'. (4).

Arora, G. *et al.* (2019) 'A STUDY OF SELF-MEDICATION PRACTICES AND ITS DETERMINANTS'. *Plant Archives*, VOL 19, pp. 2304–2306.

Asogwa, O. and Kelechi, U. (2021) 'A COMPARATIVE STUDY OF THE PREVALENCE OF SELF-MEDICATION AMONG NIGERIAN UNDERGRADUATES'. *International Journal of Advanced Research*, 9, pp. 455–459. DOI: 10.21474/IJAR01/12709.

Baracaldo-Santamaría, D. *et al.* (2022) 'Definition of Self-Medication: A Scoping Review'. *Therapeutic Advances in Drug Safety*, 13, p. 20420986221127501. DOI: 10.1177/20420986221127501.

Bennadi, D. (2014) 'Self-Medication: A Current Challenge'. *Journal of Basic and Clinical Pharmacy*, 5(1), p. 19. DOI: 10.4103/0976-0105.128253.

Bustanji, Y. *et al.* (2024) 'Exploring the Global Landscape of Self-Medication Among Students: Trends, Risks, and Recommendations for Safe and Responsible Practices'. *Pharmacy Practice*, 22(1), pp. 1–14. DOI: 10.18549/PharmPract.2024.1.2928.

Cohen, L., Manion, L. and Morrison, K. R. B. (2007) *Research methods in education*. (6th ed). UK: Routledge.

Copi, I. M., Cohen, C. and Flage, D. E. (2006) *Essentials of logic (2nd ed.).* Upper Saddle, New Jersey: Pearson Education.

Danraka, A. (2022) 'Rise of Substandard Medicines in Nigeria: A Call for Action. The Health System Pharmacist, Vol. 5 No. 1 July-August 2022. AHAPN National Publication ISSN: 2955-1501'.

David. (2018) *Counterfeit Drugs in Nigeria and How They Can Be Outlawed*. *The Sun Nigeria*. Available at: https://sunnewsonline.com/outlaw-counterfeit-drugs-nigeria/

Dissanayake, E.V.A. (2023) *Research Onion: A Systematic Approach for Designing Research Methodology. Part One*. DOI: 10.13140/RG.2.2.24466.12489.

Doris, S. (01/082024) *Nigeria: Population 1950-2024*. *Statista*. Available at: https://www.statista.com/statistics/1122838/population-of-nigeria/ (Accessed: 23 August 2024).

Erhun, W.O., Babalola, O.O. and M.O., M.O. (2013) 'Drug Regulation and Control in Nigeria: The Challenge of Counterfeit Drugs'. *World Health & Population*, 4(2). DOI: 10.12927/whp..17597.

Eruaga, M., Itua, E. and Bature, J. (2024) 'ENHANCING MEDICATION QUALITY CONTROL IN NIGERIA: A COMPREHENSIVE ANALYSIS OF REGULATORY CHALLENGES AND SOLUTIONS'. *International Medical Science Research Journal*, 4, pp. 284–294. DOI: 10.51594/imsrj.v4i3.920.

FDA (2021) 'Drug Development and Review Definitions'. *FDA*. Available at: https://www.fda.gov/drugs/investigational-new-drug-ind-application/drug-development-and-review-definitions.

Ghasemyani, S. *et al.* (2022) 'Global, WHO Regional, and Continental Prevalence of Self-Medication from 2000 to 2018: A Systematic Review and Meta-Analysis'. *Annals of Public Health*, 1. DOI: 10.55085/aph.2022.585.

Halappa, M. (2016) 'Research on Self-Medication: A Hype or a Hope? A Literature Review'. *Asian Journal of Pharmaceutical and Clinical Research*, 9, pp. 28–31. DOI: 10.22159/ajpcr.2016.v9i6.13757.

Hodkinson, P. (2008) 'Grounded theory and inductive research', Gilbert, N. (ed.) *Researching social life (3rd ed.).* London: Sage.

Jatau, A., Shitu, Z., Khalid, G. M., Yunusa, I. and Awaisu, A. (2019) 'Understanding adverse drug-related emergency department visits: Development of a conceptual model through a systematic review', *Ther Adv Drug Saf.,* 10. doi:10.1177/2042098619852552

Kothari, C. R. (2004) *Research methodology: Methods and techniques*. US: New Age International.

Idris, T. *et al.* (2016) 'Study on Self-Medication Practices among University Students of Bangladesh'. *British Journal of Medicine and Medical Research*, 14(6), pp. 1–8. DOI: 10.9734/BJMMR/2016/24364.

Jatau, A.I. *et al.* (2021) 'The Burden of Drug Abuse in Nigeria: A Scoping Review of Epidemiological Studies and Drug Laws'. *Public Health Reviews*, 42, p. 1603960. DOI: 10.3389/phrs.2021.1603960.

Kohl, S. (2022) 'European Commission Publishes Study on Shortages of Medicines'. *European Journal of Hospital Pharmacy*, 29(2), pp. 116–118. DOI: 10.1136/ejhpharm-2022-003255.

Leelavanich, D. *et al.* (2020) 'Prescription and Non-Prescription Drug Classification Systems Across Countries: Lessons Learned for Thailand'. *Risk Management and Healthcare Policy*, 13, pp. 2753–2768. DOI: 10.2147/RMHP.S281629.

Melnikovas, A. (2018) 'Towards an Explicit Research Methodology: Adapting Research Onion Model for Futures Studies'. *Journal of Futures Studies*, 23, pp. 29–44. DOI: 10.6531/JFS.201812_23(2).0003.

MHRA (2023) *Guidance Medicines: Reclassify Your Product. Medicines and Healthcare Products Regulatory Agency*. *GOV.UK*. Available at: https://www.gov.uk/guidance/medicines-reclassify-your-product

Mutair, A.A. *et al.* (2021) 'The Effective Strategies to Avoid Medication Errors and Improving Reporting Systems'. *Medicines*, 8(9), p. 46. DOI: 10.3390/medicines8090046.

NAFDAC (2017) *NAFDAC – National Agency for Food & Drug Administration & Control*. Available at: https://www.nafdac.gov.ng/

NAFDAC (2021) (156) *NATIONAL AGENCY FOR FOOD AND DRUG ADMINISTARTION AND CONTROL ACT (CAP.N1, LFN), 2004: DRUG AND RELATED PRODUCT REGISTRATION REGULATIONS, 2021*. Available at: https://www.nafdac.gov.ng/wp-content/uploads/Files/Resources/Regulations/REGULATIONS_2021/DRUG-AND-RELATED-PRODUCTS-REGISTRATION-REGULATIONS-2021.pdf

Nguyen, C.T. *et al.* (2023) 'Prevalence and Impacts of Self-Medication in a Disadvantaged Setting: The Importance of Multi-Dimensional Health Interventions'. *Frontiers in Public Health*, 11. DOI: 10.3389/fpubh.2023.1176730.

Obasola, O.I. and Agunbiade, O.M. (2016) 'Online Health Information Seeking Pattern Among Undergraduates in a Nigerian University'. *Sage Open*, 6(1), p. 2158244016635255. DOI: 10.1177/2158244016635255.

Oluyemi, J.A. *et al.* (2015) 'ISSN: 1520-5509 Clarion University of Pennsylvania, Clarion, Pennsylvania'.

Popoola, O.O. *et al.* (2024) 'A National Survey of the Antibiotic Use, Self-Medication Practices, and Knowledge of Antibiotic Resistance among Graduates of Tertiary Institutions in Nigeria'. *Scientific African*, 23, p. e01978. DOI: 10.1016/j.sciaf.2023.e01978.

Pragathi, D. and Divya, S. (2021) 'Self Medication Hypothesis: Probability and Possible Solutions'. *INTERNATIONAL JOURNAL OF MEDICINE AND HEALTHCARE REPORTS*, 01. DOI: 10.51521/IJMHR.2021.1109.

Ruiz, M. (2010) 'Risks of Self-Medication Practices'. *Current Drug Safety*, 5, pp. 315–23. DOI: 10.2174/157488610792245966.

Sapkota, A.R. *et al.* (2010) 'Self-Medication with Antibiotics for the Treatment of Menstrual Symptoms in Southwest Nigeria: A Cross-Sectional Study'. *BMC Public Health*, 10(1), p. 610. DOI: 10.1186/1471-2458-10-610.

Sasu, D.D. (2023) *Population of Nigeria in Selected Years between 1950 and 2023*. *Statista*. Available at: https://www.statista.com/statistics/1122838/population-of-nigeria/

Saunders, M. N. K., Lewis, P., Thornhill, A. and Bristow, A. (2016) 'Understanding research philosophy and approaches to theory development, in Saunders, M. N. K., Lewis, P. and Thornhill, A. (eds.) *Research methods for business students.* 7th edn. Harlow: Pearson Education, pp. 122–161.

Shayam, prasad. and Chouhan, K. (2016) *Self Medication and Their Consequences: A Challenge to Health Professionals.*

Sunny, T. *et al.* (2019) 'Self-Medication: Is a Serious Challenge to Control Antibiotic Resistance?' *National Journal of Physiology, Pharmacy and Pharmacology*, (0), p. 1. DOI: 10.5455/njppp.2019.9.0620508062019.

SurveyMonkey (2024) Sample Size Calculator and Tips for Determining Sample Size. SurveyMonkey. Available at: https://www.surveymonkey.com/mp/sample-size-calculator/

Tamene, E.H. (2016) 'THEORIZING CONCEPTUAL FRAMEWORK'. 4(2).

Tengli, M. (2020) 'RESEARCH ONION: A SYSTEMATIC APPROACH TO DESIGNING RESEARCH METHODOLOGY'.

UNODC (2018) *United Nations Office on Drugs and Crime UNODC: DRUG USE IN NIGERIA*.Available at: https://www.unodc.org/documents/data-and-analysis/statistics/Drugs/Drug_Use_Survey_Nigeria_2019_BOOK.pdf

Uzochukwu, B.S.C. *et al.* (2015) (4) 'Health Care Financing in Nigeria: Implications for Achieving Universal Health Coverage'. *Nigerian Journal of Clinical Practice*, 18(4), pp. 437–444. DOI: 10.4103/1119-3077.154196.

Yin, R. K. (2018) *Case study research and applications: design and methods.* Thousand Oaks, CA: SAGE.

APPENDIX

Dear Participant,

My name is Uwana Nyah and I am conducting this study as part of my Master's degree programme in Pharmaceutical Business and Technology at Griffith college Dublin. This research aims to investigate the factors influencing individual decision making processes when self-diagnosing ailments and purchasing of drugs based on online information. This survey is expected to take 5 to 10 minutes, your privacy is of utmost importance and responses collected will be used solely for my research study and stored in line with General Data Protection Regulation (GDPR). If you have any queries or require further information about this study, please feel free to contact me at Uwanavictory.nyah@student.griffith.ie.

Before filling this form, kindly mark if you have understood the research purpose and give consent to be part of this research.

☐ I Understand the purpose of the study.

☐ I Voluntarily agree to participate in this study.

Thank you.

Demographic Information

1. What is your age?
   - 18-24
   - 25-30
   - 31-35
   - 36-40
   - Above 40

2. What is your gender?
   - Male
   - Female
   - Other

3. What is your highest level of education?

- Secondary or High School
- Bachelor’s degree
- Master’s degree
-Doctoral Degree
- Other (please specify)

4. What is your current occupation?

- Student
- Employed
- Self-employed
- Unemployed
- Other (please specify)

5. How often do you use the internet?

- Daily
- Weekly
- Monthly
- Rarely
- Never

6. Which devices do you primarily use to access the internet? (Select all that apply)

- Smartphone
- Tablet
- Laptop
- Desktop computer
- Other (please specify)

7. Do you search for health-related information online?

- Strongly disagree
- Disagree
- Slightly Disagree
- Neutral
- Slightly Agree
- Agree
- Strongly Agree

8. How frequently do you search for health-related information online?
- Daily
- Weekly
- Monthly
- Rarely
- Never

9. Which sources do you primarily use to find health information online? (Select all that apply)
- Search engines (e.g., Google, Ask.com)
- Health websites (e.g., WebMD, WHO)
- Social media (e.g., Facebook, Instagram, TikTok, Twitter)
- Online forums (e.g., Reddit)
- Medical journals
- Other (please specify)

10. Have you ever self-medicated based on information you found online?
- Strongly disagree
- Disagree
- Slightly Disagree
- Neutral
- Slightly Agree
- Agree

- Strongly Agree

11. How often do you self-medicate based on online information?

- Always
- Often
- Sometimes
- Rarely
- Never

12. What type of medications do you most commonly self-medicate with based on online information? (Select all that apply)

- Over-the-counter drugs (OTC)
- Prescription drugs
- Herbal remedies
- Supplements
- Other (please specify)

13. What are the primary reasons that influence your decision to self-medicate based on online information? (Select all that apply)

- Convenience
- Cost-saving
- Trust in online information
- Previous positive experiences
- Perception that the condition is not serious
- Difficulty accessing health care services
- Other (please specify)

14. Have you experienced any adverse effects from self-medicating based on online information?

- Yes-
- No

If yes, please describe the adverse effects you experienced.

15. How confident are you in the accuracy of the health information you find online?

- Very confident
- Somewhat confident
- Not very confident
- Not confident at all

16. Do you verify the online health information with other sources before self-medicating?

- Always
- Often
- Sometimes
- Rarely
- Never

17. Do you agree that the online health information is a reliable substitute for professional medical advice?

- Strongly disagree
- Disagree
- Slightly Disagree
- Neutral
- Slightly Agree
- Agree
- Strongly Agree

18. Would you prefer to consult a healthcare professional rather than self-medicate if it were more accessible and affordable?

- Strongly disagree
- Disagree
- Slightly Disagree
- Neutral
- Slightly Agree
- Agree
- Strongly Agree

19 Do you think the Information on the internet carries risk for self-medication?

- Strongly disagree
- Disagree
- Slightly Disagree
- Neutral
- Slightly Agree
- Agree
- Strongly Agree

20 Is there anything else you would like to share about your experiences or opinions regarding online health information and self-medication?