"PREDICTIONS AND VIEWS ON THE FUTURE OF OTC AND PRESCRIPTION DRUG USAGE"

A PROJECT WORK (BP812PW) SUBMITTED TO

NIRMA UNIVERSITY

In partial fulfillment of the requirements for the degree of

Bachelor of Pharmacy

BY

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Semester VIII

UNDER THE GUIDANCE OF

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SARKHEJ-GANDHINAGAR HIGHWAY

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GUJARAT, INDIA

MAY-2023

CERTIFICATE

This is to certify that Project Work (BP812PW) entitled **"PREDICTIONS AND VIEWS ON THE FUTURE OF OTC AND PRESCRIPTION DRUG USAGE"** is the bonafide work carried out by DHRUVEE PATEL (19PH032), JAHNVI SHAH (19BPH048), MANAS KOTADIYA (19BPHO73) SARTHAK LAKHANI (19BPH094), VYOM SHETH (19BPH121) B.Pharm semester VIII under my guidance and supervision in the Institute of Pharmacy, Nirma University, Ahmedabad during the academic year 2022-2023 This work is up to my satisfaction

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CERTIFICATE OF SIMILARITY OF WORK

This Is to Certify That Project Work (BP812PW) Entitled **"PREDICTIONS AND VIEWS ON THE FUTURE OF OTC AND PRESCRIPTION DRUG USAGE"** Is the Bonafide Work Carried Out By DHRUVEE PATEL (19PH032), JAHNVI SHAH (19BPH048), MANAS KOTADIYA (19BPHO73) SARTHAK LAKHANI (19BPH094), VYOM SHETH (19BPH121) B.Pharm Semester VIII Under My Guidance And Supervision In The Institute Of Pharmacy, Nirma University, Ahmedabad During The Academic Year 2022-2023 This Work Is Up To My Satisfaction.

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DECLARATION

We, DHRUVEE PATEL (19PH032), JAHNVI SHAH (19BPH048), MANAS KOTADIYA (19BPHO73) , SARTHAK LAKHANI (19BPH094), VYOM SHETH (19BPH121) , students of VIII Semester of B.Pharm at Institute of Pharmacy, Nirma University, hereby declare that our project work (BP812PW) "PREDICTIONS AND VIEWS ON THE FUTURE OF OTC AND PRESCRIPTION DRUG USAGE" is a result of culmination of our sincere efforts. We declare that the submitted project is done solely by us and to the best of our knowledge; no such work is done by any other person for the award of degree or diploma or for any other means. We also declare that all the information was collected from various primary sources (journals, patents, etc) has been duly acknowledged in this project report.

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And now we want to express our feeling of appreciation to the people who give their contribution directly or indirectly to make our project success.

With great pleasure we want to give credits to that person who showed us the right path to follow and guided us every time whenever we get into trouble Dr. Udit Chaube (M pharm, PhD, Assistant Professor in Pharmaceutical Chemistry in Institute of Pharmacy Nirma University)

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“PREDICTIONS AND VIEWS ON THE FUTURE OF OTC AND PRESCRIPTION DRUG USAGE”

ABSTRACT

When patient is diagnosed with a symptom such as fever, headache, or any of the other symptoms such as vomiting, constipation and acidity or any other nutritional deficiency people typically avoid going to the doctor and prefer the treatment from community pharmacy. OTC medication is a category of medication that may be obtained without the need of a doctor's prescription. When it comes to decisions of patient about her own health and its siblings care management, over-the-counter (OTC) drugs play a critical part in the ability to do so. According to survey conducted by us source of information about OTC and Prescription was mostly obtained by doctor and from self-learning targeting age group of 13-24 followed by 24-40 age targeting population in India most specifically in Ahmedabad and Surat. On the other hand, if a patient has a medical issue, the patient will most likely choose to go to the physician and take the drug in accordance with the prescription that was provided by a certain certified doctor. These medicines are classified as POM.

1 INTRODUCTION

1.1 OTC MEDICATIONS

OTC medications are those which does not require the prescription and can be directly taken by the patients knowing its benefits and side effect of the medication they are taking & it can be used for variety of disorder such as headache, vomiting, pain, constipation and many more and some OTC medication may also contain some active substance which may be cause of potential abuse and may cause side effects(*Prescription Drugs and Over-the-Counter (OTC) Drugs: Questions and Answers | FDA*, n.d.).

Over-the-counter medications are extensively accessible at drugstores, stores, and convenience stores. These medications are deemed safe when utilized as directed and usually well-tolerated by the majority of individuals. It is crucial to meticulously peruse the label and adhere to the instructions to prevent any possible unfavorable outcomes or medication interactions. It should be emphasized that although over-the-counter (OTC) medications can be efficacious in addressing minor health concerns, they should not be utilized as a substitute for medical guidance or treatment from a healthcare practitioner.

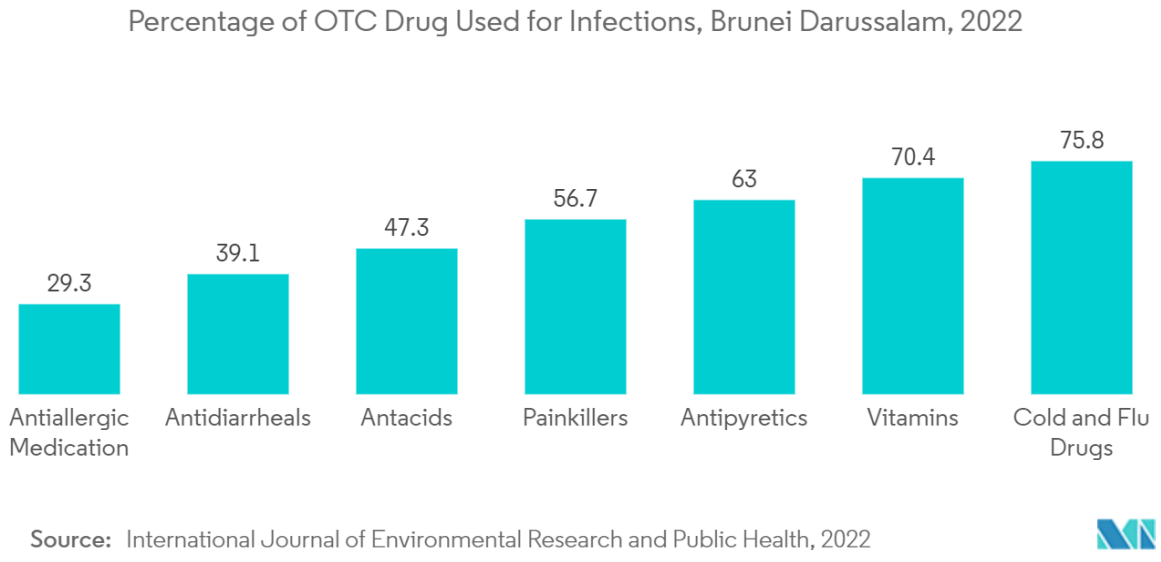

Figure 1 Percentage of OTC Consumption

Topical Antibacterial	**OTC capsaicin**	**Laxatives**
Topical Antifungal	**Calamine lotions**	**Cathartics**
Nicotine patch	**Antidiarrheal drugs**	**Eye care**
Ointment	**OTC vitamins**	**Anti-allergic**
Gels	**Antiulcer medicines**	**ORS**
OTC pain Relievers	**Omeprazole**	**Effervescent tablets**
Chewable tablets	**Antacids**	**Nasal spray**
Pain killer	**Spray**	**Aerosols**
Topical cream	**Disinfectant**	**Antifungal**

It is imperative to possess an understanding of the pharmacological and toxicological properties of frequently utilized over-the-counter medications. Furthermore, it should be noted that unfavorable responses to non-prescribed drugs are prevalent and may pose a significant risk if these drugs are not administered appropriately (Exclusive | Government Proposes Over-the-Counter Sale of 16 Commonly Used Medicines, n.d.).

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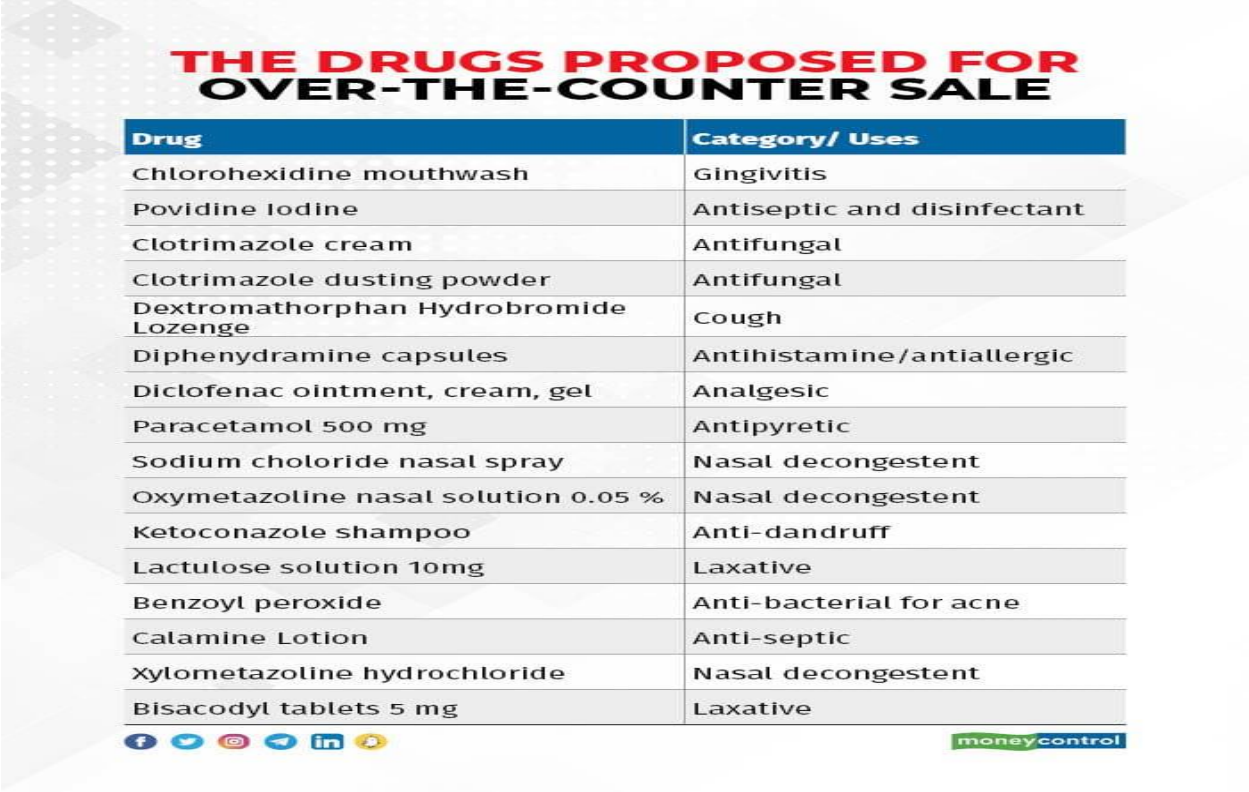

THE DRUGS PROPOSED FOR OVER-THE-COUNTER SALE

Drug	Category/ Uses
Chlorohexidine mouthwash	Gingivitis
Povidine Iodine	Antiseptic and disinfectant
Clotrimazole cream	Antifungal
Clotrimazole dusting powder	Antifungal
Dextromathorphan Hydrobromide Lozenge	Cough
Diphenydramine capsules	Antihistamine/antiallergic
Diclofenac ointment, cream, gel	Analgesic
Paracetamol 500 mg	Antipyretic
Sodium choloride nasal spray	Nasal decongestent
Oxymetazoline nasal solution 0.05 %	Nasal decongestent
Ketoconazole shampoo	Anti-dandruff
Lactulose solution 10mg	Laxative
Benzoyl peroxide	Anti-bacterial for acne
Calamine Lotion	Anti-septic
Xylometazoline hydrochloride	Nasal decongestent
Bisacodyl tablets 5 mg	Laxative

moneycontrol

Figure 2 The government has proposed a drug for over-the-counter sale.

1.2 MISUSED OTC MEDICINE

OTC medicine which are commonly being misused are dextromethorphan and loperamide and are Opioid medicine designed not to enter the brain and may produce hallucinogenic effect like drugs causing hallucinogen and may cause drug addiction and abuse of over-the-counter medications Certainly, it is possible to overdose on cold medications that contain DXM or loperamide (Background, n.d.; Katz, n.d.). A drug overdose occurs when any individual overdoses itself, causing life-threatening reactions or mortality which may lead to depletion of oxygen and may cause hypoxia and may lead to brain injury and even coma.

“PREDICTIONS AND VIEWS ON THE FUTURE OF OTC AND PRESCRIPTION DRUG USAGE”

Excessive consumption of over-the-counter medications can result in severe health complications. Excessive consumption of acetaminophen may result in hepatic injury, whereas overconsumption of ibuprofen may lead to gastrointestinal ulcers and hemorrhage.

The concomitant use of over-the-counter (OTC) medications or their co-administration with prescription drugs may result in hazardous drug interactions. The co-administration of the medication with alcoholic beverages or prescription analgesics has been reported to result in hepatotoxicity.

Over-the-counter (OTC) drugs, such as cough suppressants containing a medication known as (DXM), can be utilized for recreational purposes due to their psychoactive effects. The administration of elevated dosages of DXM has been found to induce hallucinatory experiences and a state of dissociation.

Figure 3 Opioids Addiction

There are instances where individuals inappropriately utilize over-the-counter medications, such as laxatives and diuretics, with the intention of achieving weight loss. Nonetheless,

this may result in dehydration, imbalances in electrolytes, and additional health complications.

The use of expired medications may result in a loss of efficacy or potential harm. It is imperative to verify the expiration date of medications and appropriately discard any that have exceeded their expiration date.

The act of distributing OTC medications, particularly those that require a prescription, to other individuals is both unlawful and potentially hazardous. The suitability of the medication for the other individual's health status and potential drug interactions with their current medication regimen should be taken into consideration.

Prescription medicine and Schedule X medicine on Advertisement, distribution & selling of drugs

1.3 OTC VS PRESCRIPTION MEDICINE

Pharmaceutical medications that are legally available only with a valid prescription from a licensed healthcare provider. The act of grasping a container of medication with one's hand.

Prescription order Medicine

As directed by a medical professional.

Purchased from a pharmaceutical retailer.

This medication is designated for and meant to be utilized by a singular individual.

The prevalence of problems with drugs in the country under consideration ranges from 10% to 30%, with an estimated annual mortality rate of approximately 190,000 individuals due to severe adverse drug reactions. Hence, the utilization of the drugs knowledge base for the purpose of furnishing healthcare practitioners with prompt and logical medication diagnosis and therapy recommendations, as well as averting the incidence of contraindications, overdose, and other erroneous medication prescriptions, constitutes a significant subject meriting investigation in the realm of medical information. This article presents the integration of expert systems and ontology technology in the context of smart

medical services. Specifically, an intelligent review system is developed based on the pharmacy knowledge base (Johnson, 2011; Shaw, 2016). The system leverages prescriptions, an ontological framework pharmacies expertise simulation, and review process reorganization to enhance its functionality. Real-time artificial intelligence examination of medication issued by physicians is conducted during the process

Over-the-counter (OTC) medications refer to drugs that can be purchased without a prescription from a healthcare professional.

OTC Medications

Pharmaceutical substances that can be obtained without a medical practitioner's prescription.

Purchased from retail establishments.

The regulation of Over-The-Counter (OTC) drugs is overseen by the Food and Drug Administration (FDA) through the implementation of drug monographs. Over-the-counter (OTC) drug monographs serve as a compendium of acceptable ingredients, dosages, formulations, and labeling guidelines, akin to a recipe book. The monographs will undergo regular updates to incorporate supplementary constituents and appropriate labeling, as required. Items that adhere to a monograph are eligible for marketing without additional clearance from the FDA. Conversely, products that do not conform to a monograph must undergo a distinct evaluation and authorization process via the "New Drug Approval System. “As directed by a medical professional.

Purchased from a pharmaceutical retailer.

This medication is designated for and meant to be utilized by a singular individual.

The New Drugs Application (NDA) process is utilized by the FDA to regulate the approval of drugs. The process by which a drug sponsor formally requests that the FDA evaluate and potentially authorize a new drug for commercialization in the US is commonly referred to as a New Drug Application (NDA). The Non-Disclosure Agreement (NDA)

encompasses both animal and human data, along with corresponding data analyses. Additionally, it comprises details regarding the drug's behavior within the body and its manufacturing process. To obtain further details regarding the NDA procedure, kindly refer to "The the Food and Drug Administration Drug Evaluation Process: Ensuring Pharmaceuticals Are Acceptable and Effective."

Over-the-counter (OTC) medications refer to drugs that can be purchased without a prescription from a healthcare professional.

1.4 PERSONALIZED MEDICINE

Future Trends & Impact of AI & Machine Learning in Research & Development

Prevention efforts, diagnosis, and therapy in the area of personalized medicine are all informed by the patient's unique molecular or cellular data. Its goal is to tailor medical treatment to each individual depending on their expected outcome or risk of illness. These are some applications of customized medicine.

Precision medicine, also known as individualized medicine, is a healthcare approach that tailors medical interventions and therapies to individual patients by taking into account their unique environmental, lifestyle, and genetic variables. Personalized medicine endeavors to enhance the effectiveness and security of medical therapies by utilizing the distinctive characteristics of a patient to guide treatment decisions.

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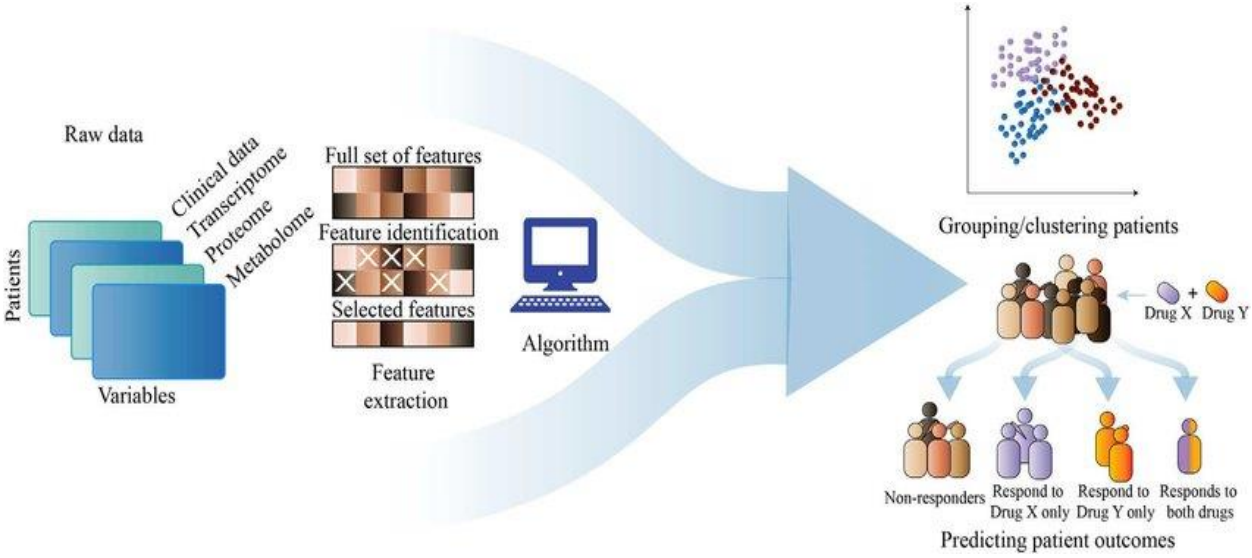


Figure 4 AI & ML in Data Analysis of Patient Clinical Data

Personalized medicine employs advanced technologies such as proteomics, genomics, metabolomics, and other "-omics" methodologies to examine a patient's genetic composition and other molecular information (Ginsburg & Phillips, 2018). The selection of optimal treatment options is based on the identification of biomarkers that can accurately forecast the likelihood of developing an illness, facilitate early detection of diseases, and enable disease diagnosis. Example by taking into consideration various factors

- Trastuzumab
- Imatinib
- Pharmacogenomics, the study of how genes affect a person’s response to drugs.. This can help doctors prescribe the right dose and avoid adverse effects for each patient.
- It can help prevent disease by predicting susceptibility and providing customized prevention strategies
- It can improve disease diagnosis and detection by using molecular and genomic data

The field of precision medicine has had a significant impact on patients, healthcare delivery structures, and research participants. This impact was not foreseen a decade ago when the genome of humans was initially sequenced. The pace of identification of genetic variants responsible for causing diseases and influencing drug response has increased, yet their integration into clinical practice has been slow. In this discourse, we establish a definition for precision medicine and expound on the stakeholder community that is essential for facilitating its seamless integration into both research and healthcare domains. This study investigates the convergence of analytics, data science, and personalized medicine in the establishment of healthcare systems that conduct research within the framework of clinical care. The aim is to enhance patient outcomes by optimizing the resources and knowledge utilized. The paper presents instances of tangible effects on the world and culminates with a set of recommended policies and economic measures that are imperative for the implementation of this novel healthcare model, both domestically in the US as well as internationally.

1.5 PRESCRIPTION ORDER MEDICINE AND REGULATIONS

Pharmaceuticals possess the ability to improve health outcomes, however, their administration can result in adverse effects if not prescribed with due consideration. It is advisable that healthcare practitioners who are involved in prescribing medications employ critical thinking abilities to guarantee the secure and efficient utilization of therapeutic agents. Pharmacists play a critical role in both dispensing and prescribing medications (*International Regulatory Harmonization | FDA*, n.d.). The rational prescription of medication is essential for ensuring patient safety, promoting adherence to treatment, and providing relief to patients. The present study posits a set of objectives that a prescriber ought to strive for when initially prescribing a medication, with the aim of optimizing its efficacy, minimizing potential hazards and expenses, and considering the patient's genuine requirements.

In India, the Central Drugs Standard Control Organization (CDSCO) under Directorate General of Health Services, Ministry of Health & Family Welfare, and Government of India the National Regulatory Authority (NRA) of India, ensures that new drugs are

rigorously tested for safety and efficacy, with an aim towards minimizing side effect and maximizing the efficacy of the drug (Akande & Ologe, 2007).

According to Drug and Cosmetic Act 1940 there are stringent rules for Allopathic medicine.

1.6 ALTERNATIVE SYSTEMS OF MEDICINE

Alternative medicine has gained popularity in recent years and is predicted to keep doing so. A rising knowledge of the limits of conventional medicine, along with a preference for further holistic approaches to healthcare, may explain this trend.

The term "Alternative Medicine" is frequently utilized to encompass all forms of healing practices that are not considered to be within the scope of conventional medicine. Complementary and alternative medicine (CAM) encompasses a range of therapeutic or preventative healthcare practices, including homeopathy, naturopathy, chiropractic, and herbal medicine. These practices deviate from conventional medical methods and may lack a scientific basis for their efficacy. The term alternative medicine (CAM) refers to medical practices and products that are not considered part of conventional healthcare. The practice of standard care is commonly observed among Doctor of Medicine, doctors of osteopathy, and other health care providers, including licensed nurses and physical therapists. Alternative medicine refers to therapies and practices that are utilized in lieu of conventional medical treatments. Complementary medicine refers to unconventional therapies that are utilized in conjunction with conventional treatments(Ernst, 2000).

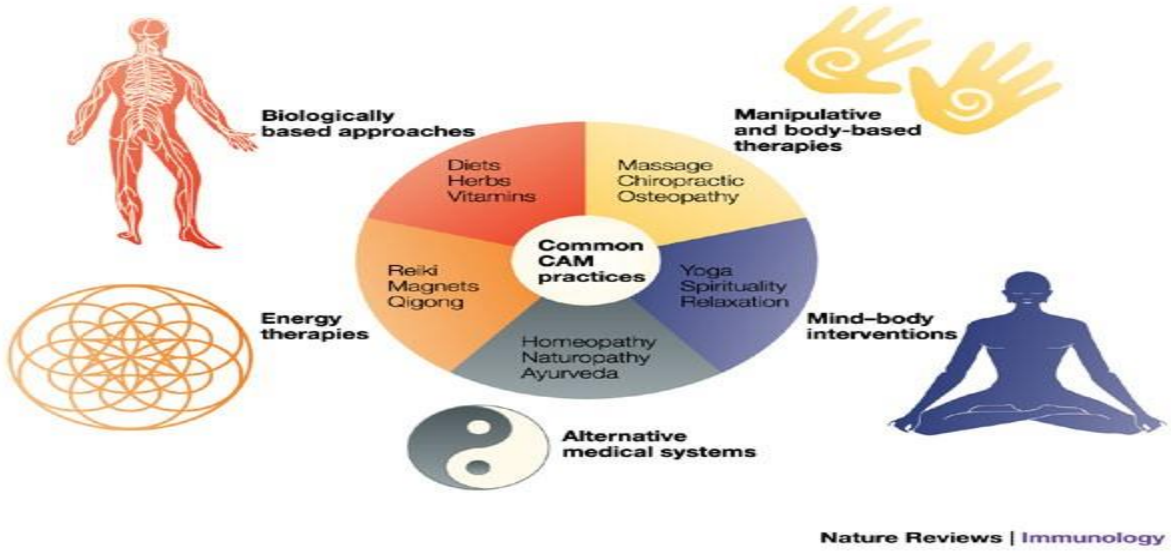


Figure 5 Alternative system of Medicine

Prior to the release of the Flexner report in 1910, which established a standardized framework for medical education in the United States, allopathic physicians shared a comparable level of influence in the American healthcare system with other professionals such as Doctor of Chiropractic, naturopaths, and homeopaths (MS, 2018).

More technological development might lead to more specific and individualized alternative therapies, such as genetic analysis to identify the most beneficial herbal medicines or acupuncture spots for a certain patient.

It is critical that patients must be aware of the risks and benefits of any treatment they receive(Goldrosen & Straus, 2004). It is essential that alternative medicine and the allopathic approach work together to provide optimal health care.

1.7 SAFETY AND EFFICACY OF MEDICINE

Efficacy: Efficient action is one which results in the desired outcome

Only under perfect circumstances can the effectiveness of a method be properly evaluated In a controlled clinical trial, for example, pharmacological effectiveness is evaluated by observing how well the treatment works in a population of patients who are expected to benefit from it.

Effectiveness: The effectiveness of a medicine is different from its efficacy since it considers how well it performs in actual clinical practice.

Clinical trial results are not always indicative of a drug's performance in real-world settings (Shaw, 2016). The effectiveness of a medicine may be poor despite its great efficiency in decreasing blood pressure if people quit taking it due to its numerous unpleasant side effects.

Inappropriate prescribing by professionals is another factor that might reduce a drug's effectiveness as a result, efficacy is often more valued than effectiveness.

The approval of a drug over clinical use is contingent upon a comprehensive evaluation of its potential benefits and associated risks. Whilst efficacy is commonly comprehended during the period of delivery to the the Food and Drug Administration for endorsement, evaluating the associated risks is a more challenging task. The search terms "risk evaluation. Limited research studies directly pertaining to the topic are available, however, supplementary materials such as government documents were accessible. In cases where drugs exhibit efficacy but possess ambiguous or worrisome safety profiles, the FDA may mandate a plan for risk assessment and mitigation as a means of implementing a methodical framework for monitoring and ensuring the safe administration of medication. Currently, REMS encompasses a repertoire of over 100 distinct medications, with each REMS being tailored to the unique requirements of the particular drug or drug class. The complete understanding of the possible benefit, boundaries, and consequences of REMS, despite its probable association with enhancements in medication safety, remains elusive.

The FDA retains its role as the authority responsible for evaluating the appropriateness of a pharmaceutical product designed for medical application and ensuring the accessibility of drugs that exhibit both efficacy and safety. The evaluation of efficacy and safety is crucial; however, it is important to note that these factors are not absolute and must be evaluated on a case-by-case basis, taking into consideration the specific patient people, the illness currently being treated, and the possible frequency of administration. The fluidity of medication usage is evident in practice, as medications may acquire novel indications, be utilized off-label, and undergo formulation changes.

1.8 USAGE AMONG POPULATION

According to the survey we conducted, roughly 40% of patients used both OTC and prescription order medicine, while 20% of the population preferred self-diagnosis and treatment and preferred OTC medications. Additionally, some patients are using alternative medical systems, such as Ayurveda and homoeopathic treatments and many people now see over-the-counter drugs as being safe to consume and without considering any negative effects(Verhaak & Van Busschbach, n.d.).

As a result of the survey that we took, 45 percent of people believe that over-the-counter medicine is safe, while 29 percent of people believe that it is harmful, and the remaining number of people have no clue regarding the safety and proper use of the drug.

Many people believe that dextromethorphan and loperamide are safe drugs that can be used as over-the-counter drugs in certain strengths and doses; however, it has side effects similar to those of the Opioids drug because it has a structure similar to Opiod; as a result, it may be addictive in nature, leading to drug abuse.

Figure 6 India OTC market size

1.9 DRUG SAFETY AND SIDE EFECTS

The United States Food and Drug Administration states that the drugs that are intended for sale to be both safe and with effective and benefits outweighs the risk(Saleem et al., n.d.; Sunny et al., 2019).This implies that the benefits of the medication must be higher than the known dangers of the drug. It's important to keep in mind that there are side-effects to both the prescriptions and over the counter (OTC) medications. The severity of a drug's adverse effects might range from something as innocuous as a stuffy nose to something as potentially fatal as a cardiac arrest or damage to the liver. When you begin using a new medicine, you may have side effects. If you stop using the drug altogether, you may also experience withdrawal experiences or side effects. May occur as a result of the medicine you take and the foods you consume having a certain kind of interaction with one another.

As a result of the survey that we took, 45 percent of people believe that over-the-counter medicine is safe, while 29 percent of people believe that it is harmful, and the remaining number of people have no clue regarding the safety or proper use of the drug.

Figure 7 Safety & Side Effect

Factors influencing the future OTC and prescription drug usage & Future Trends

Various factors can impact the utilization of over the counter (OTC) and prescription drugs in the future.

The aging population is expected to result in a rise highly sought after for medical care and medications on a global scale(*Patient Engagement Strategies for Post-Discharge Follow-Up Care*, n.d.). The elderly population exhibits a higher prevalence of health complications and necessitates a greater number of medicinal interventions compared to their younger counterparts, potentially resulting in a surge in the utilization of both over the counter and prescription drugs.

The pharmaceutical industry is anticipated to be influenced by technological advancements in diverse ways, including the emergence of more precise therapies and individualized medicine. The potential outcome of these technological advancements is the possibility of

an upsurge in the production of prescription drugs and over the counter (OTC) drugs that are backed by electronic health records (*Stanford Team Reveals Cost-Effective and Life-Saving Treatment for Nation’s Opioid Disorder Epidemic | FSI*, n.d.).

The influence of economic factors on drug consumption can be substantial. The escalation of healthcare expenses and challenges with insurance coverage may prompt a rise in over-the-counter (OTC) drug utilization as individuals endeavor to manage minor health concerns independently. Economic downturns can potentially result in a reduction in the utilization of prescription drugs due to financial constraints experienced by patients.

The availability of certain drugs or the regulatory strain on drug manufacturers may be affected by modifications to regulations at either the international or national levels. The availability of prescription drugs without a prescription may result in a reduction in prescription drug consumption or an escalation in over-the-counter drug consumption.

The utilization of drugs can also be influenced by consumer habits and tastes in the field of consumer behavior. Patients may opt for over-the-counter (OTC) medications due to their perceived convenience in terms of accessibility and usage, or due to the perception that they are comparatively safer than prescription medications. Conversely, certain patients may exhibit a preference for prescription medications based on their perceived efficacy or the unavailability of an over-the-counter alternative.

The utilization of both over-the-counter (OTC) and prescription drugs in the future is expected to be impacted by various factors such as demographic shifts, technological innovations, economic considerations, regulatory modifications, and consumer conduct. Comprehending these variables holds significance for healthcare practitioners, policymakers, and pharmaceutical companies in their endeavors to formulate and endorse secure and efficacious medicinal treatments.

This paper aims to analyze the future projections of over-the-counter (OTC) and prescription drug usage.

The market for over-the-counter (OTC) drugs is anticipated to expand in the forthcoming years, primarily due to the rise in consumer awareness and the need for self-treatment alternatives. It is estimated that the worldwide over-the-counter (OTC) pharmaceutical

market will exceed $195 billion by 2026, indicating a significant increase from the 2020 figure of around $125 billion. It is anticipated that over-the-counter (OTC) medications will experience a surge in digitization, as health care technologies and applications are leveraged to facilitate patient health monitoring and self-management of minor health conditions.

The prescription drug industry is anticipated to experience sustained expansion, owing to factors such as the aging demographic, the rising incidence of chronic ailments, and technological innovations that are facilitating the creation of more precise treatments. It is estimated that the worldwide prescription drug industry will exceed $1.2 trillion by 2026, indicating a rise from its 2020 value of around $950 billion. The future utilization of prescription drugs may be influenced by regulatory modifications and the escalation of healthcare expenses.

The emergence of personalized healthcare, which entails customizing medical interventions based on an individual's genetic composition and other relevant variables, is anticipated to have a significant influence on both the over-the-counter and prescription drug sectors. The implementation of personalized medicine has the potential to facilitate the creation of more precisely targeted over-the-counter medications and may also augment the utilization prescription drugs for ailments that were previously challenging to manage. The implementation of personalized medicine has the potential to result in elevated drug expenses, which may affect the utilization of both over-the-counter and prescription drugs. Additionally, the rising prevalence of digital health technologies, including mobile health applications and telemedicine, is anticipated to have an impact on the consumption of both over-the-counter and prescription drugs. The advent of these technologies may potentially result in a surge in the utilization of over-the-counter medications for self-management of minor health conditions, owing to the enhanced accessibility of information and resources to patients. The implementation of digital health technologies has the potential to influence the utilization of prescription drugs by enabling patients to effectively track their health status and comply with prescribed medication schedules.

2. OVERVIEWS OF MARKET

2.1 OTC & PRESCRIPTION MARKET OUTLOOK

The Indian pharmaceutical industry dominates trade by over 50% of the worldwide demand for various vaccines, 40% of the pharmaceutical supply in the United States, and 20% of all medications in the United Kingdom. The Indian Government Report 2021 predicts that the domestic market will triple in size over the next decade. Domestic pharmaceutical sales in India total value of US$ 42 billion in 2021 and are expected to reach US$ 65 billion by the year 2024 and US$ 120-130 billion by 2030. In January 2022, the Indian pharmaceutical market's total revenue increased by 13.9%. As of 2021, India produces the majority of vaccines in the world, accounting for approximately 60% of the overall vaccines. CARE Ratings anticipates that India's pharmaceutical industry will grow at a compounded annual growth rate of 11% in the following two years, reaching a value of over $60 billion by August 2021.

Because of COVID pandemic in 2019 this market got a huge impact because of this. As for example the Indian OTC market was greatly dependent on China for the raw materials of drugs. As lockdown occurs it created less production of API and this results into increase the prize of drugs. And because of the high demand of this drugs some of the medication which were exported previously were stopped transporting. For example over the counter painkillers and Paracetamol the some antibiotics, gastrointestinal drugs etc exportation is restricted. And due to whole country lockdown the supply chain of this drugs has also got a negative impact. Many of the essential OTC drugs were not available. The retailers are facing shortage of stocks of this drugs due to low amount of transportation even government is not able to fulfil the stock of market by making so much efforts. But the online shopping has increased a lot. Large amount of website came into action during this lockdown period and also gain a lot of appreciation. Government of India is also forming new policies in order to outlook this online market of drugs. For example, in April 2020 COVID Pharmaceutical policy is launched in Andhra Pradesh it was a mobile application which keep track record of this OTC drugs purchase by local people through online.

However, currently the OTC market has reached pre-pandemic nature in terms of demand and sales of the OTC drugs.

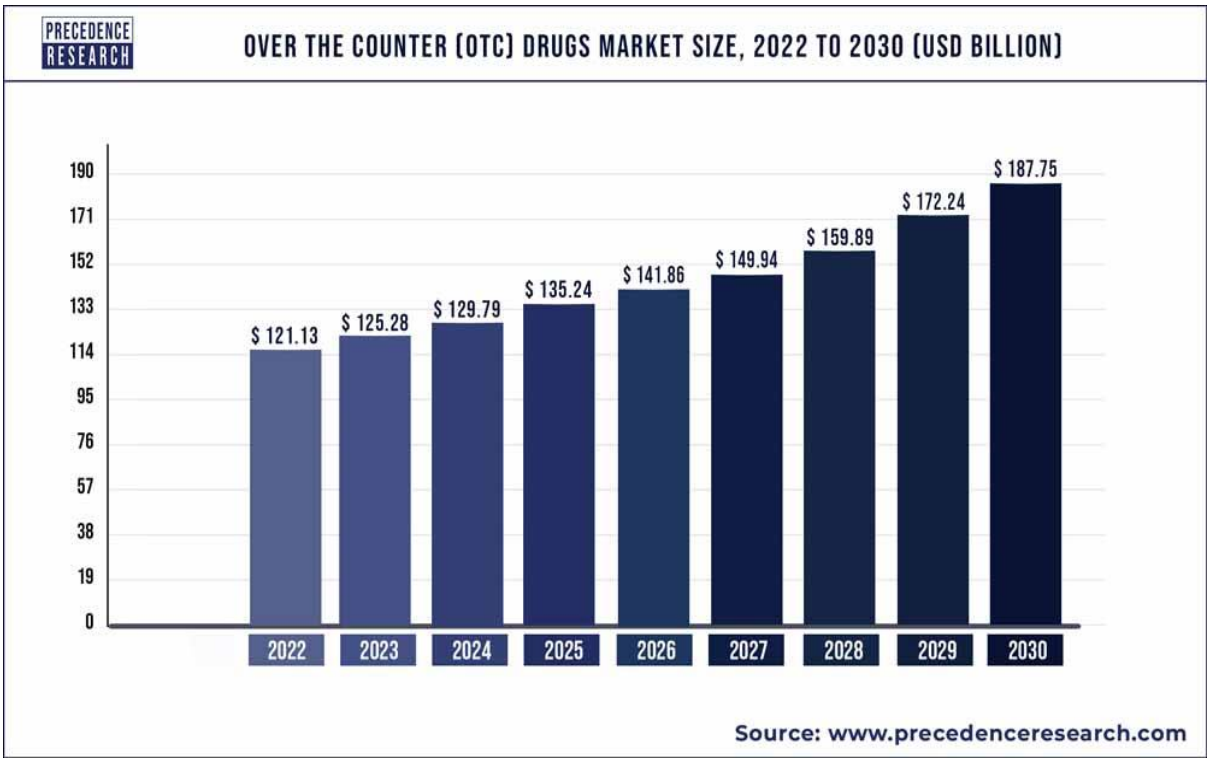


Figure 8 Market Size of OTC Medications

In recent years, the Indian pharmaceuticals industry has witnessed significant developments, investments, and government support.

Between April 2000 and June 2022, FDI inflows into the Indian pharmaceuticals sector reached $19.90 billion.

In September 2022, Indian drug and pharmaceutical exports totaled $2, 19632 million.

The market for medical devices is anticipated to reach $50 billion by 2030, growing at a compound annual growth rate of 15%.

2.2 TECHNOLOGICAL DEVELOPMENT

With the expansion of telehealth, it is feasible that the more people will have the ability to receive health advice and medications remotely. This may raise the need for home-delivery prescription medications.

Developments in genetics as well as other technologies could enable more personalized medicine, in which treatments are tailored to the specific requirements of an individual. This could result in more targeted, effective, and side-effect-free prescription medications.

The aim of this study is to provide an overview of the current status of Nano medicine-based technology, specifically nanoparticles (NPs), in terms of their potential for drug delivery and diagnostic applications in the field of otolaryngology and its subspecialties.

Over the past few decades, scholars have endeavored to promote the concept of "precision medicine" with the aim of assisting healthcare providers in customizing treatment to suit the unique needs of each patient.

The field of nanotechnology is dedicated to advancing personalized patient care by examining the interactions that occur at the Nano scale level within a system, typically ranging from 1 to 300 nm. At this stage, the characteristics of substances exhibit significant variations in comparison to those at the microscopic and particulate scales. By comprehending the fundamental principles that regulate these interactions, medical practitioners and scholars can manipulate the observable characteristics of a given system. The field of nanomedicine pertains to the utilization of advanced technologies for the purpose of diagnosing and treating patients on a molecular scale.3

Nanomaterial’s, also and nanoparticles (NPs) possess distinctive characteristics that hold great potential for their utilization in the field of healthcare. The diminutive dimensions of nanoparticles enable them to traverse biological obstacles that are typically impervious to conventional therapeutic agents (Burruss & Kacker, 2022). Additional advantages

encompass enhanced pharmaceutical administration and targeted tissue localization in relation to nanotechnology-based delivery platforms.

Specifically and therapeutically relevant applications due to their unique physicochemical properties.

Automation has been playing and increasingly important role in the creation and distribution of pharmaceuticals, and this will probably continue(Roy, 2022). For instance, 3D printing might be employed to create personalized prescription medications on demand, whereas block chain could be used to monitor distribution and prevent the introduction of counterfeit drugs into the market.

The future of the over-the-counter (OTC) and prescription medication industries will likely be shaped by technological advancements, shifting consumers’ preferences, and regulatory changes.

2.3 SPREADING AND SCALING UP INNOVATION AND IMPROVEMENT

The field of implementation science pertains to the structured improvement of spread and scale-up processes.

Implementation science refers to the systematic examination of approaches aimed at facilitating the integration of research findings and other evidence-based practices into regular practice. The origin of this phenomenon can be traced back to the emergence of the evidence-based medicine movement in both Europe and North America.

The field of implementation science has undergone significant growth in recent times, coinciding with advancements in the Medical Research Council's recommendations for the creation and evaluation of intricate interventions. This methodology acknowledges the necessity of employing adaptable and versatile strategies to tailor the intervention to diverse contexts.

The authors, McKay et al., designed, evaluated, and expanded a program aimed at promoting physical activity and nutritious dietary habits among primary schools in British

Columbia, Canada. The implemented intervention resulted in enhancements in the physical activity levels, chronic disease risk factors, and academic performance of the students.

During the phase of implementation and expansion, a total of 348 educational institutions were provided with assistance to incorporate and integrate the intervention, and to conduct a local assessment of its impact. The development and pilot phase of the project spanned six years, and the project was subsequently sustained for a period of 10 years.

The topic of discussion pertains to the field of complexity science, specifically the concept of spread and scale-up as a form of adaptive change (*Healthcare Landscape in India: Challenges versus Emerging Technologies (Part I) | by Asha Impact | Asha Impact: Profit, Purpose and Policy | Medium*, n.d.).

Three distinct logics have been presented to approach spread and scale-up, namely mechanistic (implementation science), ecological (complexity science), and social (social science). The aforementioned methodologies possess the potential to enlighten the development and execution of programs aimed at dissemination and expansion, ranging from minor quality enhancement initiatives to comprehensive, transformative modifications at the systemic level.

2.4 MARKETING AND ADVERTISEMENT OF MEDICINE

Medicine marketing and advertising involve the advertising and sale of prescription medicines to healthcare professionals and consumers (Khan et al., n.d.). The primary objective of Pharma marketing is to boost product sales by building brand recognition and advertising the advantages of a drug. Direct marketing, which targets patients directly, and professional marketing, which targets healthcare providers, are two forms of advertising. Concerns exist regarding the moral consequences of pharmaceutical marketing, including the potential for biased information, over-prescribing, and the effect of monetary rewards on medical decision-making. In the United States, laws such as the (FDA) aim to make sure that Pharma promotion is honest, accurate, and not deceptive.

The Drug and Magic Remedies (Objectionable Advertisement) Act enumerates a roster of medical conditions for which promotional activities are prohibited. The regulation also

includes a provision that disallows the dissemination of deceptive promotional materials that may create inaccurate perceptions about the actual nature of the medication. This encompasses the promotion of fraudulent assertions or any other form of misleading or inaccurate information. The DCGI's office, in partnership with OPPI, has recently issued a the voluntary the Code on OTC Advertising, which is currently being adhered to by all member companies of OPPI. At present, there exists no explicit legislation that forbids the promotion of prescription medications, although it is customary for the pharmaceutical industry to refrain from advertising drugs that require a prescription.is currently under clinical trial, until it is approved for marketing by the regulatory authority.

The subsequent advertisements for over-the-counter medications are observable on television in India.

- Digestives are a type of biscuit commonly consumed as a snack or dessert.
- Antacids
- Antiflatulents
- Medicated cream & soap
- Throat Lozenges

We conducted a survey that found that 38% of people favor generic medicines, while others favor both branded and generic medicines, and from that, 36% Favor switching to a different brand name for consumption; most people Favor getting medicines from doctors' pharmacies (40%), while others Favor getting medicines community pharmacies (38%), and only a select few Favor getting buying medicines online (2%).

2.5 REGULATORY APPROVAL

It is very difficult to gain clearance of the medication and patent in India due to the severe regulations imposed by the Central Drugs Standard Control Organization (CDSCO), the Drug and Cosmetic Act (DC Act), and the Food and Drug Administration (FDA).

In nations with fewer resources for approving medical items, patients may have to wait longer for life-saving treatments. Via the SRA CRP, Drug Regulatory Authorities (NRAs) may rely on the scientific assessments conducted by Strict Regulatory Authorities (SRAs) when making decisions on the approval of medicinal goods under their jurisdiction.

The regulatory framework of Canada is the subject of interest in this context

There exists an intermediate category of non-prescription items that are required to be stored behind the counter, in a store room, or on a shelf that is easily visible by the pharmacist. This category involves weak codeine products, muscle relaxants, and certain antihistamines.

The Food and Drug Administration regulates the production and distribution of over-the-counter substances in the United States. The Food and Drug Administration mandates that any pharmaceutical products categorized as "new drugs" must secure an application for a new drug ("NDA") before being introduced into interstate commerce. However, the legislation provides an exemption for drugs that are generally acknowledged as safe and effective ("GRAS/E") from this prerequisite.

The FDA established the OTC the monograph system to address the extensive range of over-the-counter drugs that were already available in the market before the mandate that necessitated all drugs to acquire an NDA. The purpose of this system was to evaluate various drug categories and classify them as GRAS/E following assessment by proficient committees. As per the finalized regulations in the Uniform Code of Federal Regulations, specific categories of over-the-counter medications are exempted from the requirement of obtaining a New Drug Application (NDA) and can continue to be sold in the market, provided they adhere with the monograph guidelines pertaining to dosages, labeling, and warnings. In the United States, the marketing of an over-the-counter drug product is permissible through two means: (1) adherence to an FDA monograph; or (2) submission of a New Drug Application for products that do not fall under a specific monograph. It is plausible that specific over-the-counter drug commodities are promoted under the grandfather clauses of the Federal Nutrition, Drug, and Cosmetic Act. However, the Food and Drug Administration (FDA) has not officially recognized the existence of any valid grandfathered over-the-counter drug.

Regulatory harmonization is a procedure that involves the synchronization of technical specifications by regulatory bodies for the purpose of facilitating the development and commercialization of pharmaceutical products. The uniformity of regulatory requirements

offers several advantages, including facilitating beneficial marketing conditions to enable timely access to medicinal products, fostering competition and efficacy, and minimizing unwarranted duplication of clinical testing.

The FDA collaborates with stakeholders on a global scale via international platforms to address the intricate and worldwide scope of pharmaceutical industry activities and associated regulatory supervision. The present study advances the mission of the FDA by guaranteeing the safety and efficacy of pharmaceuticals. This objective is achieved through the FDA's participation in various international organizations, such as the International Council for Harmonization (ICH), International Pharmaceutical Regulators Program (IPRP), the Pharmaceutical Inspection Co-operation Plan (PIC/S), the Asia-Pacific Economic Collaboration and International the Coalition of Medicines Regulatory Authorities (ICMRA).

2.6 PATIENT EDUCATION AND FOLLOW UP

According to the findings of a study that was carried out by us patients who are ill have a preference for going to the doctor once a week, in addition to other visits as needed and directed by their physicians, and the number of visits depends on how well the patient is doing and what the doctor has prescribed.

Figure 9 Patients Education & Follow Up

“PREDICTIONS AND VIEWS ON THE FUTURE OF OTC AND PRESCRIPTION DRUG USAGE”

Considerable emphasis has been placed on the quantity of information provided regarding the etiology of the ailment, diagnostic procedures, clinical assessment, therapeutic objectives, and the likely outcome of treatment. While information is typically provided regarding certain aspects, a comprehensive explanation is a relatively infrequent occurrence. In 70% to 80% of cases, patients are provided with guidance regarding the utilization of drugs and home remedies. Basic understanding of illness was provided by the doctor in 7% of cases, whereas lifestyle was discussed in 15% of cases. The aforementioned activities, which extend beyond the specific grievances presented by patients, are commonly referred to as patient education. The present study examines the correlation between the level of knowledge, instruction, and education provided during a consultation and the nature of the interaction that takes place between the parties involved. There exists a positive correlation between the provision of information and the display of interest and concern for the patient by the physician. Nonetheless, it did not result in a rise in the proclivity of patients to inquire. The doctor's patient-centered behavior was found to have no significant correlation with either the provision of information or the asking of questions. The duration of a consultation was found to be the most significant predictor of the quantity of information conveyed and the level of inquiry conducted during the consultation.

According to the results of the survey, estimated that 90% of physicians will suggest that their patients participate in counseling when it is required and it is been preferred by patient. Approximately fifty percent of all medical professionals will explain their patients not just the terminology associated with how to take medicine but also the benefits and potential drawbacks of the medication they are taking. On the other hand, the survey found that roughly 8% to 9% of the persons who took part in the study do not have a proper knowledge of the drugs they are taken and not able to read prescription associated with the drug that they are taking.

2.7 Challenges in changing Healthcare Landscapes

Although numerous challenges exist, I propose four "A's" for our contemplation:

Awareness

To what extent is the Indian populace informed about crucial matters pertaining to their personal health? There is a wide range of research on the topic of awareness, however, deficiencies in awareness seem to be prevalent throughout the lifespan within our nation (Kasthuri, 2018). Two studies have revealed that only one-third of antenatal mothers possess sufficient knowledge regarding breastfeeding practice

Access

The communication is unambiguous - it is imperative that we endeavor to enhance consciousness among our colleagues and inspire the upcoming cohort to acknowledge the efficacy of education in inducing behavioral transformations.

The concept of access, specifically in relation to healthcare, is defined by the Oxford dictionary as the entitlement or possibility to utilize or derive advantages from such services.

The fundamental factor that influences access is physical reach, which is characterized as the capacity to reach a healthcare facility within a radius of 5 kilometers from one's place of residence or employment. According to a definition employed in a particular context, a research conducted in India in 2012 revealed that a mere 37% of individuals residing in rural areas were capable of availing themselves of IP facilities within a 5 km radius, while 68% were able to access out-patient facilities

Figure 10 Challenge’s in Healthcare Landscapes

Absence of Human Resource

As scholars in the fields of neighborhood medicine and public health, it is imperative that we foster discourse regarding the factors that influence individuals' ability to obtain healthcare services. It is imperative to identify and analyze potential obstacles to healthcare access across financial, geographic, social, and systemic domains. Furthermore, it is crucial to encourage critical thinking among students and colleagues regarding the issue of access to high-quality healthcare.

The topic of discussion pertains to the issue of absence or the human resource crisis in the healthcare sector.

Affordability

The present inquiry concerns the issue of healthcare affordability in India, specifically the extent to which healthcare costs are prohibitive and the number of individuals who are able to bear these expenses.

The healthcare sector in India is predominantly dominated by the private sector, as widely acknowledged. Households bear nearly 75% of healthcare expenses, and the incidence of impoverishment is significantly linked to the occurrence of catastrophic healthcare

costs.[19] The absence of regulation in the private sector and the resulting disparities in the standards and expenses of services exacerbate the issue.

The public sector provides healthcare services at a reduced or no cost, however, it is often viewed as being unreliable and of subpar quality. As a result, individuals typically opt for private healthcare services unless they are unable to afford them.

The resolution to the issue of healthcare affordability can be found in both regional and nationwide endeavors. It is imperative that the government increases its spending on healthcare at a national level, from the current level of less than 2%, to a minimum of 5-6% of the gross domestic product in the near future.

2.8 VARIOUS COMPANY AND MARKET SHARE

Based on regional sales of pharmaceutical products, some of the top pharmaceutical companies by market share in India as of March 2023 are(*Pharmaceutical Companies in India, Indian Pharma Industry- IBEF*, n.d.) (*Top Pharmaceuticals & Drugs Companies in India, Top Pharmaceuticals & Drugs Stocks in India by Market Capitalisation, List of Top Pharmaceuticals & Drugs Stocks in India {2023} - BSE*, n.d.)

Company Name	Market Cap (Rs in cr)
Sun Pharma	236,766.37
Divis Labs	86,713.98
Dr Reddys Labs	81,763.52
Cipla	73,265.65

Company Name	Market Cap (Rs in cr)
Torrent Pharma	55,645.51
Zydus Life	52,619.43
Abbott India	47,405.28
Alkem Lab	42,055.20
Aurobindo Pharm	36,120.19
Lupin	32,245.41

India is recognized as the primary global supplier of generic drugs and is renowned for its cost-effective vaccines and generic pharmaceuticals (Johnson, 2011; Marathe et al., 2020) The Indian pharmaceutical sector has undergone significant growth and development over time and is presently positioned as the third largest producer of pharmaceuticals by volume. This thriving industry has experienced a compound annual growth rate of 9.43% over the past nine years. The Indian pharmaceutical industry comprises several significant segments, including generic medicines, prescription and over-the-counter bulk drugs, vaccines, contract research and manufacturing, biosimilars, and biologics. India possesses the greatest amount of pharmaceutical manufacturing plants that adhere to the regulations of the United States Food and Drug Administration (USFDA)(Aufegger et al., 2021). Additionally, the country boasts of 500 active pharmaceutical ingredient (API) producers, contributing to approximately 8% of the global API market.

The pharmaceutical industry in India caters to more than half of the worldwide demand for diverse vaccines, 40% of generic drug demand in the United States, and a quarter of all medication in the United Kingdom. The national pharmaceutical sector comprises a complex system of approximately 3,000 pharmaceutical enterprises and around 10,500 production facilities. India holds a significant position in the worldwide pharmaceutical industry. Additionally, the nation possesses a substantial group of scientists and engineers who possess the capacity to propel the sector towards further advancements. At present, Indian pharmaceutical companies are responsible for supplying more than 80% of the antiretroviral drugs utilized worldwide in the fight against AIDS, also known as acquired immune deficiency syndrome. India has gained the reputation of being the "medicine capitol of the world" owing to the high quality and cost-effectiveness of its pharmaceutical products.

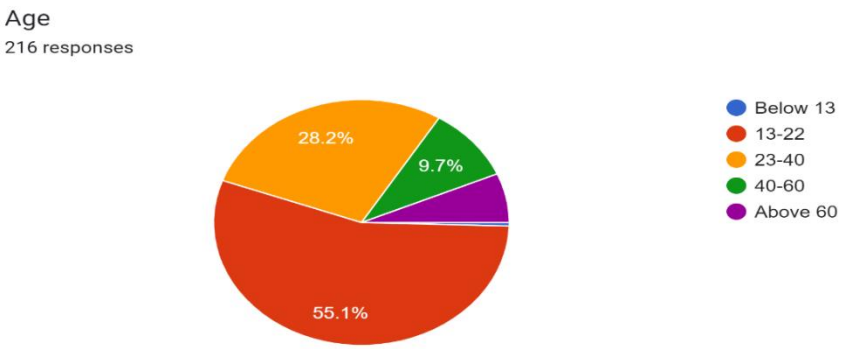
The Indian pharmaceutical industry.

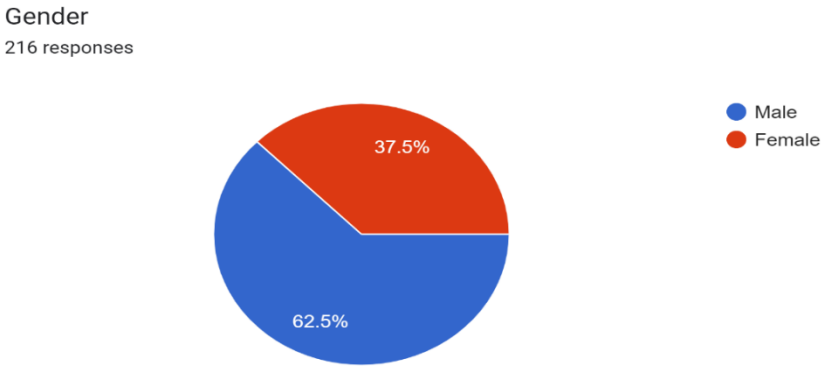
The Indian pharmaceutical sector is renowned worldwide for its production of cost-effective vaccines and generic drugs. At present, it holds the third position in terms of pharmaceutical production volume globally. India's pharmaceutical industry ranks third globally in terms of volume and fourteenth in terms of value. The pharmaceutical industry presently constitutes approximately 1.72% of the gross domestic product of the nation.

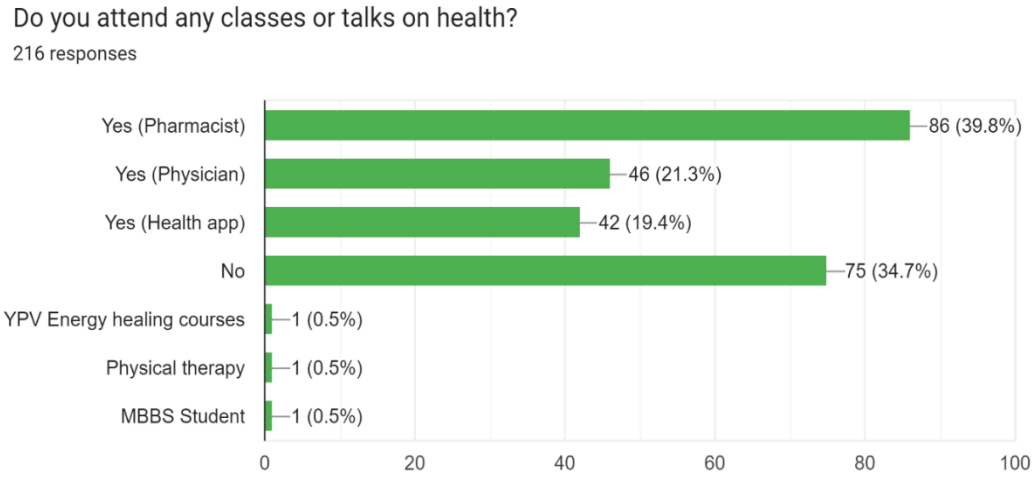
As per a recent report by EY FICCI, the Indian pharmaceutical marketplace is projected to attain a value of US$ 130 billion by the conclusion of 2030, owing to the increasing agreement on the provision of novel and inventive therapies to patients. The projected estimation suggests that the worldwide market for pharmaceutical products will exceed the US$ 1 trillion threshold by the year 2023

3. ANALYSIS AND FORECAST

As per the findings of the team's survey, a total of 216 responses were analyzed. The results indicate that the majority of the respondents, accounting for 55.1%, belonged to the age group of 13-22 years. The subsequent age group of 23-40 years constituted 28.2% of the respondents. The age group of 40-60 years accounted for 9.7% of the respondents, while those aged above 60 years constituted 6.5% of the total responses. Of the total responses, 62.5% were attributed to the female gender, while 37.5% were attributed to the male gender. Ahmedabad received the highest number of responses, then Surat, Pune, and Himatnagar.

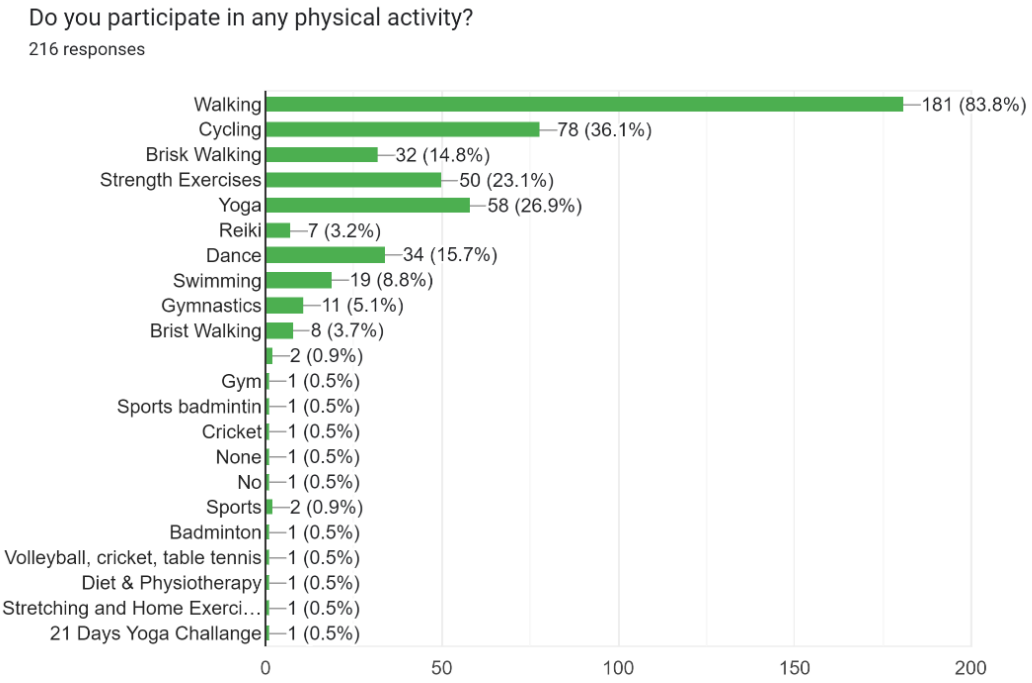






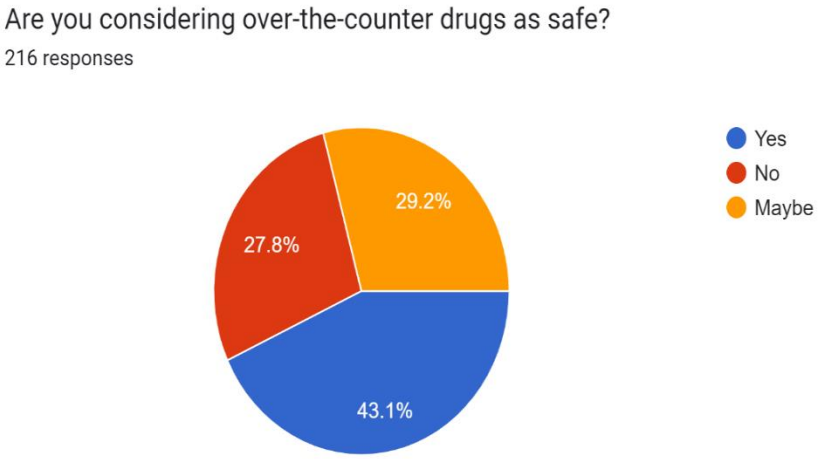
As per the questionnaire, 39.8% respondents were attending pharmacy classes, 21.3% respondents were attending physician classes/talks, 19.4% respondents were using health apps, 34.7% respondents weren’t engaging in any classes or talks on health, 0.5% were attending YPV energy healing courses, 0.5% were attending physical therapy course and 0.5% were MBBS student.

1 in 5 adults have tried using fitness trackers and health apps.

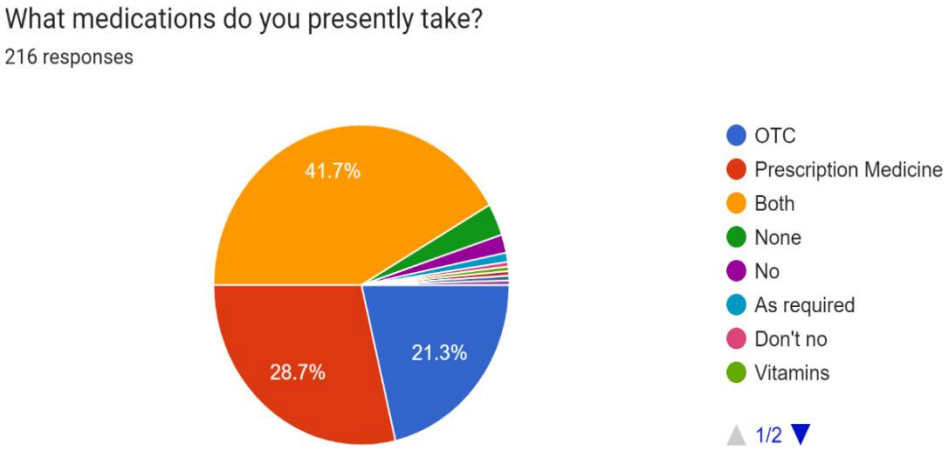


The study found that a majority of the respondents, specifically over 80%, engaged in walking, while 36.1% participated in cycling. Additionally, 14.8% of respondents reported engaging in brisk walking, 23.1% in strength exercising, 26.9% in yoga, 3.2% in reiki, 15.7% in dance, 8.8% in swimming, and 5.1% in gymnastics.

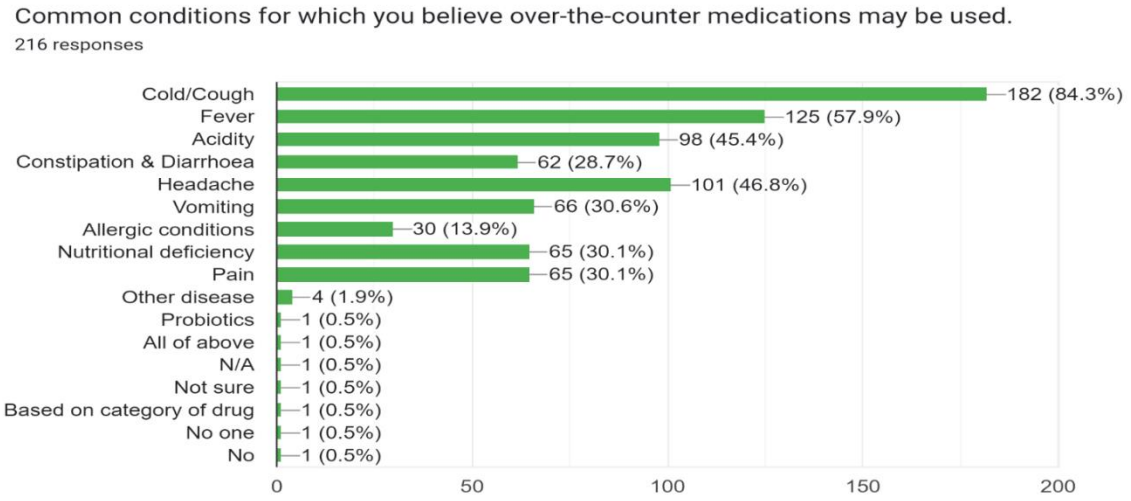
This data shows that walking and cycling are the most popular forms of exercise among the respondents, followed by strength exercising and yoga. Other forms of exercise, such as reiki, dance, swimming, and gymnastics, are less popular but still widely practiced.



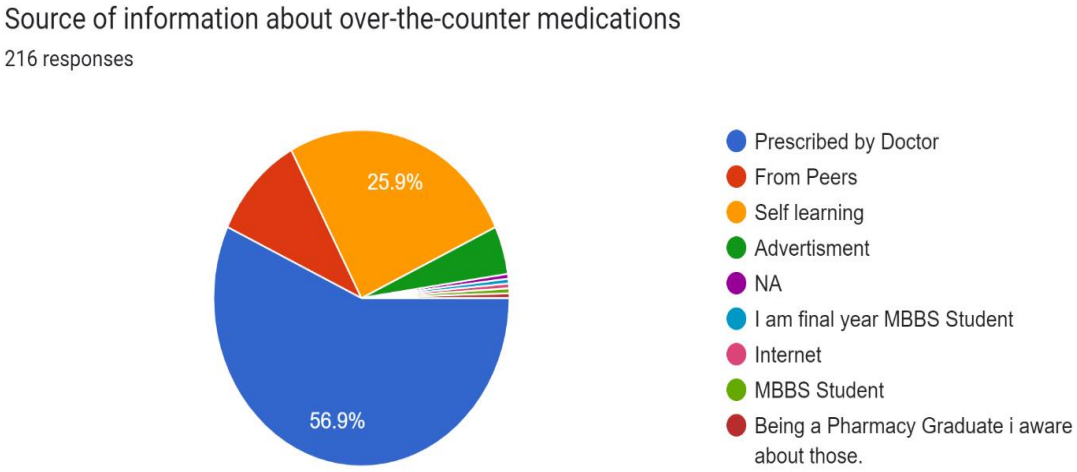
According to the survey results, 43.1% of the participants expressed agreement regarding the safety of over-the-counter drugs. Conversely, 27.8% of the respondents disagreed with the notion that drugs available without a prescription are safe, while 29.2% of the participants were uncertain about the safety of such drugs. This shows that despite the widespread availability of over-the-counter drugs, there is still a large segment of the population that is wary of their safety. This could be due to a lack of information about the safety and efficacy of these drugs, or it could be due to negative experiences with them.



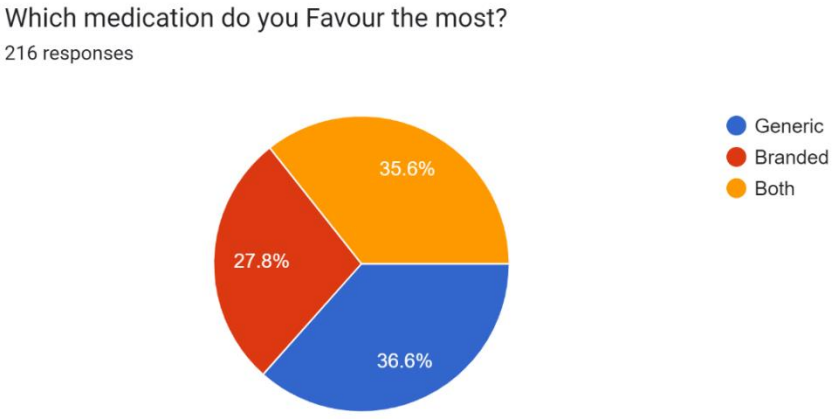
The results indicate that a minority of respondents, specifically 21.3%, reported taking over-the-counter (OTC) drugs, while a slightly larger proportion, namely 28.7%, reported taking prescription medication. However, a significant proportion of respondents, accounting for 41.7%, reported taking both over-the-counter and prescription medication.



The results of the survey indicate that a significant proportion of respondents (84.3%) believe that over-the-counter (OTC) medications are appropriate for the treatment of cold and cough symptoms. Additionally, 57.9% of respondents believe that OTC medications may be used for fever, while 45.4% believe they may be used for acidity. A smaller proportion of respondents (28.7%) believe that OTC medications may be used for constipation and diarrhea, and 46.8% believe they may be used for headache. Furthermore, 30.6% of respondents believe that OTC medications may be used for vomiting, and only 13.9% believe they may be used for allergic conditions. Finally, 30.1% of respondents believe that OTC medications may be utilized for nutritional deficiency and pain, respectively.

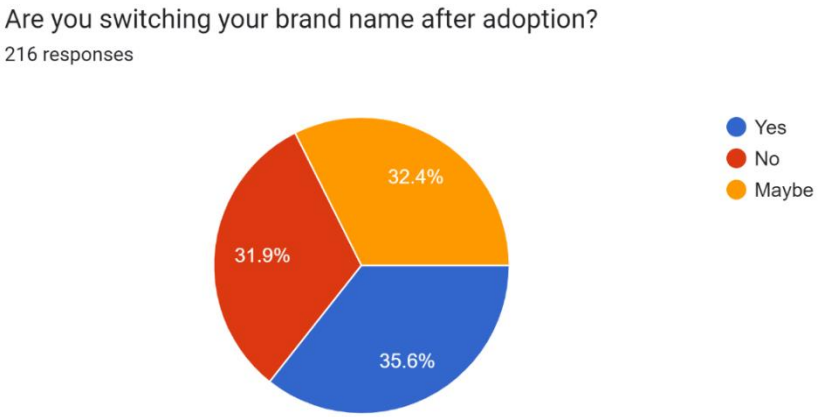


When inquiring about the origin of knowledge regarding non-prescription drugs. According to the survey results, a majority of the respondents (56.9%) reported being prescribed over-the-counter (OTC) medications by doctors. A significant proportion of the respondents (25.9%) reported self-learning about OTC medications, while a smaller percentage (10.2%) reported learning about them from peers.



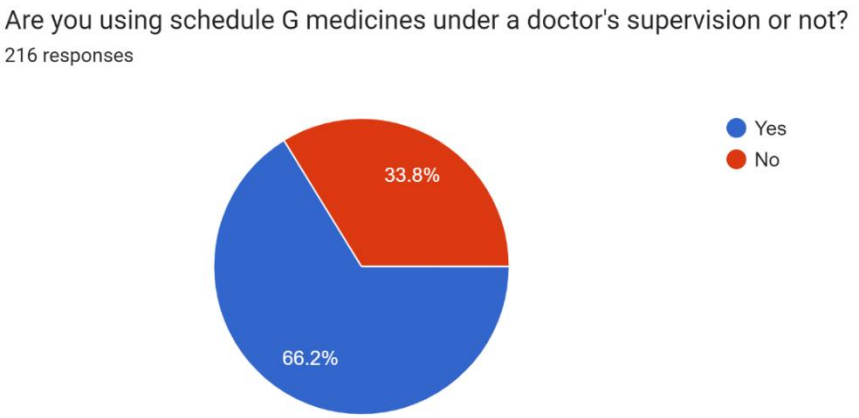
The results of the survey indicate that 36.6% of the participants preferred generic medications, while 27.8% preferred branded medications. Additionally, 35.6% of the respondents indicated a preference for both generic and branded medications.

This shows that a large majority of the participants are open to using both types of medications, depending on the situation. Furthermore, it appears that the participants overall prefer generic medications more than branded ones.



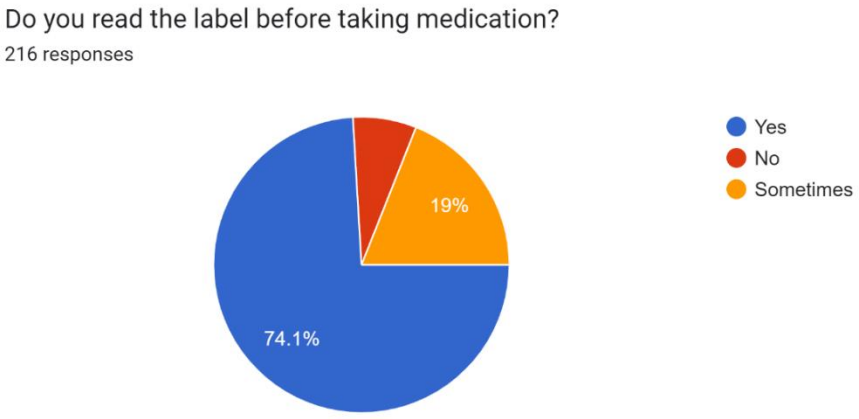
According to the survey results, 35.6% of the participants expressed their willingness to switch to a different brand. On the other hand, 31.9% of the respondents stated that they were not inclined to change to another brand, while 32.4% of the participants remained uncertain about their willingness to change to a different brand.

This suggests that, overall, more people are open to the idea of switching brands than those who are not. However, the number of people who are uncertain is also quite high, indicating that a significant portion of the population is still undecided on the matter.



Of the respondents surveyed, 66.2% reported using schedule G medications while under the supervision of a medical professional, while 33.8% reported not taking schedule G drugs under such supervision.

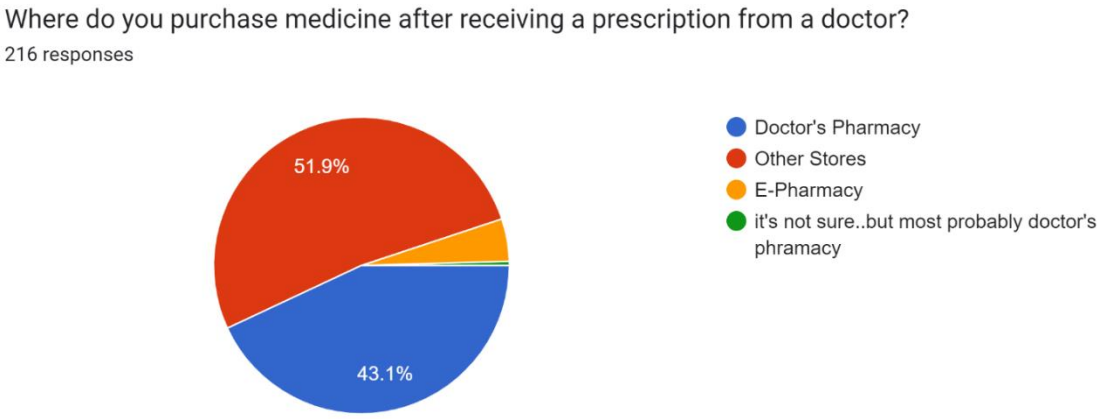
This suggests that while a majority of the respondents were under the care of a medical professional while taking schedule G medications, a significant minority chose to take these drugs without professional oversight.



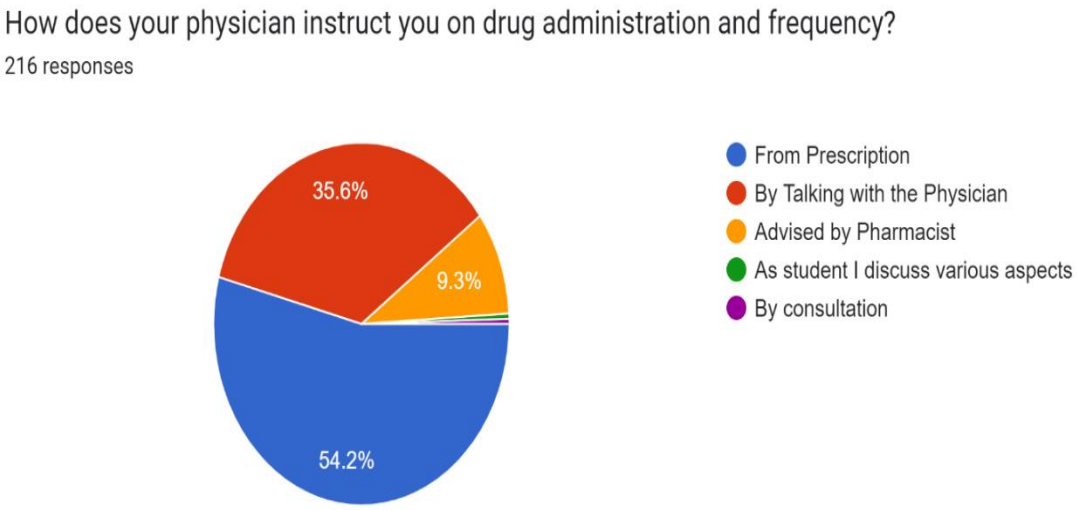
A majority of the respondents, specifically 74.1%, indicated that they read the medication label prior to consumption. Meanwhile, 19% of the respondents reported that they

occasionally read the label before taking medication, and 6.9% of the respondents stated that they do not read the label before consuming medication.

These results demonstrate that the majority of respondents are aware of the importance of reading medication labels before taking medication. On the other hand, the results also show that there is still a sizable portion of the population that does not read labels before taking medication, highlighting the need for further education and awareness.

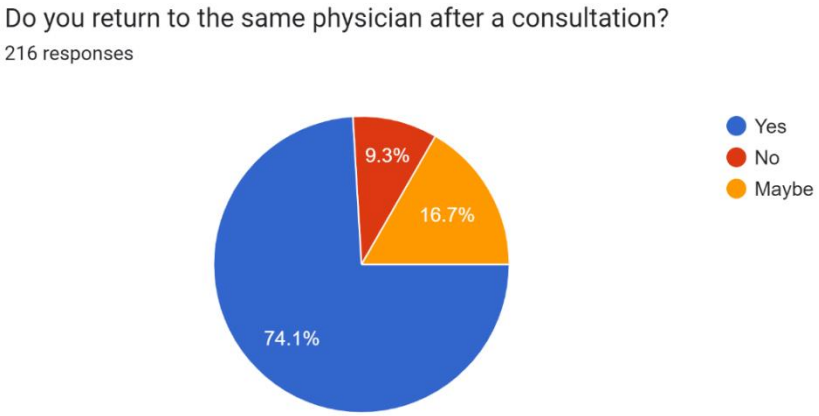


After getting a prescription from a physician, 43.1% of respondents buy medication from the doctor's pharmacy; however, 51.9% of respondents buy medication from other pharmacy shops, and 4.6% of respondents buy medication from an online drugstore. This could be because of the convenience of having other shops nearby, or the better prices they can get online. Additionally, many people may not be comfortable buying drugs online, which could explain why a smaller portion of respondents are buying medication online.



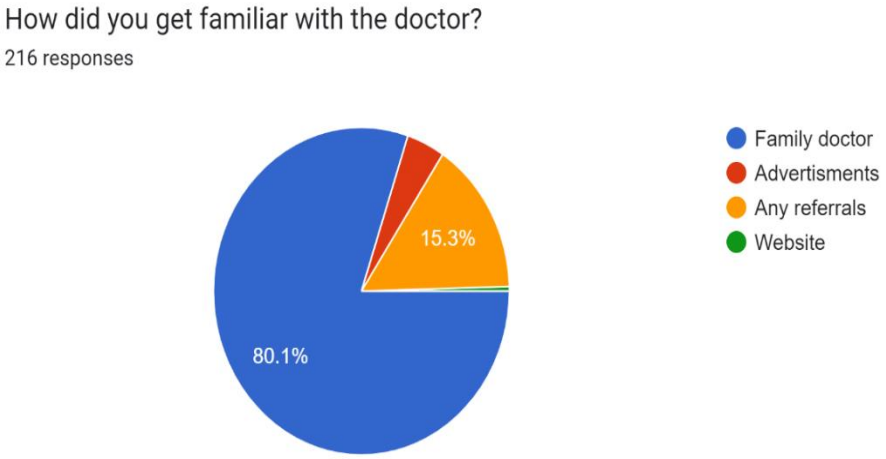
According to the survey results, a majority of the respondents (54.2%) reported that their physician provides them with instructions regarding how to use the medication and frequency as per the prescription. A smaller proportion of respondents (35.6%) indicated that they receive such instructions through verbal communication from their physician, while a minority (9.3%) reported receiving instructions from the pharmacist.

This indicates that, while verbal communication is still a popular form of providing instructions, the majority of physicians are now relying on written instructions to ensure that their patients correctly understand how to use the medication. This helps to reduce the risk of medication errors and ensure that patients are taking the right dosage.



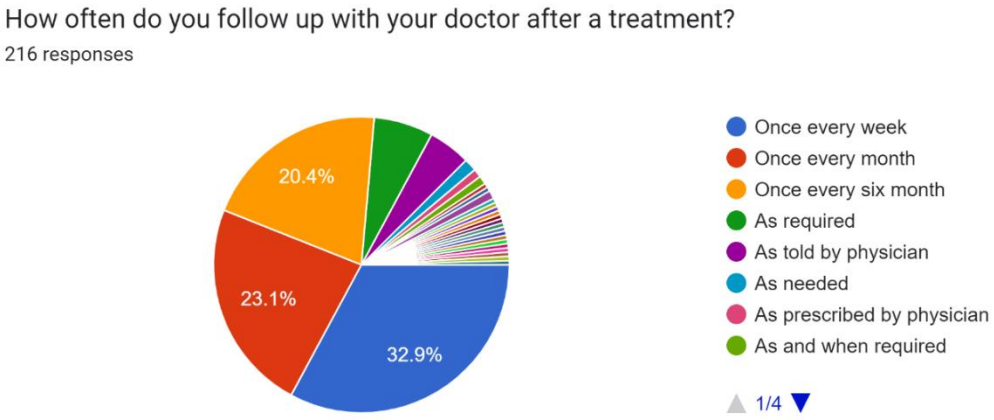
The subsequent segment pertained to pharmaceuticals that require a medical practitioner's prescription. When inquired about their preference for returning to the same medical professional after a consultation, 74.1% of the respondents indicated that they regularly go back to the same physician, while 9.3% reported not returning to the same physician. Additionally, 16.7% of the participants expressed uncertainty regarding their inclination to return to the same physician.

This suggests that the majority of participants had a positive experience with the physician and were likely to return for follow-up consultations. Furthermore, the uncertainty of the remaining participants may be attributed to the availability of multiple healthcare options and the lack of knowledge regarding the quality of care provided by different practitioners.

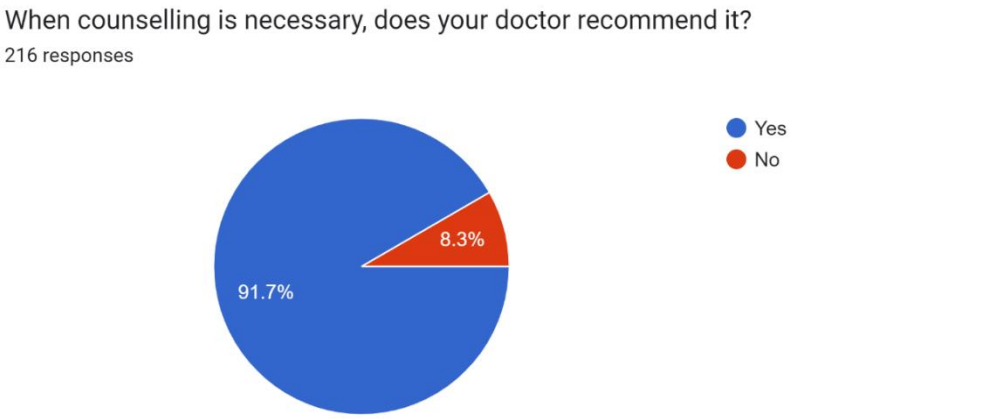


The majority of respondents, specifically 80.1%, reported that their doctor was a family doctor. A smaller proportion of respondents, 15.3%, reported becoming acquainted with their medical professional through referrals, while only 4.2% reported becoming familiar with their physician via advertisements. These results indicate that most people rely on trusted family members and friends for referrals when looking for medical professionals,

which suggests that word-of-mouth has a strong influence in the decision-making process.

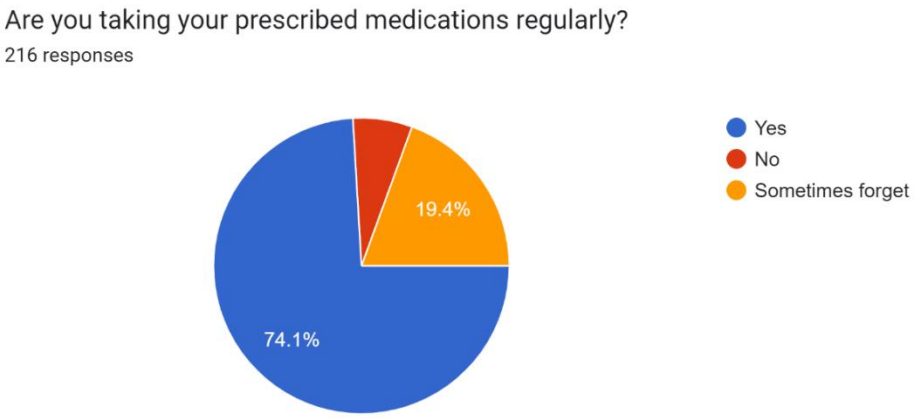


32.9% respondents get a follow up once every week with their doctor after a treatment, 23.1% get a follow up once every month with their doctor after a treatment and 20.4% respondents get a follow up once every six months. This data indicates that the majority of respondents need to follow up with their doctor after a treatment more frequently than once every six months, with the most frequent being once a week.



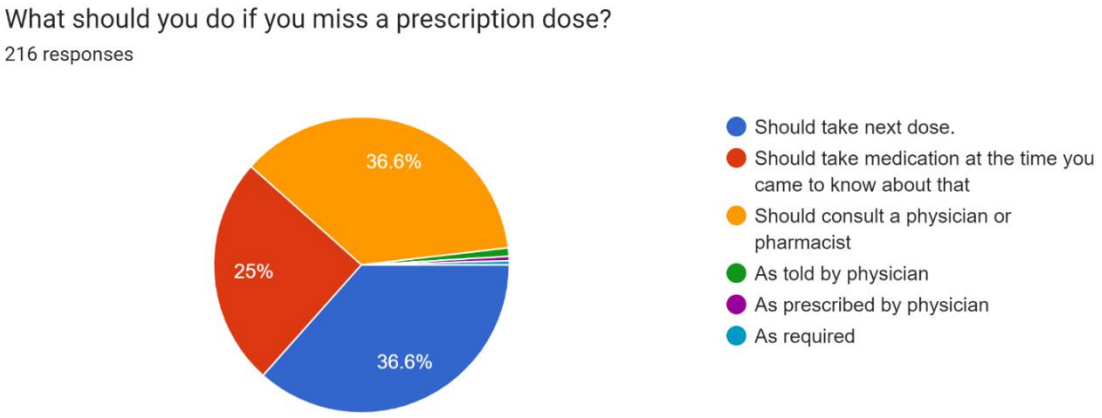
The results indicate that a majority of the respondents, specifically 91.7%, agreed that their physician recommended counselling when deemed necessary, while a minority of 8.3% disagreed with this statement.

This indicates that physicians prioritize the mental well-being of their patients by recommending counselling when needed. It also suggests that there is an understanding of the importance of mental health among the respondents.

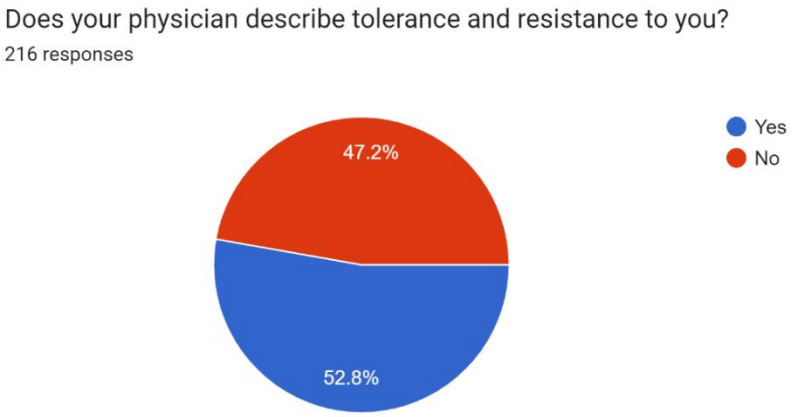


The study found that 74.1% of participants adhered to their prescribed medication regimen, whereas 19.4% reported occasional forgetfulness in taking their medication, and 6.5% reported non-adherence to their prescribed medication.

This shows that the majority of participants followed the prescribed medication regimen, however there is still a significant portion of people who did not adhere to their medication, either due to forgetfulness or not taking it at all.

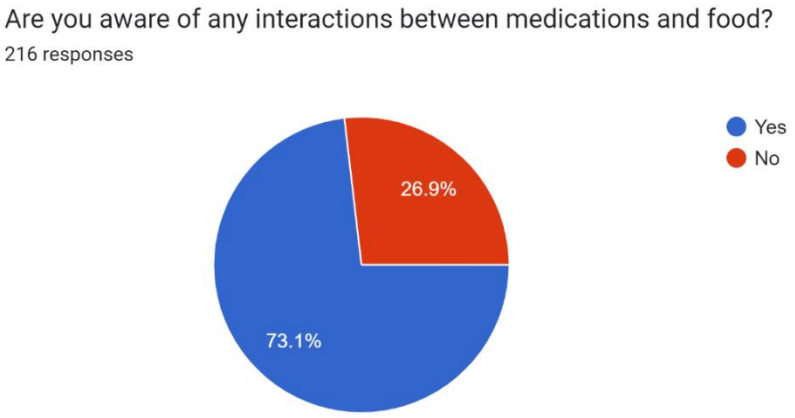


The study found that 36.6% of participants self-administer the missed dose when faced with a missed prescription dose, while an equal percentage of respondents seek advice from a healthcare professional. Additionally, 25% of participants reported taking the missed medication upon realizing that they missed the dose.



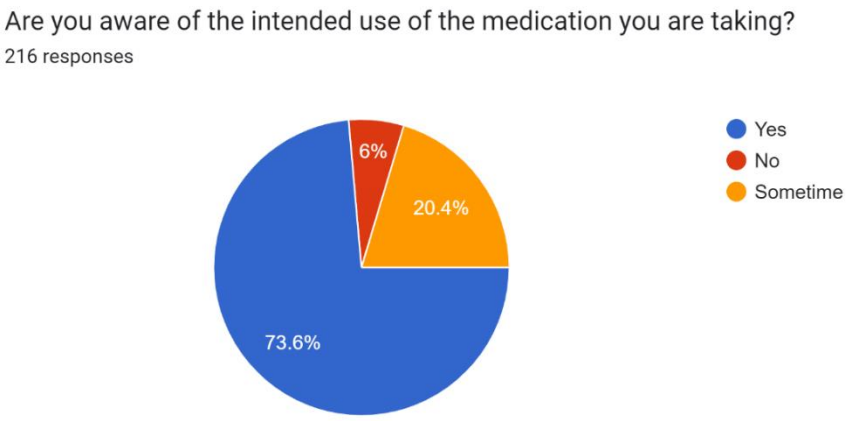
The results indicate that 52.8% of the participants agreed that their physician provides them with information regarding tolerance and resistance, while 47.2% of the participants disagreed with the statement that their physician does not provide them with such

information.



A total of 73.1% of the respondents demonstrated awareness regarding the potential interactions that may occur between medications and food.

Conversely, 26.9% of the respondents lacked awareness regarding such interactions.



A total of 73.6% of the respondents demonstrated awareness regarding the intended use of the medication they were consuming. Conversely, 6% of the respondents lacked awareness regarding the intended use of the medications they were consuming. Additionally, 20.4% of the respondents exhibited partial knowledge regarding the intended use of the medication they were consuming.

3.1 Material and methods

Subject Characteristics

According to the survey that was carried out with a sample size of 216 responds that were collected, 55 percent of the population was male and the other were female, and maximum response was been acquired by age group from 13-22 that Generation Z age, as well as geographical based we received maximum response from Ahmedabad, followed by Surat and Pune.

Sampling Procedure

Separated individuals based on many different factors, analyzed consumer trends and the behavioral analysis of consumers who bought over-the-counter and prescription medicine, and found that healthy people and patients are now more conscious about their health and are following preventive testing for earlier detection based on symptoms.

Sampling Precision

The sample size that we acquired was unbiased, and it was obtained from professionals, students, and other individuals. After that, individuals were chosen at random and classified according to their behavioral pattern regarding the purchase and future use of over-the-counter and prescription drugs.

Data Collection

Online surveys and questionnaires, which are examples of prospective studies in which the findings are not yet known, were the method of data collecting that we used, and the gathered data were plotted according to categories that we determined.

4. DISCUSSIONS

According to the findings of the survey that we conducted, our major goal was to find out how many people are aware of the drugs that they are taking in order to make an informed medical decision. In furtherance of this, we wanted to find out what proportion of people employ generic medicine, educate patients about tolerances and resistance, and learn how to differentiate between schedule medications that have been prescribed by doctors and pharmacists. A key part in instructing patients about medicine and their health is played by medical professionals such as pharmacists and doctors.

5. CONCLUSIONS

In conclusion, the significance of drugs in the health care system has been brought into sharp focus by the COVID-19 a pandemic Prescription treatments have been critical in treating severe instances and long-term impacts of the virus, while OTC medications have been effective in controlling moderate symptoms. The development and research of over-the-counter (OTC) and prescription drugs should be prioritized to assure their availability and proper usage as we keep going through the current crisis and plan for future ones. When it comes to managing the health of people and communities, a holistic strategy that takes into account the pros and downsides of all available medications is essential. Consumers' preference for self-medication increased after COVID 19, with vitamin supplements, cough syrup, and medicines like loperamide being the most popular choices when symptoms were mild. However, when symptoms became more severe, respondents were more likely to seek medical attention from a doctor. A recent poll found that the majority of patients are now health-focused, and as a result, consumers are more health-conscious and tag-readers.

It's vital to acknowledge the value of doctors and nurses in the drug management process. In the context of prescription drugs in particular, they play a crucial role to make sure that they are administered correctly and safely. Therefore, it is essential to invest in the

education and training of medical staff to ensure that they have the knowledge and abilities to prescribe medications safely and effectively.

The epidemic has also brought attention to the necessity for vulnerable individuals to have easier access to treatments they may need to survive. Those in outlying or rural locations, as well as those without access to adequate medical care or financial means, fall into this category. As a result,

Measures should be taken to increase patient access to pharmaceuticals via channels including telemedicine and community health programs.

The overall significance of drugs in the health care system has been highlighted by the recent COVID-19 epidemic. To enhance the health of people and communities, it will be crucial moving ahead to emphasize education, research, and access to drugs.

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"PREDICTIONS AND VIEWS ON THE FUTURE OF OTC AND PRESCRIPTION DRUG USAGE"

Appendix

Questionnaire used for Final Survey (Online mode)

Dear Respondent,

The objective of this research is to propose a conceptual framework which attempts to analyse the trends of consumption of OTC and Prescription Medicine.

In contrast to prescription pharmaceuticals, which may only be sold to consumers with a valid prescription, over the counter (OTC) drugs are offered directly to customers without the need for a prescription from a healthcare practitioner.

I know your time is valuable but I assure it will hardly take 2 minutes. Your support will be appreciated.

Section I

Name _____

City where you live in _____

E-mail id _____

1. Age (yrs): (I) Below 13 (II) 13-22 (III) 23-40 (IV) 40-60 (V) Above 60

2. Gender: (I) Male (II) Female

3. Do you attend any classes or talks on health? (I) Yes (Pharmacist) (II) Yes (Physician) (III) Health App (IV) No

4. Do you participate in any physical activity?

- Walking
- Cycling
- Brisk Walking
- Strength Exercises
- Yoga

- Reiki
- Dance
- Swimming
- Gymnastics

5. Are you considering over-the-counter drugs as safe? (I) Yes (II) No (III) Maybe

6. What medications do you presently take?

- OTC
- Prescription Medicine
- Both

7. Common conditions for which you believe over-the-counter medications may be used.

- Cold/Cough
- Fever
- Acidity
- Constipation & Diarrhoea
- Headache
- Vomiting
- Allergic Condition
- Nutritional Deficiency
- Pain

8. Source of information about over-the-counter medications

- Prescribed by Doctor
- From Peers
- Self-Learning
- Advertisement

9. Which medication do you Favour the most?

- Generic

- Branded
- Both

10. Are you switching your brand name after adoption? (I) Yes (II) No (III) Maybe

11. Are you using schedule G medicines under a doctor's supervision or not? (I) Yes (II) No

12. Do you read the label before taking medication? (I) Yes (II) No (III) Sometimes

13. Where do you purchase medicine after receiving a prescription from a doctor?

- Doctor Pharmacy
- Other Store
- E-Pharmacy

14. How does your physician instruct you on drug administration and frequency?

- From Prescription
- By talking with the physician
- Advised by Pharmacist

Section II

15. Do you return to the same physician after a consultation? (I) Yes (II) No (III) Maybe

16. How did you get familiar with the doctor?

- Family Doctor
- Advertisements

- Any Referrals

17. How often do you follow up with your doctor after a treatment?

- Once every Week
- Once every Month
- Once every Six Month

18. When counselling is necessary, does your doctor recommend it? (I) Yes (II) No

19. Are you taking your prescribed medications regularly? (I) Yes (II) No (III)

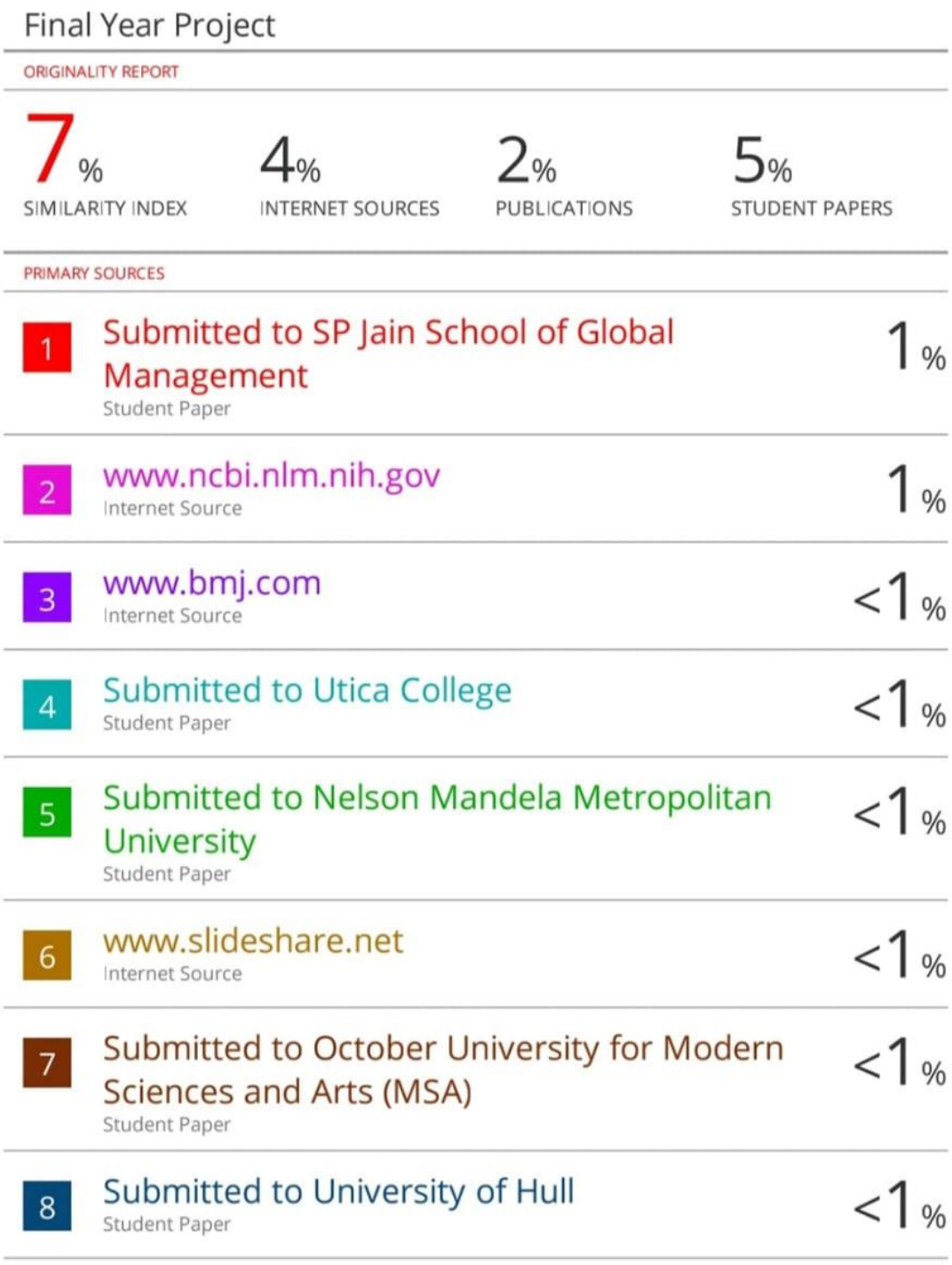
20. What should you do if you miss a prescription dose?

- Should take next dose
- Should take medication at the time you came to know about that
- Should consult a physician or pharmacist

21. Does your physician describe tolerance and resistance to you? (I) Yes (II) No

22. Are you aware of any interactions between medications and food? (I) Yes (II) No

23. Are you aware of the intended use of the medication you are taking? (I) Yes (II) No (III) Sometime



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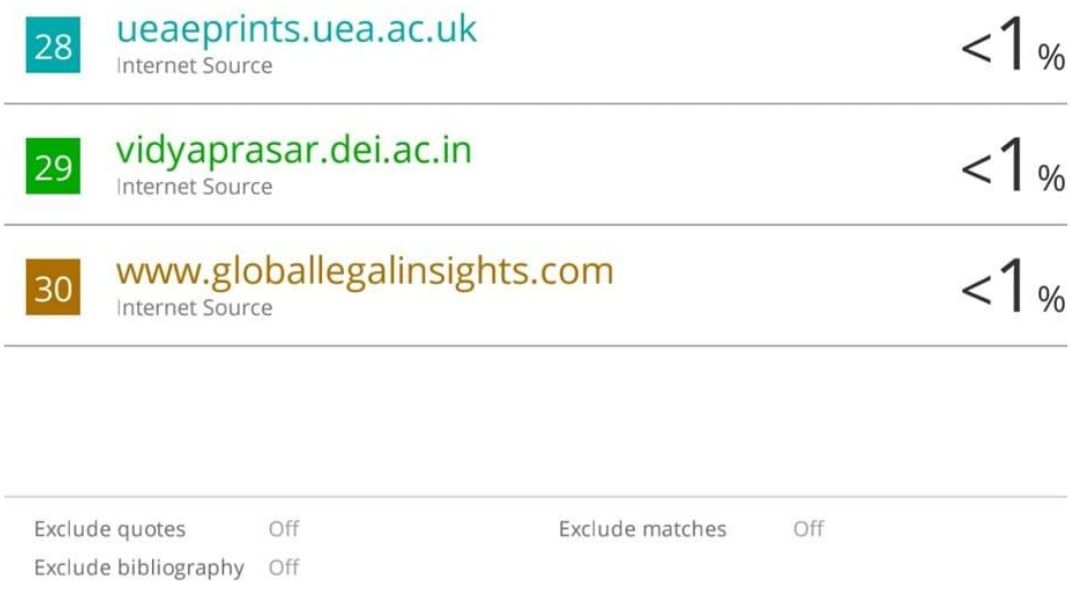
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