

**“MARKET RESEARCH ON FACTORS INFLUENCING PHYSICIANS PRESCRIBING
BEHAVIOUR FOR MACROLIDE ANTIBIOTICS OVER OTHERS”**

DISSERTATION SUBMITTED

TO



THE IIHMR UNIVERSITY, JAIPUR

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MASTER OF BUSINESS ADMINISTRATION (MBA)

IN

PHARMACEUTICAL MANAGEMENT

Submitted by

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CERTIFICATE OF ORIGINALITY OF WORK

It is to certify that AMARJIT BERA (ROLL NO: IIHMR-U/02/2021-23/0285) student of IIHMR UNIVERSITY, JAIPUR has carried out the Dissertation work entitled “Market Research on Factors Influencing Physicians Prescribing Behaviour for Macrolide Antibiotics Over Others “under my guidance and supervision for the partial fulfillment of the requirement for the award of Master of Business Administration (MBA) in Pharmaceutical Management Degree of IIHMR UNIVERSITY. The results presented in this report have not been included in any other paper submitted for the award of any other degree to any other Institute or University.

.....

Dr. Saurabh Kumar Banerjee

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DECLARATION OF ORIGINALITY

The undersigned candidate, as a partial fulfillment of the degree of Master of Business Administration (MBA) in Pharmaceutical Management Degree. All of the data in this study were gathered and presented in compliance with academic norms and ethical conduct. I further certify that I correctly attributed and referenced all materials and conclusions as required and data that are not, I hereby declare that this report contains literature survey and /or survey reports done by original to my work.

TITLE OF PROJECT

“Market Research on Factors Influencing Physicians Prescribing Behaviour for Macrolide Antibiotics Over Others”

NAME OF STUDENT: AMARJIT BERA

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SIGNATURE OF STUDENT

DATE:

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MBA in Pharmaceutical Management (2021-23)

ABSTRACT

BACKGROUND: The purpose of the study is to see the factors which are responsible for the physicians or healthcare professionals to prescribe macrolides antibiotics to the Indian population while they are practicing. This study mainly inspired us due to the recent time the excessive use of antibiotics in different patients for each and every disease which leads to antibiotic resistant for maximum population.

AIM: When treating a variety of infections, macrolide antibiotics have been found to be effective substitutes for penicillin and cephalosporins. There are several macrolides accessible right now. When selecting a certain macrolide, consider the types of infectious agents, the medication's tolerability, and the ease of use. Dosing and potential drug interactions must also be considered. To treat most gram-positive bacteria, erythromycin, azithromycin, and clarithromycin are all equally effective. To provide accurate use of antibiotics prescribed by the doctors whom should not be manipulated, or corrupted by any means was been studied.

METHOD: The primary method to extract data was to ask direct questionnaire to the doctors who are using antibiotics for their treatment to the patients. Here, we get to know about the usage, types and factors related to prescribe macrolides antibiotics. Then in the secondary method used for the extraction of data was reading the articles, journals, news, webpages and published reports. Here get to know about present macrolide market globally, then the studies done in different parts of India regarding the antibiotics usage and factors which influenced the practitioners for treating the patients with antibiotics specially when dealing with the macrolide antibiotics.

RESULTS: We identified the outcomes of the research findings that maximum doctors are in favor of using the antibiotics for different beneficials for the patients, keeping in the adverse effect of particular drugs. Many doctors prefer to see the cost effectiveness, efficacy, safety profile and patients' convenience of the patients, then get to prescribe any drugs. Then macrolides antibiotics are extensively used in upper respiratory infections, lower respiratory infections followed by STIs, others like fever, flu.

Keywords: prescription methods, direct questionnaire, healthcare professionals, and research findings

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ABBREVIATIONS

COPD	Chronic obstructive pulmonary disease
US FDA	Food and Drug Administration, USA
LMICs	Lower-middle-income nations
MRSA	Methicillin-resistant Staphylococcus aureus
VRSA	Vancomycin Resistant Staphylococcus aureus
CAGR	Compound Annual Growth Rate
ABSSSIs	Acute bacterial skin and skin structure infections
MD Medicines	Doctor of Medicine
STIs	Sexually transmitted infections
Pvt ltd	Private Limited Company
DDDs	Defined Daily Doses
R&D	Research And Development

CHAPER 1

INTRODUCTION

A class of medications known as macrolide antibiotics is employed to prevent and treatment certain bacterial infections. Azithromycin, clarithromycin and erythromycin are frequently prescribed medicines for infections such tonsillitis, sinusitis, pneumonia, and sinusitis. They are also used to treat small infections of the skin and otitis media among young kids. Regardless of the presence or absence of clarithromycin resistance, clarithromycin is utilized to treat *Helicobacter pylori* infections in the usual triple therapy protocol. Macrolides are frequently employed in the treatment of chlamydial and gonococcal infections, two sexually transmitted diseases. This activity goes through the macrolide's mechanism of action, indications, contraindications, and other important aspects (including labelled off applications, dosing form, pharmacodynamics actions, pharmacokinetics actions, monitoring, and pertinent interactions).

Macrolides are naturally occurring substances of lactone ring with deoxy sugars attached. Certain macrolides are employed in pharmaceutical antimicrobial therapy because they exhibit antibiotic or antifungal characteristics. Erythromycin, which was initially administered in this way in 1952, was frequently prescribed for infections in people who were penicillin-allergic or whose illnesses were resistant to the drug.

The benefits of macrolide antibiotics treating different types of bacterial infections has received FDA approval. For example, pneumonia, sinusitis, pharyngitis, and tonsillitis are frequently treated with azithromycin, clarithromycin, and erythromycin. Additionally, the FDA has authorized its usage in pediatric patients having simple skin infections and others infection. Additionally, regardless of the presence of clarithromycin resistance, the use of clarithromycin is to treat *Helicobacter pylori* infections in the usual three types therapy protocol. The treatment of sexually transmitted illnesses including gonococcal and chlamydial infections with macrolides is also quite prevalent. Like other antibiotics, the majority of macrolide use is determined by the target organism's susceptibility and resistance levels. Macrolides also used in one of the main medications treat atypical pneumonia, which is typically brought on by pathogens like *Chlamydia pneumoniae*, *Legionella*, and *Mycoplasma pneumoniae*.

In different age population with non-cystic fibrosis bronchiectasis, macrolide helps in maintaining therapy which been proven to enhance life expectancy and holistic results. Additionally, it has been demonstrated that these drugs lessen the frequency of bronchiectasis exacerbations. These trials, however, did not find a decrease in hospital admissions related to exacerbations.

Macrolides continue to be a crucial component of COPD exacerbation therapy plans. These medications' anti-inflammatory and immunomodulating properties make them useful for treating COPD.

Marketing has a considerable impact on medical professional prescribing habits. Pharmaceutical companies use different types of strategies to promote their products, including advertisements, representatives who does sales, and CMEs (Continue Medical Educations). These techniques can have a significant impact on the medicines that doctors administer to the patients regarding a specific medicine.

The particular marketing components that have an impact on doctors' prescribing behaviours for macrolide antibiotics are little understood, despite the reality that marketing serves a critical role in helping to do so. This dissertation seeks to fill this gap in existing research by providing an extensive marketing assessment of the components that lead practitioners to choose macrolide antibiotics for treatment above various kinds of medications.

The main aim of this dissertation is to determine the key marketing components that impact the medical professionals' administration of macrolide antibiotics for treatment. This study intends to concentrate on the manner in which pharmaceutical company provide sales representatives and branding impact physician choices regarding the use of macrolide antibiotics. The research will also look into how medical professionals and patient demographic information interfere with prescribing adheres to macrolide antibiotics.

This study will help pharmaceutical companies build effective marketing strategies for macrolide antibiotics by offering a detailed marketing analysis of the elements that influence physician prescribing behavior for these antibiotics. This study will also shed light on how decision-makers may encourage good prescribing practices to address antibiotic resistance.

CHAPTER 2

LITERATURE REVIEW

Davari M, Khorasani E and Tigabu BM (2018) depicted in their review article provided the key to hospitals' control over other participants in the health sector, pharmaceutical companies' market share, and payers' aim to reduce costs, are physician prescription decisions. The differences in health sector spending are caused by variations in physician practice. With variances in practice, patient outcome also differs. Healthcare spending growth is significantly impacted by variations in physician practices. The relationship between healthcare spending and results, however, is shaky. The doctors' prescription of medications and ordering of laboratory tests differ greatly from one another. To accomplish the therapeutic goal and improve patient compliance, the clinical effectiveness and safety of medications are frequently taken into account.

The most often reported features was a physician's ways which included clinical experience, specialization, professional development, and practice choices.

The main factors mentioned to affect prescribing decisions were the personal inherited characteristics of the physician, the price of the medication, and ways of marketing and promoting techniques used by the pharmaceutical corporations.

Md Reza RS, *et al.* (2015) in their systemic review of literature in-depth analysis revealed that doctors underestimated the prevalence of antibiotic resistance despite having a general understanding of the issue as a clinical issue. The level of expertise among the practitioners was unrelated to their knowledge of antibiotic resistance rates. In this regard, doctors have a clear understanding of resistance as a challenge and exhibit awareness that this may diversify ongoing patient treatment. Few doctors, however, believed that antibiotic resistance was a significant issue in their own practice settings. This finding suggests that many doctors view the threat of antibiotic resistance as theoretical rather than practical, which may be diminishing the desire for behaviour change.

Doctors thought that having quick access to current information would improve their ability to choose narrow-spectrum medicines that had the best chance of being effective when prescribing antibiotics. The poor average score on understanding of antibiotic use and resistance, however, indicates that antimicrobial education has not been as effective as it could have been. Due to a lack of information, both patients and doctors mistakenly think that antibiotics are the conventional treatment for a variety of illnesses when in fact not every time case. Additionally, it is thought that doctors' personal experiences with antibiotic resistance will heighten their understanding of the significance of the negative impacts brought on by antibiotic resistance. As doctors grow via clinical practice, education, and training, their knowledge and use of antibiotics may also advance.

The cross-section study of SJ Chandy, *et al.* (2013) in Vellore of south India interpreted about the strong evidence connecting the use of antibiotics to bacterial resistance. Intervention tactics are required to keep antibiotic use and subsequent resistance in check. It is essential to conduct community surveillance to track antibiotic encounters and the factors that contribute to specific antibiotic misuse in order to develop effective interventions. Lower-middle-income nations (LMICs) hardly ever have such surveillance in place. This paper describes the patterns of antibiotic use and the difficulties encountered when creating similar monitoring systems in a low-income countries.

After study, findings were Health facilities differed in their patterns of antibiotic usage, indicating that all varieties of health facilities should be included in interventions. Despite the difficulties, our study demonstrates that it is viable to establish surveillance systems in LMICs, and the information obtained may be utilized to organize workable treatments, evaluate their effectiveness, and afterwards contain resistance.

CHAPTER 3

RESEARCH OBJECTIVE

- To conduct market analysis and descriptive study on Macrolide Antibiotics.
- To acquire knowledge on which aspects influence the physician's decision-making process regarding the administration of macrolide antibiotics.

RESEARCH QUESTIONS

- 1) How do physician demographics, specialty and prescribing patterns affect the methodology regarding their prescribing behaviours?
- 2) What are Macrolide Antibiotics? Its classification and current market scenario.
- 3) What aspects affect doctors' decisions to prescribe macrolide antibiotics?

CHAPTER 4

STUDY DESIGN AND METHODOLOGY

STUDY DESIGN:

Study type: Descriptive Study

Data source: Primary and Secondary research

Data collection Technique/ Tools:

Primary research: Structured Questionnaire

Secondary Research: Data from different articles, journals, websites and new articles.

Sample Size: 130 Respondents

Study Population: Medical practitioners with wide range of specialty

Sampling Technique: Non-Probability Convenient Sampling

Data Analysis Tool: Research Data Analysis Using Excel

METHODOLOGY

Primary data - Collected through surveys and interviews with healthcare professionals, pharmacists, and patients.

Secondary data - Collected through the analysis of published research articles, sales data, news article, blogs and reports in different webpages.

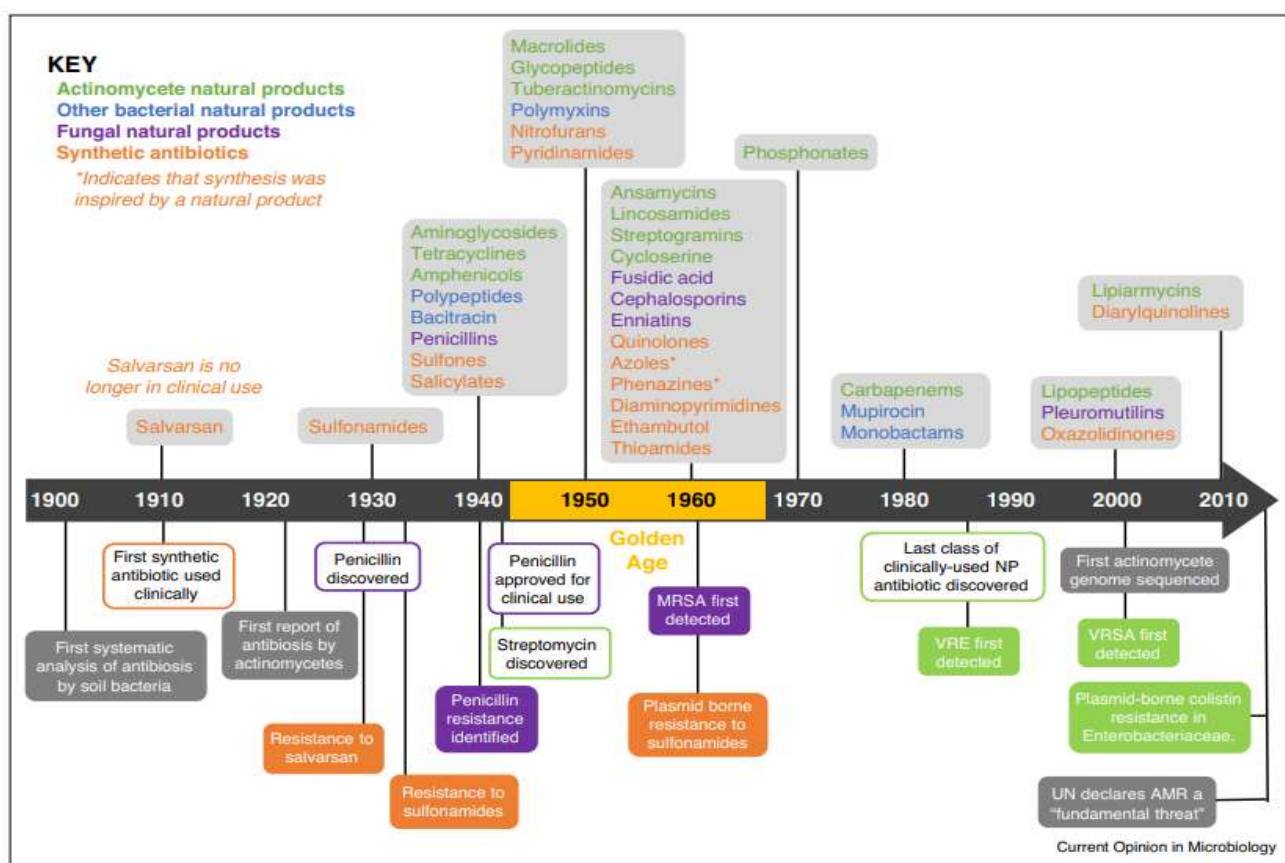
CHAPTER 5

OBSERVATIONS AND DISCUSSION

5.1 BRIEF HISTORY OF ANTIBIOTICS

The very initial antibiotic, salvarsan, became available in 1910. In fewer than 100 years since their introduction, antibiotics have dramatically changed modern medicine and extended the median lifespan of individuals by 23 years. The golden age of antibiotic discovery using organic products peaked in the middle of the 1950s and was triggered with the finding of penicillin in 1928. Since that time, there has been an ongoing decline in the discovery and development of new antibiotics, which has contributed to the emergence of drug resistance in a number of human illnesses, leading to today's antimicrobial resistance problem. Here, we provide an outline of the development of antibiotics, their classes, and their origins. We argue that the next phase of the discovery of antibiotics looks optimistic when innovative methods like genome analysis and engineering are applied for discovering novel organic molecules with a wide range of bioactivities.

Fig.1 : Evolution of Antibiotics over years:



Timeline showing the decade new classes of antibiotic reached the clinic. The antibiotics are coloured per their source: green = actinomycetes, blue = other bacteria, purple = fungi and orange = synthetic. At the bottom of the timeline are key dates relating to antibiotic discovery and antimicrobial resistance, including the first reports of drug resistant strains methicillin-resistant *S. aureus* (MRSA), vancomycin-resistant enterococci (VRE), vancomycin-resistant *S. aureus* (VRSA) and plasmid-borne colistin resistance in Enterobacteriaceae.

5.2 MACROLIDE ANTIBIOTICS

Macrolides are organic substances that exist in nature and consist only lactone ring attached deoxy sugars attached. Pharmaceutical antimicrobial therapy employs certain macrolides that have antibiotic or antifungal characteristics. In 1952, erythromycin became the first macrolide to be used in this way, and it was frequently prescribed for infections in those who were penicillin-allergic or whose illnesses were resistant to the drug.

Several different bacterial illnesses have been licensed by the FDA for treatment with macrolide antibiotics. For example, pneumonia, sinusitis, pharyngitis, and tonsillitis are frequently treated with azithromycin, clarithromycin, and erythromycin. Additionally, the FDA has authorized its usage in pediatric patients with skin allergies. In addition, regardless of the presence of resistance to clarithromycin, which also treats *Helicobacter pylori* infections in the protocol for therapy.

Macrolides are frequently employed in the treatment of chlamydial and gonococcal infections, two sexually transmitted diseases. Like other antibiotics, the occasional macrolide use is determined by the target organism's susceptibility and level of resistance. Additionally, macrolides have been a mainstay in the treatment facility of atypical pneumonia, which is brought on by pathogens like *Mycoplasma pneumoniae*, *Legionella*, and *Chlamydia pneumoniae*.

Fig.2: Classification of Macrolides:

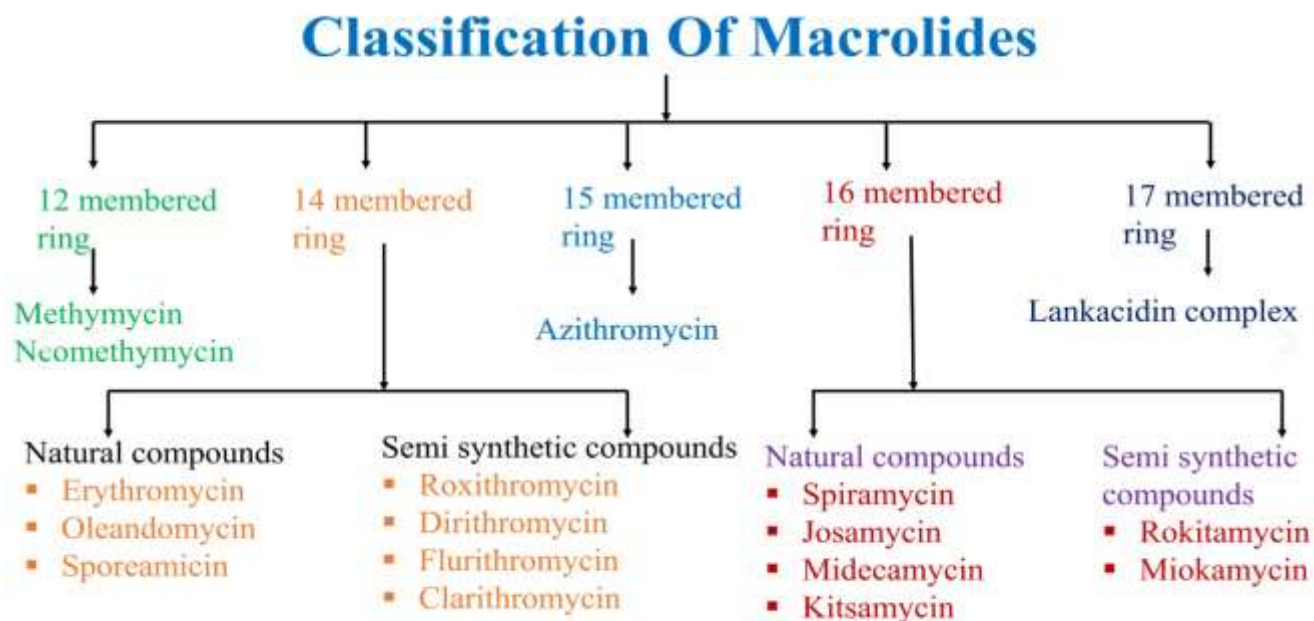


TABLE 1: MACROLIDES ANTIBIOTIC MARKET REPORT

Attribute/Metric for Report	Details
SIZE OF MARKET	USD 146,432.1 Million
CAGR	13.1%
BASE YEAR	2021
FORECASTING PERIOD	2022-2030
DATA FROM HISTORY	2020
UNITS FOR FORCAST	Value (USD Million)
REPORT COVEAGE	Revenue Forecasted, Competitors Landscape, Growing Factors, and upcoming Trends
SEGMENTS COVERED	Drugs, Route of Administration, Indication used , Last End User.
GEOGRAPHIES	America, Asia-Pacific, Europe and other nations
KEY PLAYERS	Merck Sharp & Dohme Corp (US), Pfizer Inc (US), Sandoz International GmbH (Germany), Gland Pharma Limited (India), Wockhardt (US)
MARKET OPPORTUNITIES	New Product launches and R&D Amongst major Key Players
MARKET DRIVERS	• Increasing prevalence of skin infections • Growing demand for drugs against bacterial skin infections

TABLE 2: IN INDIA, MAJOR MACROLIDES USED BY THE PHYSICIANS

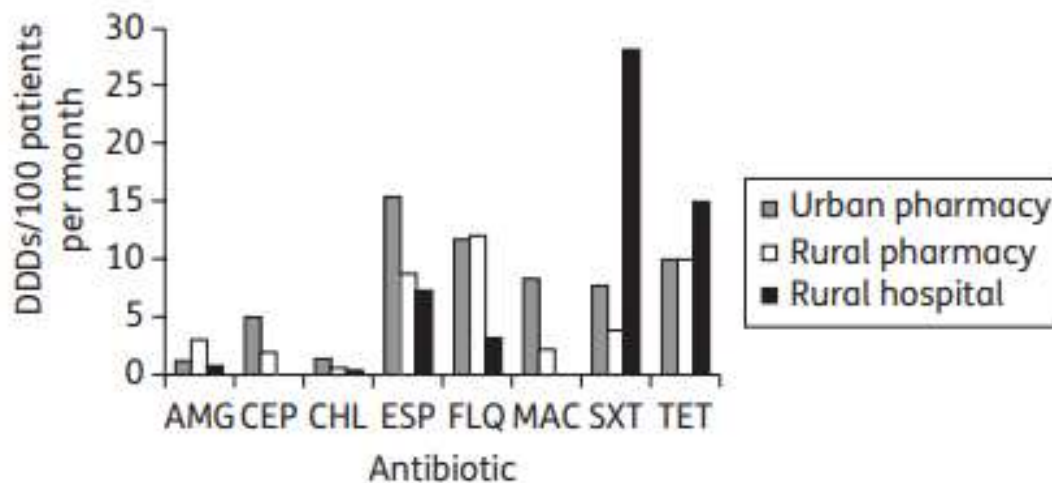
DRUG NAME	COMPANY NAME & BRAND NAME	ROUTE OF ADMINISTRATION/DOSE
AZITHROMYCIN	- Alembic Pharmaceuticals Ltd (Azithral) - Cipla Ltd (Azee) - Sun Pharmaceutical Industries Ltd (Azax)	Oral Tablets–125mg, 250mg,500mg,600mg Powder form of Injection – 500mg Powder form of reconstitution – 100mg/5ml,200mg/5ml
ERYTHROMYCIN	- Alembic Pharmaceuticals Ltd(Erythromycin) - PfizerLtd (Erythromycin Estol) - Hindustan Antibiotics Ltd (Eryster)	Oral Tablets – 250mg,500mg Ophthalmic Ointment – 0.5% Topical used gel/solution – 2%
CLARITHROMYCIN	- Abbott (Claribid) - Mankind Pharma Ltd (Clarinova) - Alembic Pharmaceuticals Ltd (Cloff)	Oral Tablets- 125mg,250mg,500mg (extended release) Power for reconstitution – 125mg/5ml (Oral Suspension)

FIDAXOMICIN	• Merck.co.Ind (Dificid)	Oral – 200mg
ROXITHROMYCIN	• Alembic Pharmaceuticals Ltd(Roxid) • Talent Healthcare(Roxitab) • Scott Edil Pharmacia Ltd (Metrox)	Oral Tablets – 150mg,300mg

5.3 STUDY OF ANTIBIOTICS SALES SURVEY ACROSS INDIA

According to surveys conducted in other nations, between 23% and 65% of prescriptions contain antibiotics. Study of SJ Chandy, et al. (2013) shows that in India, the percentage of prescriptions that include an antibiotic varies by location, from 48% for Kerala to 82% of the total in the state of Uttar Pradesh. This vast variation may be caused by a number of variables, including the environment, patient awareness, doctor and chemist expertise, illness severity, and accessibility to medical facilities and diagnostic tools.

Due to the large range, policymakers may need to deploy localized surveillance systems to give intervention measures higher priority in areas with high rates of antibiotic encounters. In our analysis, antimicrobial encounter rates were largely comparable among urban institutions, although GP clinics were shown to have higher antibiotic encounter rates in rural locations. There aren't many studies that compare rural and urban areas. This once more demonstrates the value of surveillance in identifying the providers who are pushing antibiotic use in various circumstances.



Antibiotic sales in facilities measured as DDDs/100 patients per month. AMG, aminoglycosides; CEP, cephalosporins; CHL, chloramphenicol; ESP, extended-spectrum penicillins; FLQ, fluoroquinolones; MAC, macrolides; SXT, trimethoprim/sulfamethoxazole; TET, tetracyclines.

Fig.3: DDDs (Defined Daily Doses) per 100 patients a month with respect to Antibiotics usage

CHAPTER 6

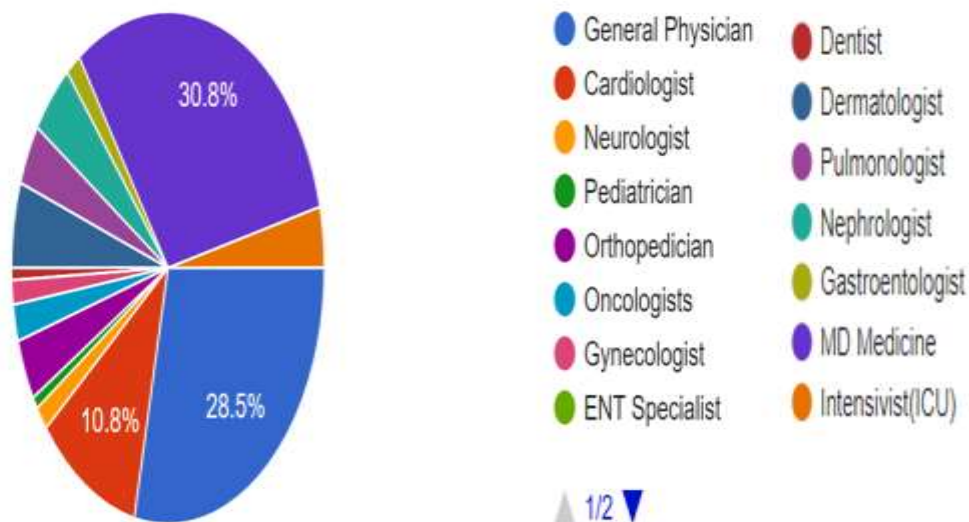
RESULTS AND DISCUSSIONS

Research Analysis:

We had the opportunity to research 130 different doctors who participated in the Survey, each of whom had a distinctive perspective on the use of antibiotics. We focused our research specifically on betterment of macrolide antibiotics. The majority of area covered was doctors in Bangalore who work in government hospitals, private hospitals, and health clinics. We made an interpretation of the manner in which doctors prescribed macrolide antibiotics.

Specialization ?

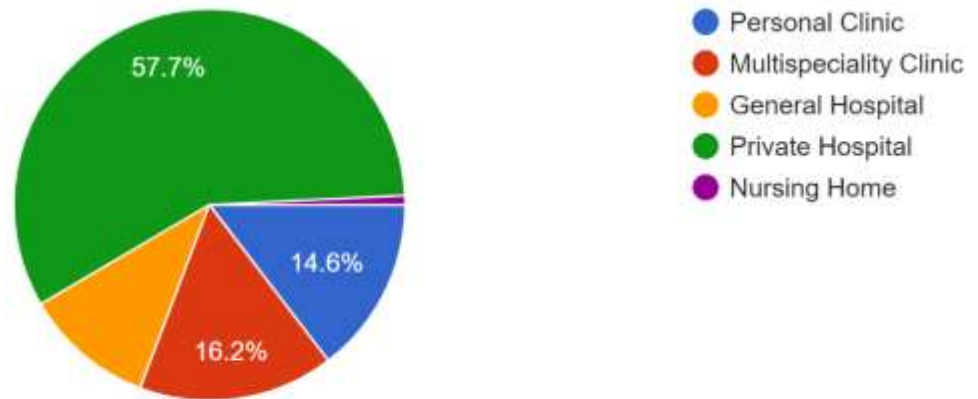
130 responses



The graph above depicts about the various doctors who responded with multiple specialties. According to the pie chart, 10.8% of respondents were cardiologists, 28.5% of respondents were general practitioners, and 30.8% of respondents were MD physicians.

Doctor's Practice Place ?

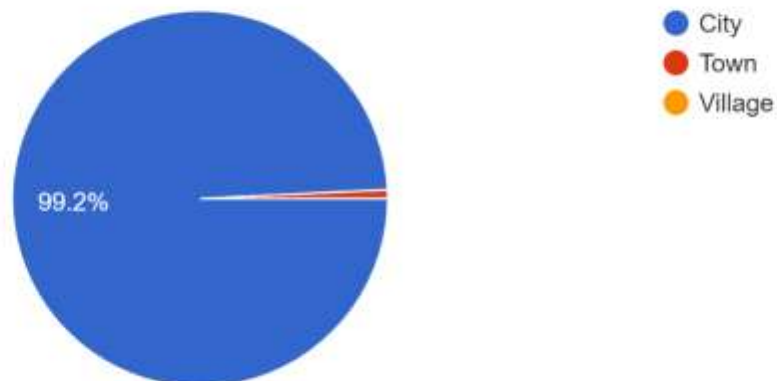
130 responses



Here, the chart depicts that 57.7% doctors were from private hospitals practitioners, 16.2% doctors were multispecialty clinic practitioners, 14.6% doctors were having personal clinics, while the large yellow portion is 10.8% doctors are general hospital practitioners who treats large no of patients during OPDs.

Area where doctor have their Chamber ?

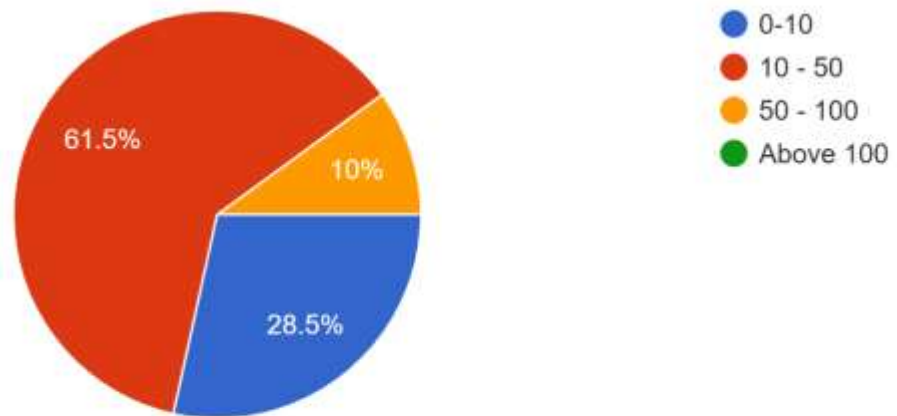
130 responses



Nearly 99.2% of the patients treated by the doctors in this area are the inhabitants of Bangalore itself.

Number of Patients seen by the doctor per day ?

130 responses

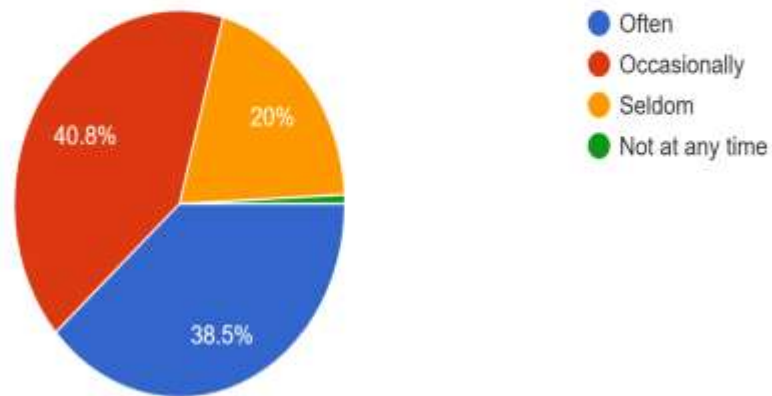


Here, in the Chart we can observe that the respondent doctors treat how many numbers of patients per day. So, majority about 61.5% doctors see 10-50 patients, 28.5% doctors see about 0-10 patients and 10% doctors see about 50-100 patients.

Now, in the research, we included certain questionnaires for the doctors in Google forms, which they provided with specific responses given below with graphs and charts.

As someone a healthcare professional, how commonly do you utilize macrolide antibiotics when treating patients?

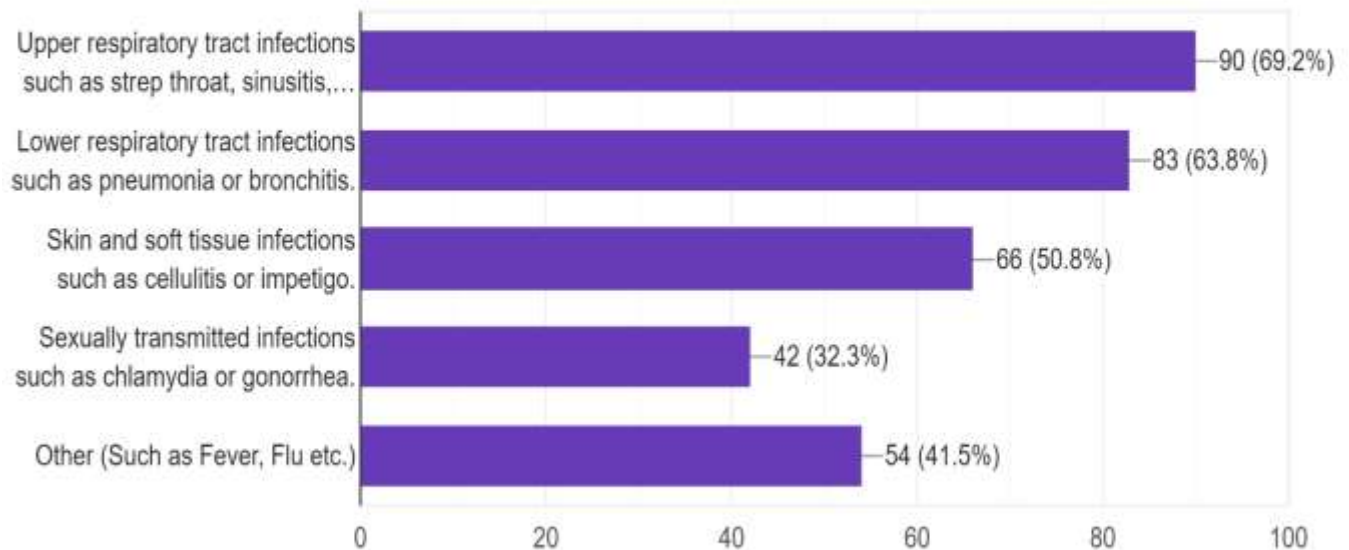
130 responses



Here, in the chart we can get to know that 40.8% doctors occasionally use macrolide antibiotics, were 38.5% doctors uses often followed by 20% doctors use seldom.

What types of infections do you typically prescribe macrolide antibiotics for?

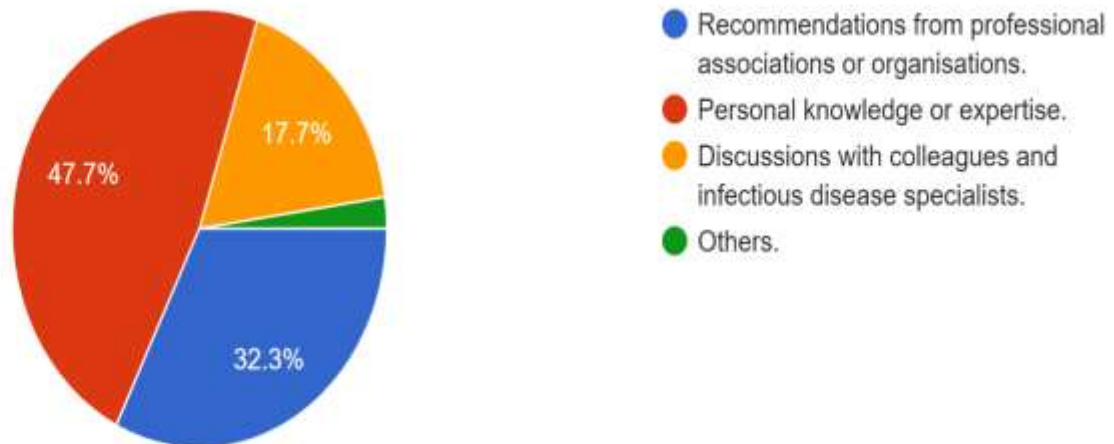
130 responses



Here, the graph above depicts that 69.2% doctors were prescribing macrolide antibiotics with upper respiratory tract infections like strep throat, sinus, or ear infections, then 63.8% doctors use macrolide antibiotics with lower respiratory tract infections like pneumonia or bronchitis, followed by 50.8% doctors use macrolide antibiotics for skin and soft tissue infections (ABSSIs), then 32.3% doctors treat STIs, and lastly widely used in others like fever, common cold, viral infections.

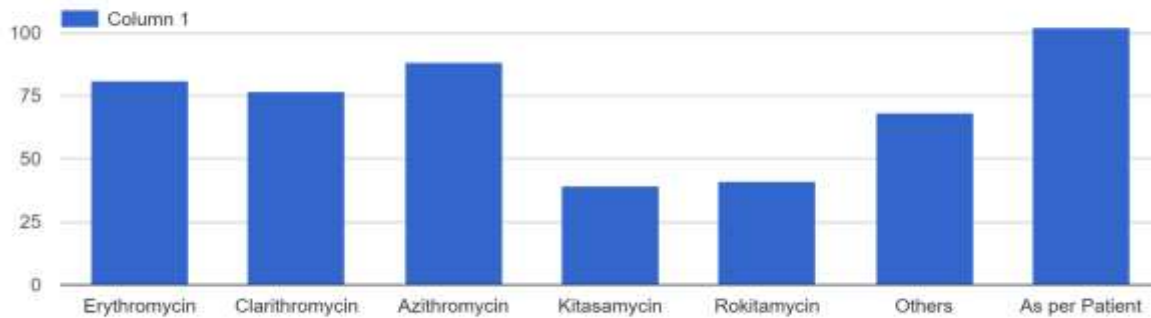
How do you choose the best antibiotic for a certain infection?

130 responses



The chart observations are 47.7% respondent doctors have their personal knowledge and experience regarding the usage of macrolide antibiotics, 32.3% doctors prescribe as per recommendations from professional associations or organizations, 17.7% doctors prefer having discussions with colleges and infectious disease sections for treatments to the patients.

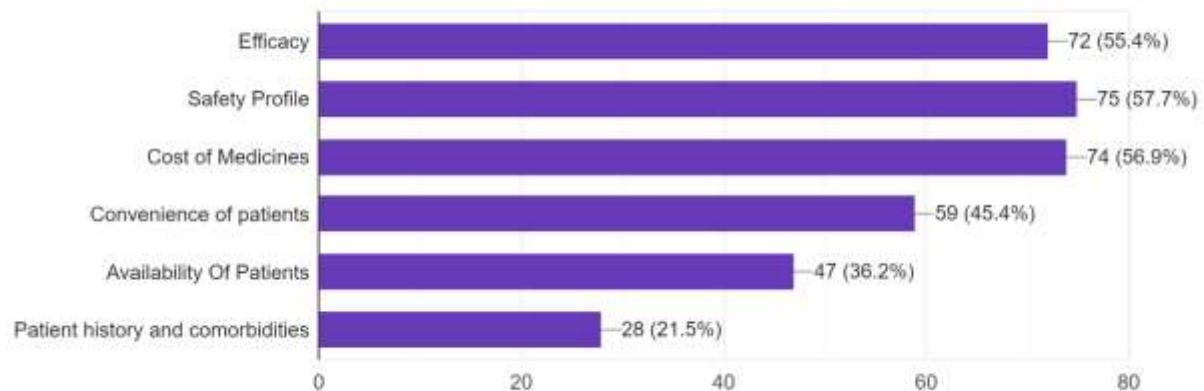
Widely Prescribed Macrolides Antibiotics to the patients?



Here, the majority of the doctors prefer using macrolide antibiotics according to the patients whom they are treating, while maximum also prefer well know antibiotics like Azithromycin, Clarithromycin, Erythromycin followed by others.

What factors influence your decision to prescribe a macrolide antibiotic over other antibiotics?

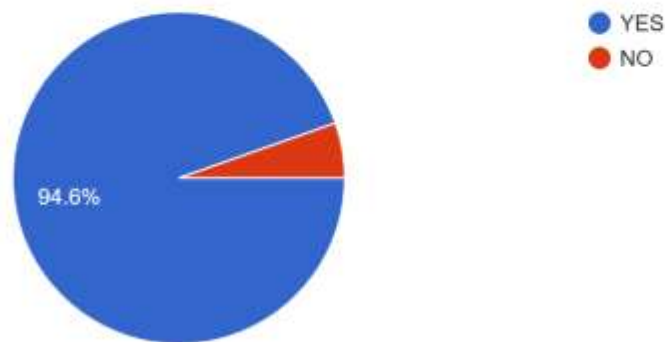
130 responses



Here, from above the graph we get to analyse that 57.7% respondent doctor prefer safety profile of the macrolide antibiotic which they are using or patients, then 56.9% cost of the medicines, then 55.4% efficacy of the drugs followed by 45.4% according to the convenience of the patients, 36.2% with the availability of patients where doctor can refer the antibiotic, then 21.5% doctors prefer to see the patient's history and comorbidities.

Have you observed any changes in the past several years in the way you prescribe macrolide antibiotics?

130 responses



The chart above depicts that 94.6% respondent doctors observed changes in past several years the way they used to prescribe macrolide antibiotics.

How do you keep up of new advancements and research in the field of prescription antibiotics?

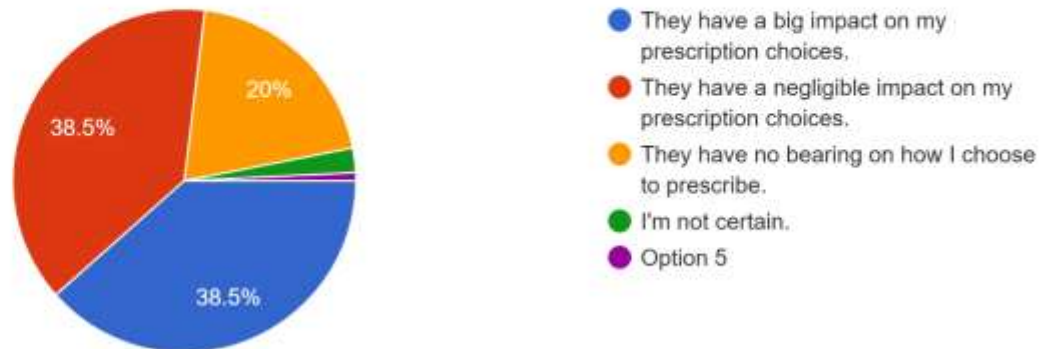
130 responses



In above, chart we can observe that how doctor keep up with the recent knowledge in terms of new advancements and research in the field of medicines which they prefer to use or recommend to the patients, like 33.8% doctors get from CMEs (Continuing Medical education courses) ,33.8% get from pharmaceutical company presentations though MRs, whereas 15.4% prefer medical journals for upgradation.

What influence on your decisions to prescribe macrolide antibiotics do pharmaceutical corporations and their marketing efforts have?

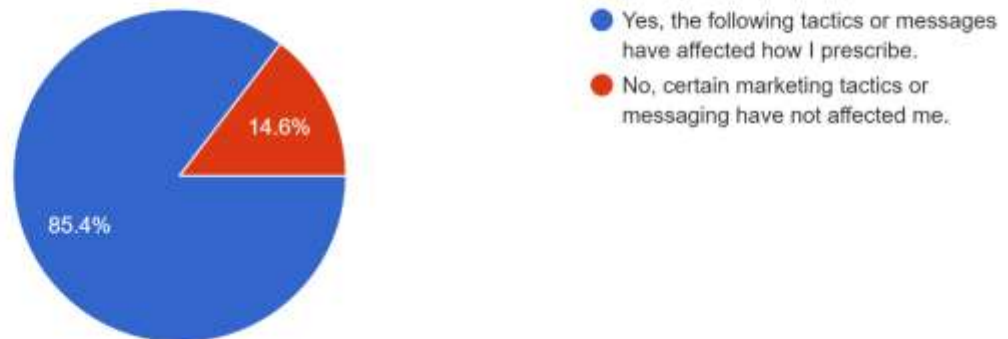
130 responses



Here, we observe from the chart that 38.5% of the respondent doctors have big impact on the prescription choice based on the pharmaceutical corporations and their marketing efforts, whereas 38% doctors have negligible effect on prescription choices, followed by 20% doctors have no bearing on how they choose to prescribe macrolide antibiotics.

Are there any particular macrolide antibiotic marketing campaigns or messages that have influenced your prescribing practices in the past?

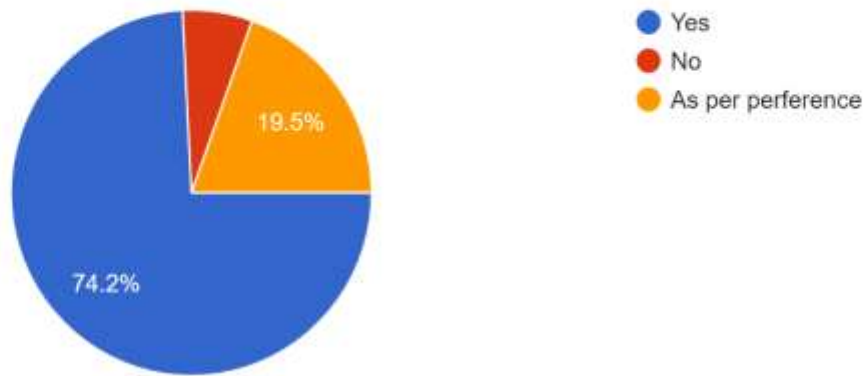
130 responses



Here, in this chart depict that in particular macrolide antibiotic marketing campaigns or messages that have influenced the doctors to prescribing practices from their past. Like 85.4% responded yes for the change and 14.6% doctors responded no.

Do you prefer to get information about any new drugs or existing drug from Medical Representatives ?

128 responses



The chart above depicts that 74.2% respondent doctors prefer to get information about any new drugs or studies related to the existing drugs from MR (medical Representatives) only, whereas 19.5% doctors responded no for extraction of information.

6.1 RESULTS

According to the results of the survey, respondent doctors about 40.8% uses macrolide antibiotics occasionally particularly in the cases of 69.2% doctors were prescribing macrolide antibiotics with upper respiratory tract infections like strep throat, sinus, or ear infections, then 63.8% doctors use macrolide antibiotics with lower respiratory tract infections like pneumonia or bronchitis, followed by STIs and others like fever, cold, flu.

Then, about 47.7 % doctors have their personal experience and knowledge regarding the use of antibiotics, mainly prefer well know antibiotics like Azithromycin, Clarithromycin, Erythromycin followed by others. Then, 57.7% respondent doctor prefer safety profile of the macrolide antibiotic which they are using or patients, then 56.9% cost of the medicines, then 55.4% efficacy of the drugs followed by 45.4% convenience of the patients, 36.2% with the availability of patients where doctor can refer the antibiotic, then 21.5% to see the patient's history and comorbidities.

Now, we can observe that 33.8% doctors get from CMEs (Continuing Medical education courses) ,33.8% get from pharmaceutical company presentations though MRs, whereas 15.4% prefer medical journals for upgradation regarding any knowledge of any drugs or brands newly launched or existing. From this 38.5% of the respondent doctors have big impact on the prescription choice, whereas 38% doctors have negligible effect on prescription choices, followed by 20% doctors have no bearing on how they choose to prescribe macrolide antibiotics.

And lastly 74.2% respondent doctors prefer to get information about any new drugs or studies related to the existing drugs from MR (medical Representatives) only, whereas 19.5% doctors responded no for extraction of information.

CHAPTER 7

CONCLUSION

Based on the questionnaire's interpretations using primary data mentioned above we can conclude that:

- Most of the city doctors prefer to use macrolide antibiotics occasionally until is required as per patient's requirement.
- Then, we saw that mainly Macrolide antibiotics preferred by doctors are largely for the cases of upper respiratory infections, followed by lower respiratory infections, STIs, Others like fever, colds, flu.
- Many doctors also prefer antibiotics brands which are cost effective for patients see the benefits of the drugs too like the efficacy, safety, and convenience for the patients for usage.
- Lastly the respondents' doctors like to get knowledge and update themselves about new drugs or antibiotics which going to come in the market or existing ones through involvements in CMEs, learn from MRs through presentations provided by the company.

We can draw the following conclusions using secondary data from various sources, including journals, publications, and websites:

- Physicians' information sources play a significant impact in influencing the prescriptions they make. Although colleagues, clinical meetings, and medical experts are important sources of knowledge utilised to prescribe new drugs, medical reference books and research literatures still have a significant theoretical impact.
- Information from pharmaceutical companies raises awareness of the drugs that are sold. However, this knowledge might make doctors into high-prescribers, high-cost prescribers, and low-prescribers of high calibre. Regarding the prescription of new medications, doctors' enthusiasm for a particular field and participation in clinical trials are crucial variables.

According to the results of this study, general practitioners typically recommend antibiotics in the following circumstances:

- ❖ Diagnostic unpredictability.

- ❖ Perceived patient needs or expectations.
 - ❖ To retain consumers and profit financially.
 - ❖ Under the guidance of medical representatives.
 - ❖ Under the mistaken belief that the less fortunate members of society require antibiotics because of unhygienic living conditions.
- Doctors' understanding of medications and antibiotic resistance:
In-depth analysis revealed that although doctors had a general understanding of resistant antibiotics as a clinical issue, they were significantly underestimating its prevalence. The level of expertise among the practitioners as well as understanding of antibiotic-resistant rates were unrelated.
 - Beliefs and attitudes when choosing antibiotics:
Numerous studies found that visiting physicians with additional years of clinical practise were more confident when prescribing antibiotics than new physicians or doctors in training. Low antibiotic knowledge may be the cause of physicians' lack of trust in their capacity to use antibiotics effectively. This shows that it's crucial to adequately cover and emphasise antibiotic resistance and prudent antibiotic use during medical education. Future interventions to enhance antibiotic prescribing should also focus on young physicians.
 - Nevertheless, given the growing adversarial nature of society and the current healthcare system, that allows doctors only a few minutes to thoroughly assess a patient's condition, make a diagnosis, and prescribe medication, physicians often discover themselves under enormous pressure to provide an antibiotic even when doing so may not be necessary.

CHAPTER 8

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