

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

A presentation on project work in the fulfillment of the requirement for the Award of the degree for

MASTER OF BUSINESS ADMINISTRATION (MBA)
IN
PHARMACEUTICAL MANAGEMENT



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ROLLNO: IIHMR-U/02/2021-23/0285

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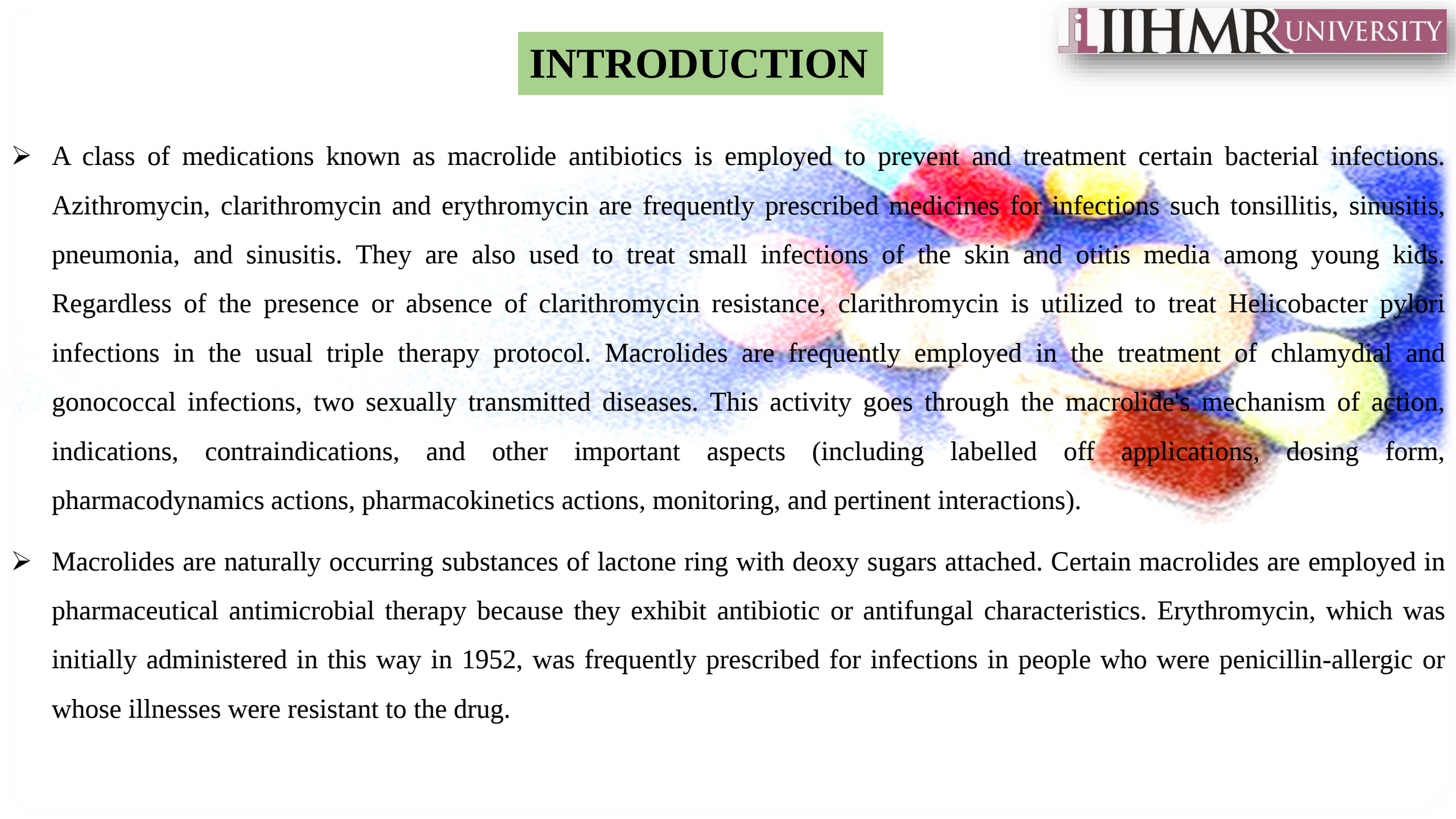
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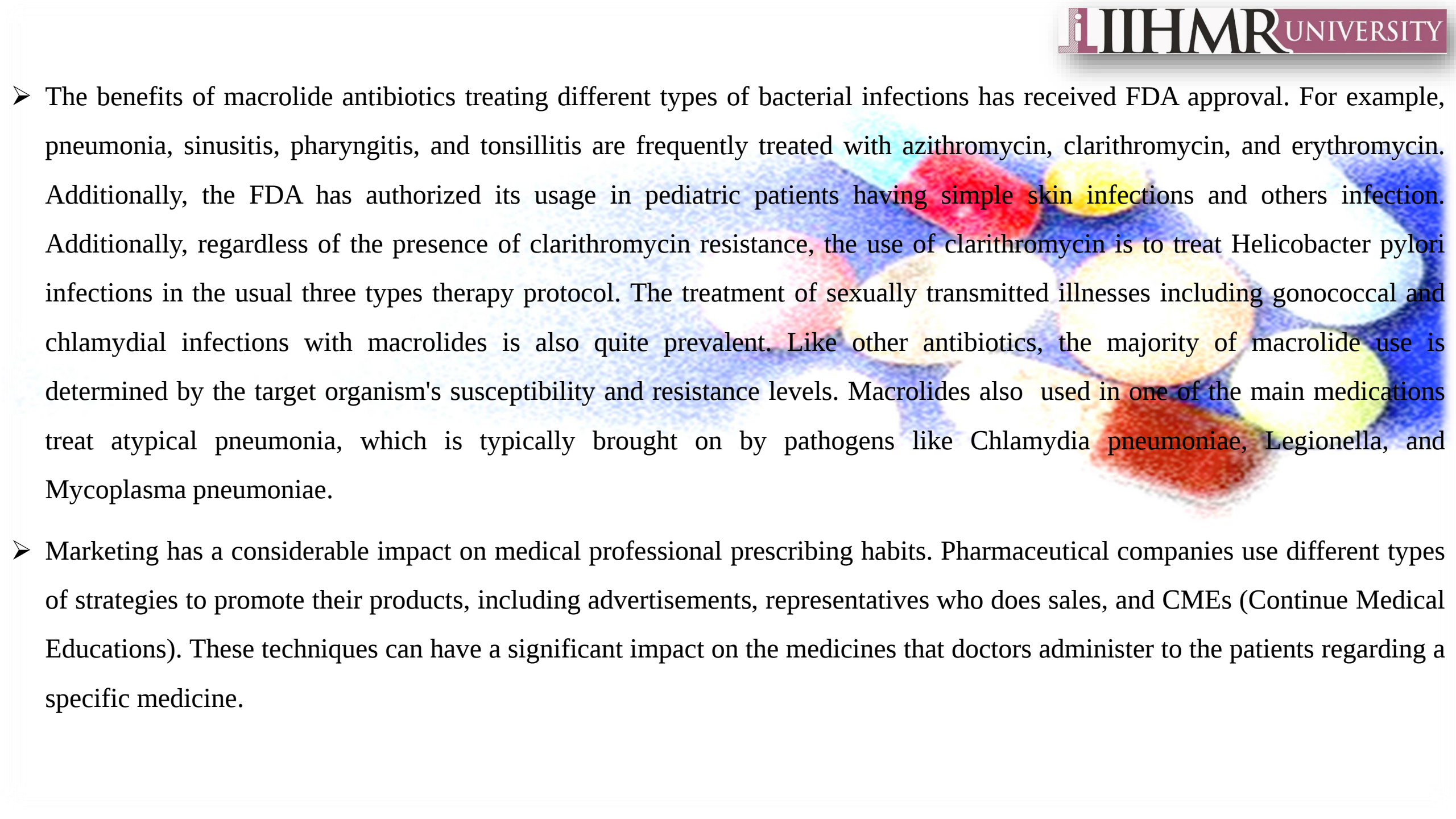
**IIHMR UNIVERSITY, JAIPUR
2023**

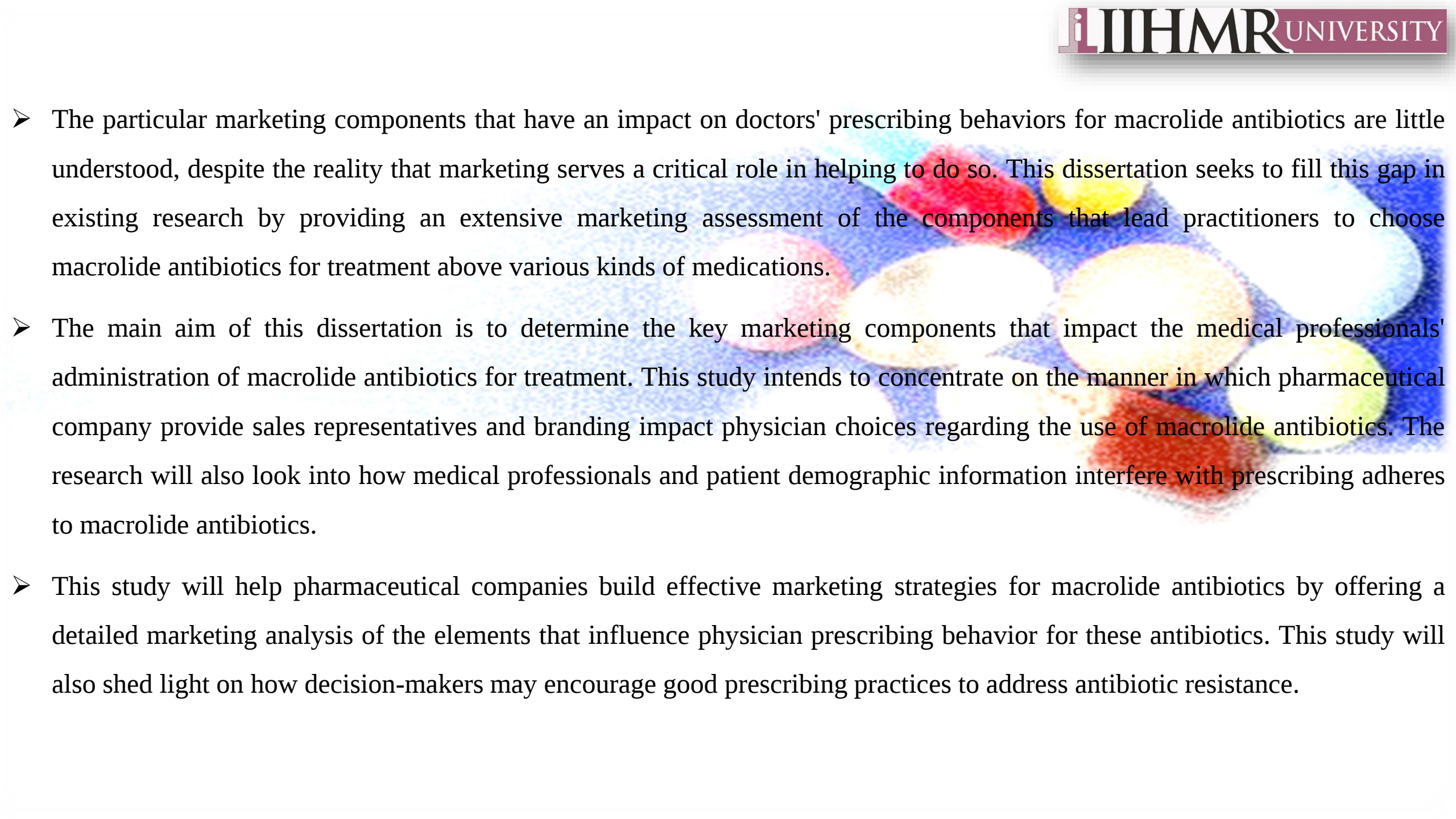
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INTRODUCTION

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- 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.

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- A background image showing a close-up of several colorful pills (red, yellow, and white) scattered on a blue surface. The pills are slightly out of focus, creating a soft, bokeh-like effect.
- 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*.
 - 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.

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- A background image showing a close-up of several colorful pills (red, yellow, white, and blue) scattered on a dark surface.
- The particular marketing components that have an impact on doctors' prescribing behaviors 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.

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?



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.



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

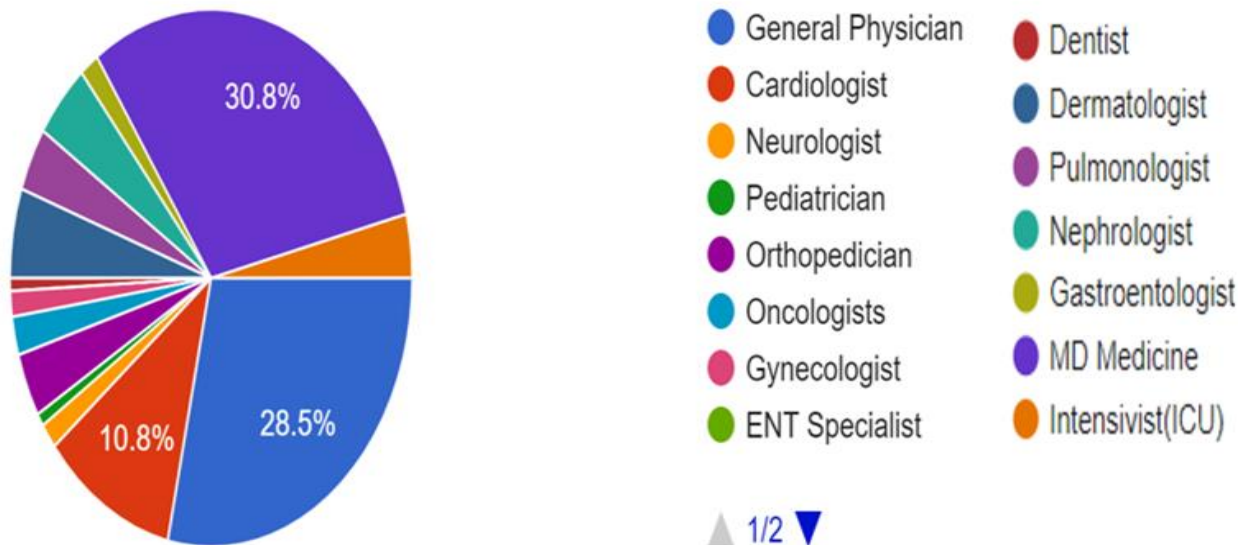
Drug Name	Company Name & Brand Name	Route of Adminstration/Dose
Azithromycin	- Alembic Pharmaceuticals Ltd (Azithral) - Cipla Ltd (Azee) - Sun Pharmaceutical Industries Ltd (Azax)	Oral Tablets–125mg, 250mg,500mg,600mg Powder form of Injection – 500mg Powder form of reconstitution – 100mg/5ml,200mg/5ml
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

RESULTS AND DISCUSSIONS

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 ?

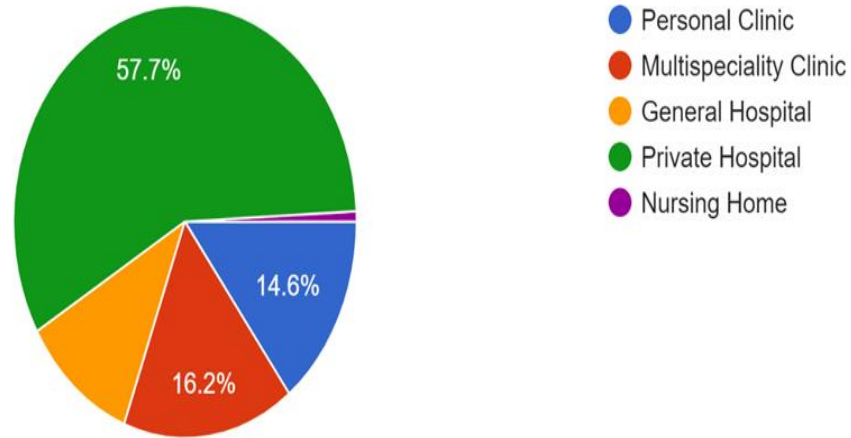
130 responses



- 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 ?

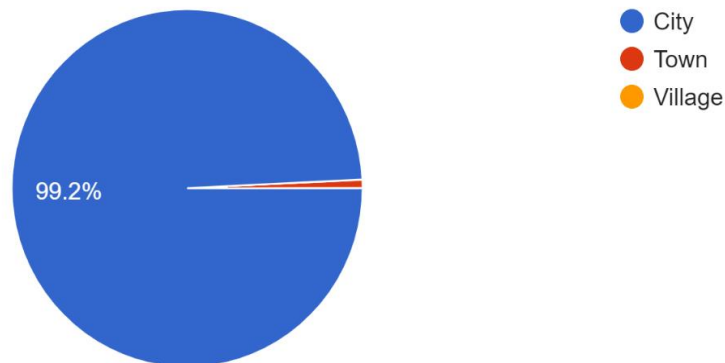
130 responses



- 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 ?

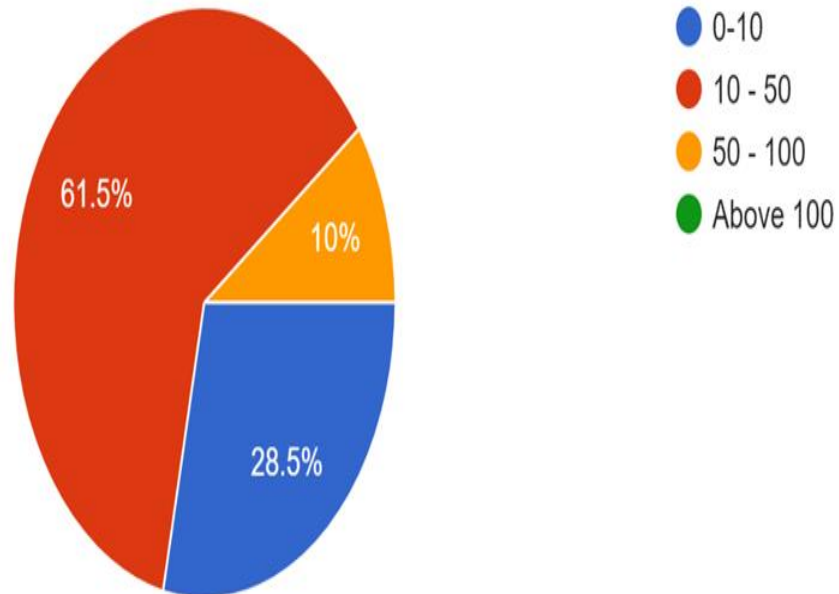
130 responses



- ❖ 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

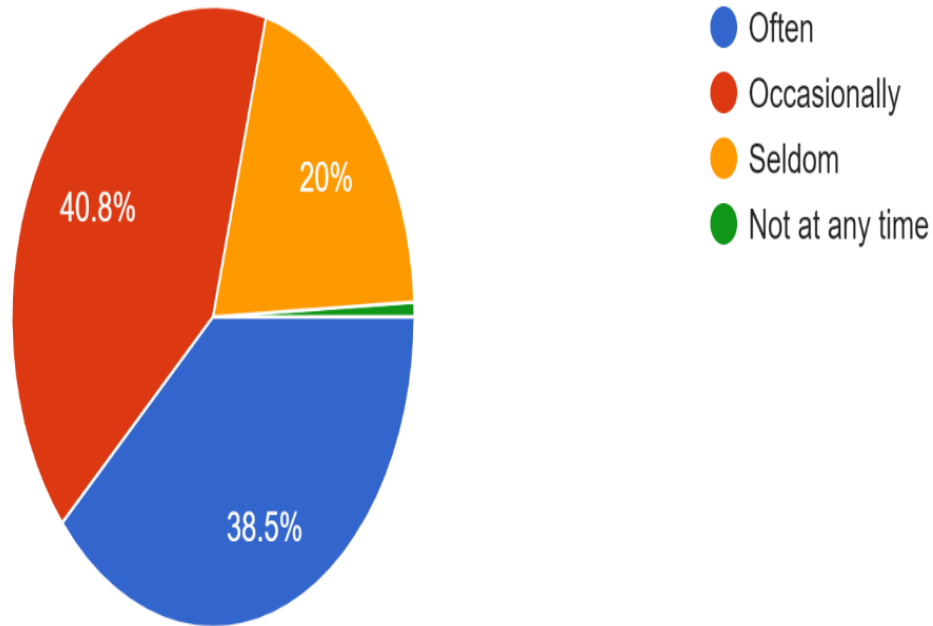


- Here, in the Chart we can observe that the respondent doctors treat how many numbers of patients per day. So, majority about 61.5% doctors see 10-50 patients, 28.5% doctors see about 0-10 patients and 10% doctors see about 50-100 patients.

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?

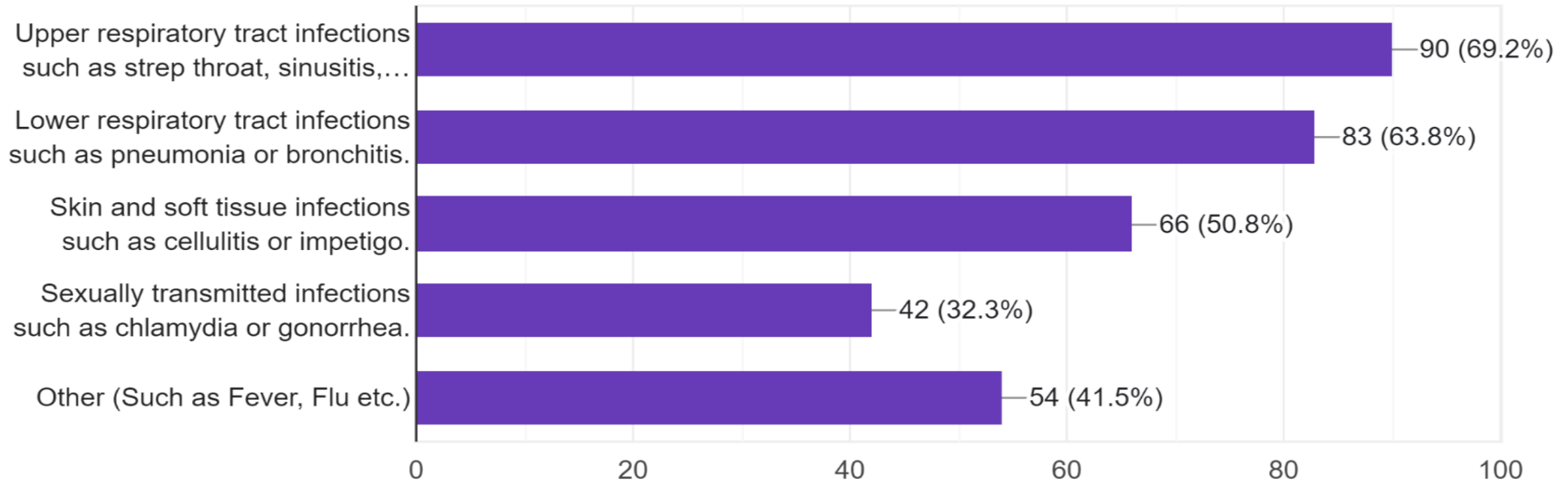
130 responses



- 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?

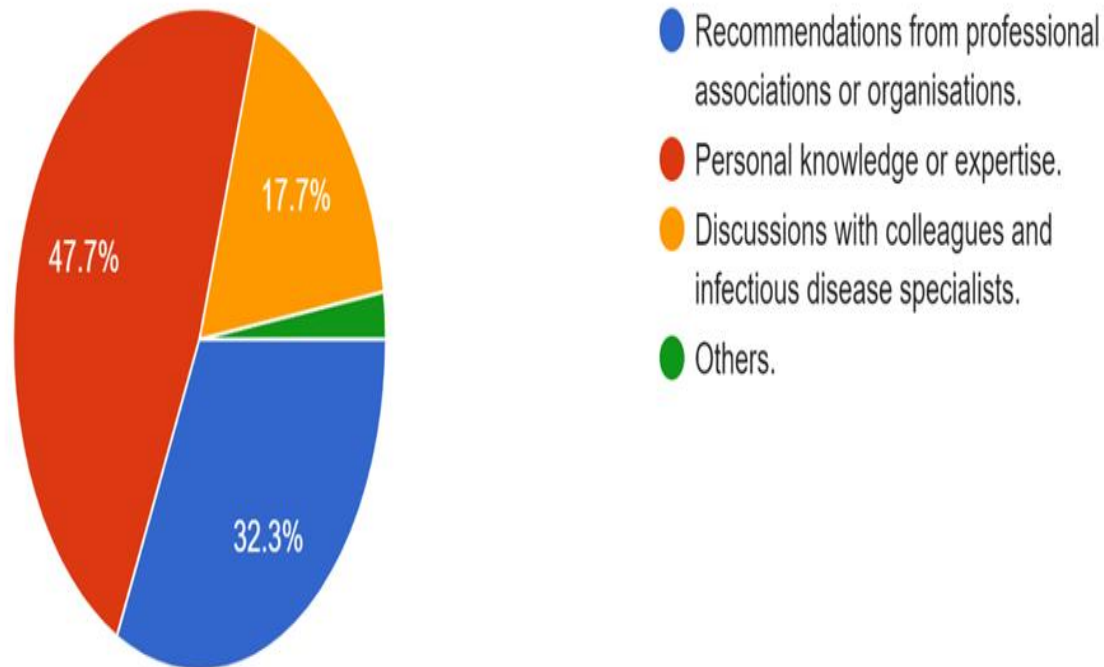
130 responses



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.

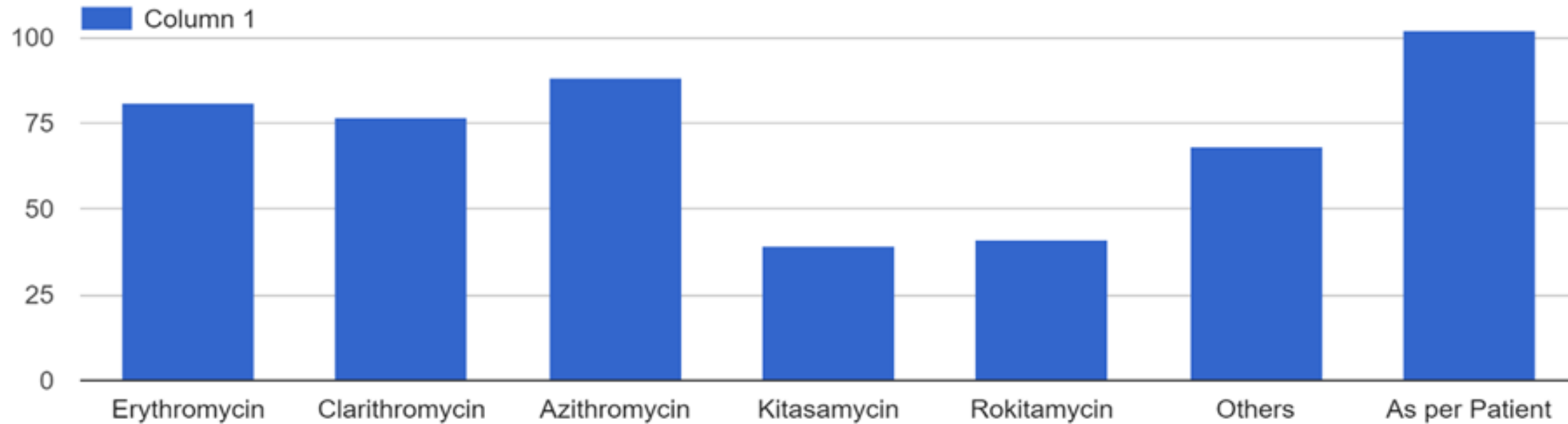
How do you choose the best antibiotic for a certain infection?

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.

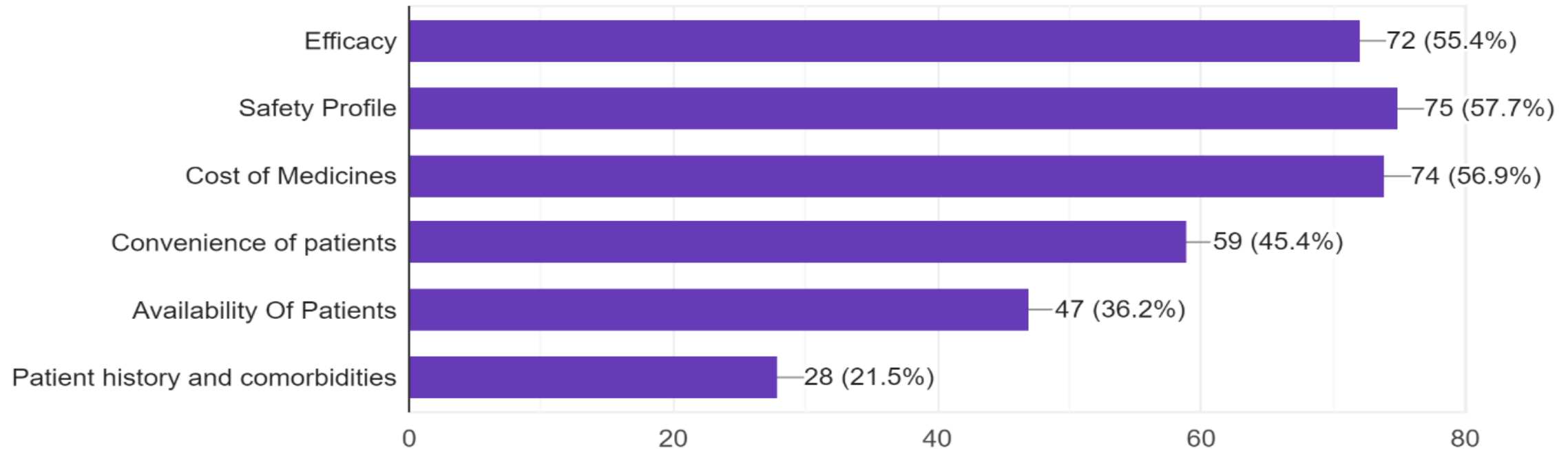
Widely Prescribed Macrolides Antibiotics to the patients?



- ❑ 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?

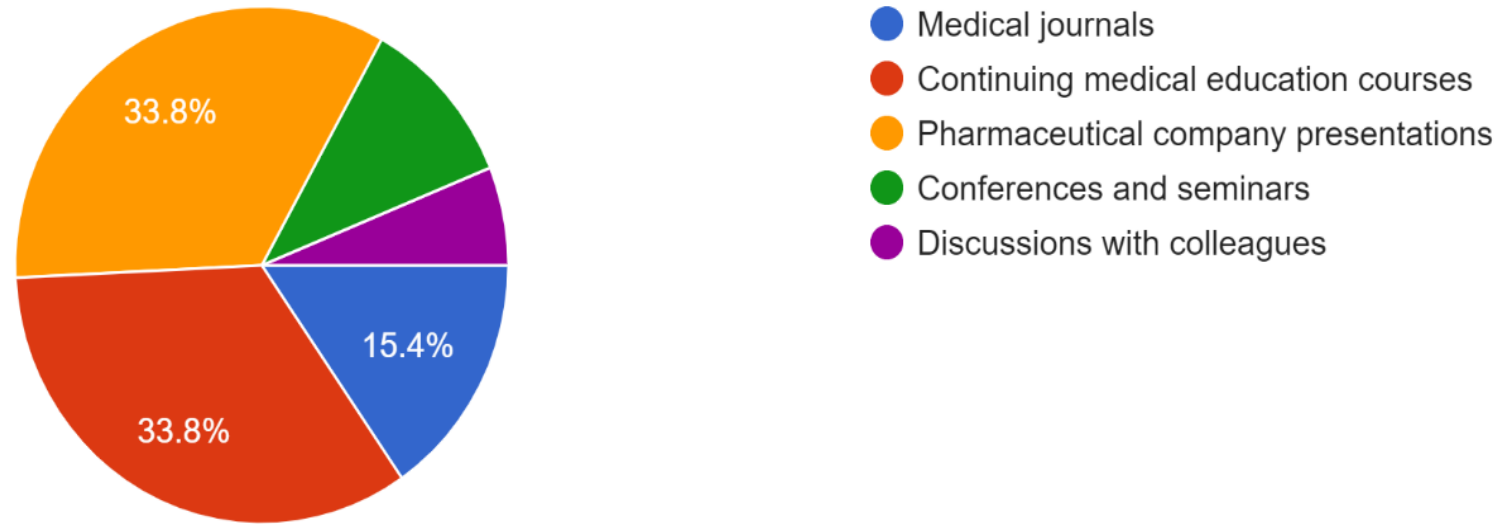
130 responses



- ❑ Here, from above the graph we get to analyze 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.

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

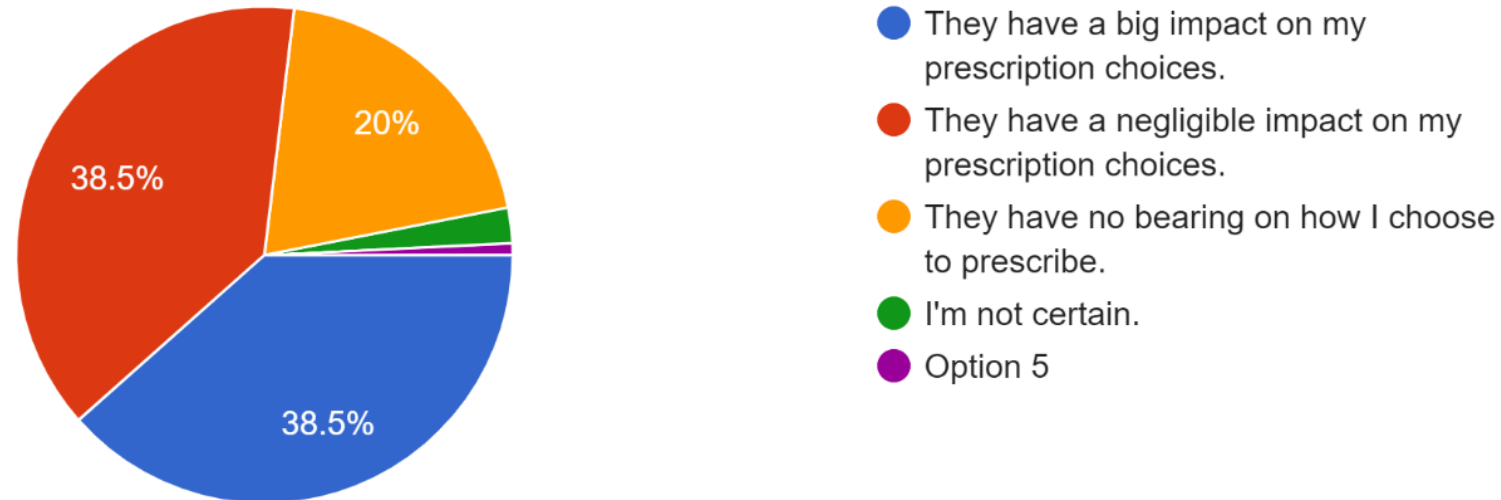
130 responses



- ❑ 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?

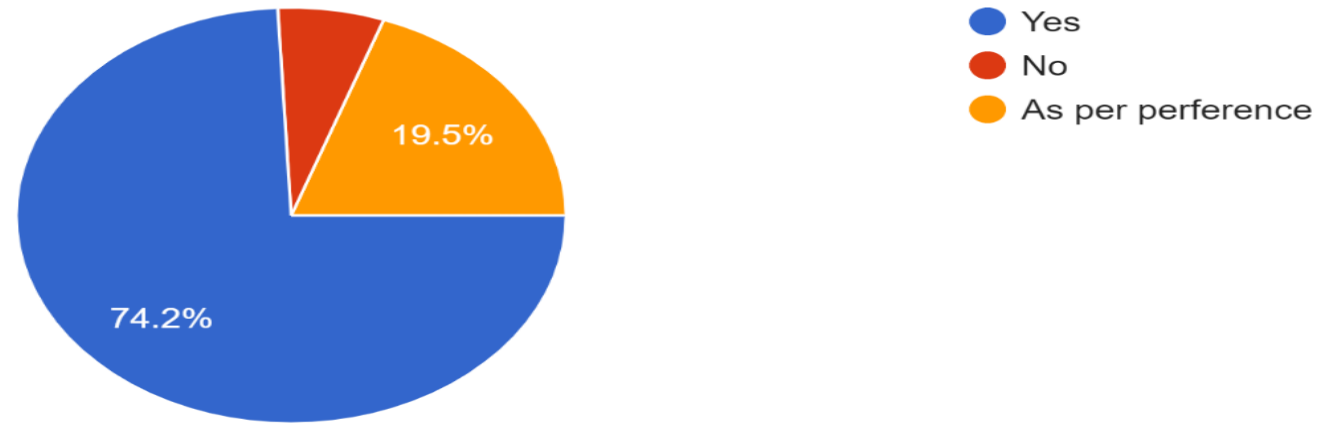
130 responses



- ❑ 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.

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.

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.

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.
- 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.
- 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.

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THANK YOU