Market Research of Atorvastatin

By

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MBA Pharmaceutical Management

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DECLARATION BY STUDENT

I, Deepanshu Bhatnagar Enrollment No. IIHMR-U/02/2019-21/0176 hereby declare that this dissertation titled **Market Research of Atorvastatin** is the Bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

Name of Student: Deepanshu Bhatnagar

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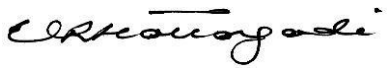
CERTIFICATE

This is to certify that Deepanshu Bhatnagar in partial fulfilment of the requirements for the award of the degree of MBA Pharmaceutical Management from the IIHMR University, Jaipur has completed his internship at The Enablers from March 22, 2021, to June 19, 2021.



Vivek Hattangadi
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29th June 2021

CERTIFICATE

This is to certify that dissertation titled “Market Research of Atorvastatin” work undertaken by Deepanshu Bhatnagar in partial fulfilment of the requirements for the award of the degree of MBA Pharmaceutical
Management from the IIHMR University, Jaipur under my guidance and supervision and his approach to the research study has been sincere, scientific, and analytical.

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Dr Saurabh Banerjee
School Dean
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Date

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I hope I can repose on the experience and knowledge that I even have gained and make a valuable contribution to the industry in the upcoming future.

Abstract

Coronary disease is the leading cause of mortality in the grown-up populace around the world. The disease causes a large number of issues, which are often connected to a process known as Atherosclerosis. Atherosclerosis is a condition that happens at whatever point a substance called plaque gathers in the course dividers. This cholesterol limits the corridors, making the bloodstream more difficult. When a blood clot forms, it has the potential to obstruct blood flow. This has the potential to result in a heart attack or a stroke. Cardiovascular disease is linked to a slew of risk factors. Cholesterol is implicated in the pathogenesis of atherosclerosis and CVD.

The study was carried out to better understand the atorvastatin market, practice trends, and to identify the top atorvastatin brands. A structured survey was utilized to collect data from 74 respondents, including a cardiologist and general physician from West Uttar Pradesh. The research was carried out for three months, from March 22 to June 19, 2021.

The task was done in 3 phases:

The first step involved learning about Atorvastatin and CVD and then preparing a questionnaire. The second stage involved contacting and visiting doctors and physicians at hospitals and clinics, and conducting the survey. After the study was completed, the next step was to analyze the data and come to a conclusion.

Background

The expression "coronary disease" is normally utilized reciprocally with the expression "cardiovascular sickness." It is the most common individual source of disease burden in India, accounting for about 25 per cent of all fatalities. heart condition portrays a spread of conditions that affect the heart.

The different sorts of heart sicknesses are there and the need of mindfulness is required so that individuals can get a brief look at every illness and appropriate differentiation can be made,

Different cardiovascular have different however interrelated issues that can cause most of the problems.

India has perhaps the highest-burden of cardiovascular illness (CVD) around the world. The yearly number of deaths from CVD in India is projected to ascend from 2.26 million (1990) to 4.77 million (2020). Coronary illness predominance rates in India have been assessed in the course of recent many years and have gone from 1.6% to 7.4% in rustic populaces and from 1% to 13.2% in metropolitan populaces & According to the ICMR State-Level Disease Burden Report, among all age gatherings, the predominance of coronary illness has expanded by more than half from 1990 to 2016 in India, with an expansion saw in each state. Coronary illness contributes to nearly 25 per cent of all fatalities in India. (Dubey, DNA, 2020)

INTRODUCTION

Atorvastatin is an antilipemic drug that reversibly hinders HMG-CoA reductase. It brings down all out cholesterol, low-thickness lipoprotein cholesterol, apolipoprotein B cholesterol, non-high-thickness lipoprotein cholesterol, and fatty oil levels in the blood while raising high-thickness lipoprotein cholesterol levels. High low-thickness lipoprotein cholesterol, low high-thickness lipoprotein cholesterol, and high fatty oils levels in the blood are connected with an expanded danger of atherosclerosis and coronary illness. The proportion of absolute cholesterol to high-thickness lipoprotein cholesterol is a huge indicator of coronary illness, and huge proportions are connected to more danger of the infection. Higher high-thickness lipoprotein cholesterol levels are connected to a diminished danger of cardiovascular illness. Atorvastatin brings down the danger of cardiovascular illness and mortality by bringing down low-thickness lipoprotein cholesterol and fatty oil and raising high-thickness lipoprotein cholesterol. Raised cholesterol levels (especially undeniable degrees of low-thickness lipoprotein) are a critical danger factor for the improvement of CVD. Atorvastatin brings down low-thickness lipoprotein cholesterol and complete cholesterol by 36-53 per cent in clinical preliminaries. Atorvastatin diminished halfway thickness lipoprotein cholesterol levels in people with dysbetalipoproteinemia. It has likewise been suggested that atorvastatin might be gainful in the therapy of persistent subdural hematoma by restricting the measure of angiogenesis. Atorvastatin, as other HMG-CoA reductase inhibitors, is connected to a danger of medication prompted myopathy, which shows as strong inconvenience, delicacy, or shortcoming in relationship with expanded creatine kinase levels (CK). Rhabdomyolysis with or without intense renal disappointment because of myoglobinuria is a typical side effect of myopathy. The possibility of statin-incited myopathy is portion subordinate, and the signs of myopathy normally disappear after the medicine is halted. As per discoveries from epidemiological investigations, 10-15% of patients taking statins may have solid agonies eventually during their treatment. (PubChem, 2005)

Mechanism of Action:

Atorvastatin is a statin drug that demonstrated by repressing HMG-CoA reductase, a protein complex that catalyzes the change of HMG-CoA to mevalonate, a rate-restricting advance in cholesterol combination. Atorvastatin works essentially in the liver, where diminished hepatic cholesterol levels advance the overexpression of hepatic low-thickness lipoprotein receptors, subsequently expanding LDL absorption. Atorvastatin likewise brings down VLDL cholesterol, serum unsaturated fats, and the quantity of apolipoprotein B-containing particles while expanding HDL cholesterol. A few investigations have additionally demonstrated that atorvastatin is successful. In vitro and in vivo concentrates additionally recommend that atorvastatin has vasculoprotective properties notwithstanding its lipid-bringing down properties, a marvel known as statin pleiotropy. The endothelial limit is expanded, atherosclerotic plaque security is improved, oxidative pressing factor and exacerbation are diminished, and the thrombogenic reaction is smothered. Statins have additionally been found to tie to 2 integrin instrument antigen-1 allosterically. which are significant for leukocyte development and T - cells incitement (pubcem, 2005).

USE: When combined with a healthy diet, atorvastatin can help lower "bad" cholesterol and lipids (such as LDL and fatty substances) while increasing "good" cholesterol (HDL). A class of medications known as "statins" is anything but that. It works by lowering the amount of cholesterol produced by the liver. Reducing "bad" cholesterol and triglycerides while increasing "good" cholesterol helps to avoid cardiovascular disease, stroke, and heart attacks. Additional lifestyle modifications which may help your medicine function effectively include exercise, reducing weight if obese, and quitting smoking, in addition to eating healthy food (such as a low-cholesterol/low-fat meal) (WebMD, n.d.).

Warnings:

Warning for muscles: When consuming atorvastatin, the overall chances of rhabdomyolysis (muscle breakdown) is raised. If you're a senior, have thyroid issues, or even have a renal illness, one’s risk is higher. Unless you have unexplained muscular discomfort, stiffness, or weakness, contact your doctor immediately away.

Warning for Liver: While using atorvastatin, laboratory tests for their liver could be excessively high, and you might develop liver issues. When you're on this medication, their physician will keep an eye on this.

Warning for diabetics: Atorvastatin might cause blood glucose levels to rise. When taking this medication, you and your physician must keep a close eye on your blood glucose levels.

Common side effects:

- Diarrhoea
- Heartburn
- Joint pain
- Gas
- Confusion
- Forgetfulness

Review of literature:

(Jing Luo, John D Seeger, Macarius Donneyong , Joshua J Gagne ,2016) : The study "Effects on Atorvastatin prescription and out-of-pocket expenditures of generic competition" found that the trends in generic atorvastatin prescription following the expiry of the exclusivity of the brand name medicine market. The impact of limited and comprehensive generic products on brand-name and generic atorvastatin prescriptions was studied using an interrupted times series model. It was emphasized that delays in generic use and high out-of-pocket levels in the first 180 days of loss of exclusive market exclusivity among patients with commercial medical insurance slowed down changes in medication prescription and reduced out-of-pocket expenses in people (Jing Luo, 2016).

(Sakthivel Selvaraj, Habib Hasan Farooqui and Aashna Mehta, 2019): They examined the effect of the drug price control regulation on the market dominance of atorvastatin in the domestic retail sector of statin in their research study 'Atorvastatin Sales in domestic: Influence evaluation using interruptive time series analysis.' Our study shows that the statin market, valued at INR 22.90 billion in the Indian sales market. For the period 2012 to 2015, we found that the market share of controlled atorvastatin in the statins market was also declining in terms of both sales values and volumes. The data from our analysis suggests that the medication price regulation had a long-term beneficial influence on atorvastatin usage when compared to alternative statins, as evidenced by increased monthly average revenue in the postintervention period (Habib Hasan Farooqui, 2019).

(Anmol S Kapoor, Hussein Kanji, Jeanette Buckingham, P J Devereaux,2006): They examined the way that major randomized examinations show that statins decline cardiovascular sickness dismalness and mortality in patients with or at high danger of coronary corridor infection in their exploration paper "Strength of proof on periodical utilization of statins to diminish the hazard of cardiovascular illness: a systematical audit of controlled investigations." Although a portion of the statins' non-lipid-bringing down pleiotropic activities may assist with forestalling perioperative myocardial areas of dead tissue, the instrument of perioperative myocardial localized necrosis is yet obscure. They led an orderly assessment to survey the degree of proof for taking statins to limit the danger of creating cardiovascular sickness during the perioperative period. They inferred that it is fitting to suggest that statin treatment be begun before a medical procedure in qualified patients who might profit with it for clinical reasons disconnected to the

strategy, like patients with coronary infection, patients with various cardiovascular danger elements, or patients with raised low-thickness lipoprotein cholesterol levels (Anmol S Kapoor, 2006).

(Yujuan Liu , Xiaoqun Lv , Ning Xie , Zhonghong Fang , Weifang Ren , Yuan Gong, 2020), : In their research article "Time trends analysis of statin prescription prevalence, therapy initiation, dose intensity, and utilization from the hospital information system of Jinshan Hospital, Shanghai" from 2012 to 2018, About 90% of individuals were administered a modest dosage of statins, according to the study. Individuals having a history of cardiac and cerebrovascular incidents (greater than 32 per cent) were far more likely to offer statins as a preventive measure. Furthermore, the analysis revealed that statin treatment was commonly administered and gradually raised over time in primary and secondary prevention, concluding that statins were often prescribed and gradually increased substantially throughout the study. Modifications in statin medication options and doses were also made. To enhance statin usage in therapeutic practice in the future, a concerted effort involving the patient, clinical pharmacist, stakeholders, and health system will be required (Yujuan Liu, 2020).

RESEARCH OBJECTIVES

Primary Objective: Market Research on Atorvastatin

Secondary Objectives:

- To Study the Cardiovascular Market, Practice Patterns of Atorvastatin in west Utter Pradesh.
- To find the top Brands of atorvastatin and to analyze the market share of other brands in west Utter Pradesh.

Scope of the study:

The major scope of this study is to know what is to find out the market of Atorvastatin brands and doctors preferences.

RESEARCH METHODOLOGY

Study Design: Descriptive Study

Sampling: Non-probability convenient sampling

Sample Size: Respondents: During the study only 74 respondents filled questionnaire.

Sample Population: Cardiologist and Consulting Physicians

Sample Area: West Utter Pradesh (Saharnpur, Meerut, Muzaffernagar, Shamli, Deoband)

Tools used for data collection: Questionnaire tool

Type of Questionnaire: Semi-Structured tool

Tools used for data analysis: MS-EXCEL 2019

Data collection:

Primary- Primary information has been gathered by the methods for the survey.

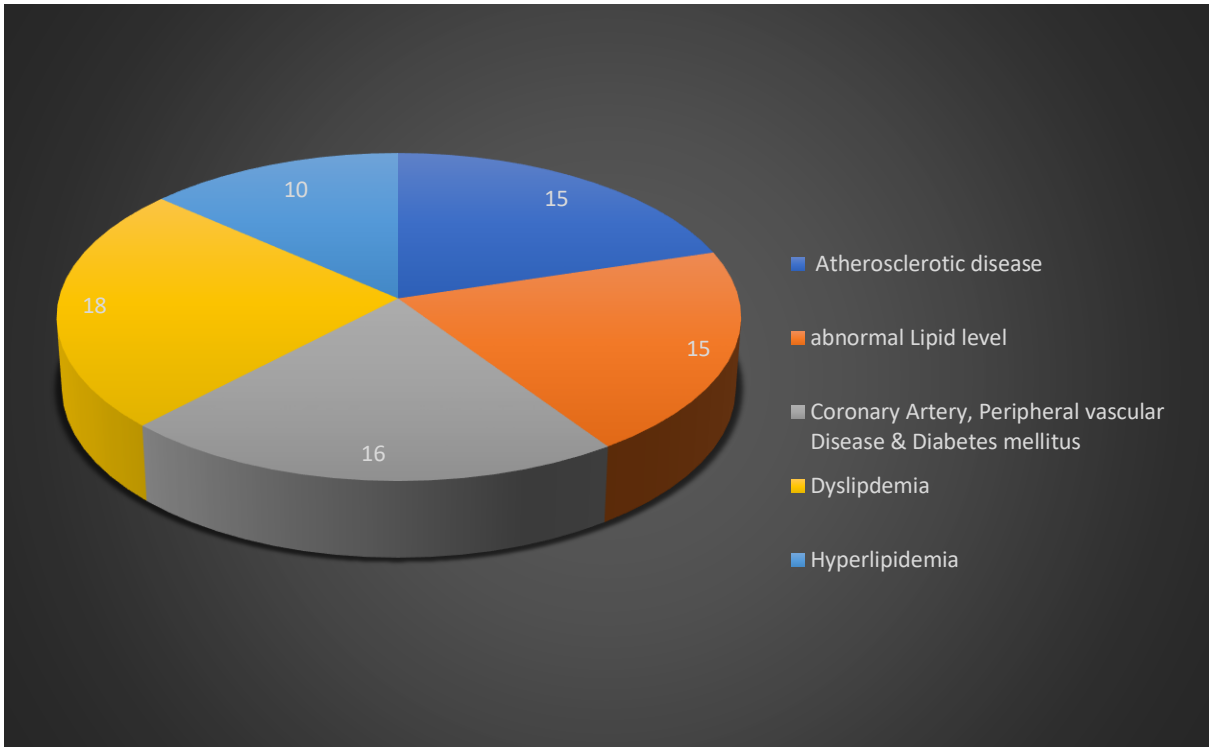
Secondary- The auxiliary information engaged with this task has been accumulated from the clinical diaries, literature, and web.

Study duration: March 22 to June 19, 2021 Three Months.

Data Analysis and Interpretation

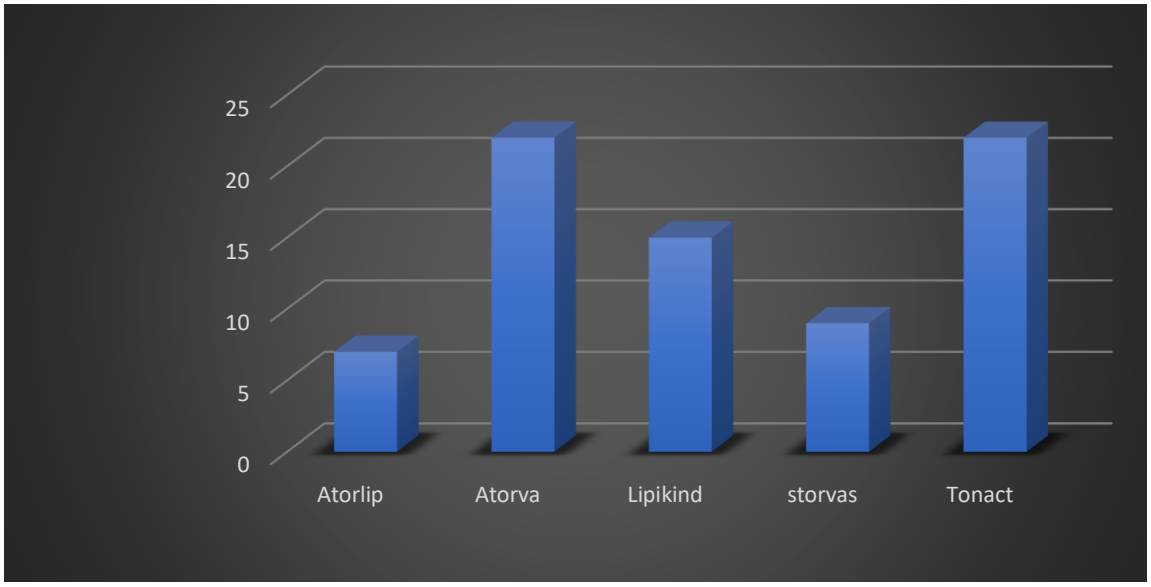
This section presents the report of information examination, Interpretation, and outline of discoveries. As showed in the research technique, the examination used elucidating measurements. Accordingly, recurrence tables were created to feature the combined scores for factors of intrigue. For the pictorial introduction, reference charts and Pie graphs were attracted to empower clients to conceptualize the outcomes.

Question 1: Doctor in which Indication do you prescribe the Atorvastatin for patients?



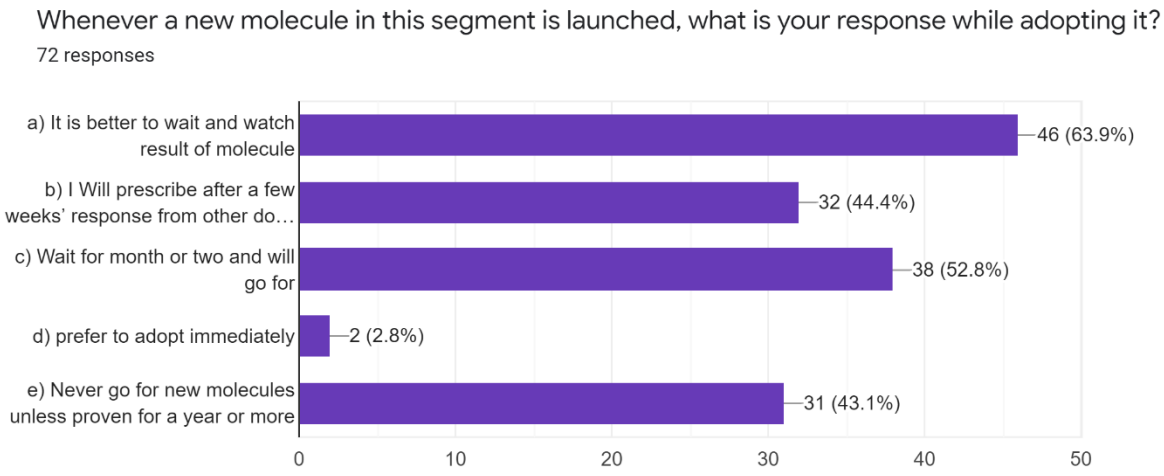
Inference: It is observed that most of the Doctors most considered indications are Dyslipidemia than CAD, PVD & MD and Abnormal lipid levels after that Atherosclerotic disease data from of 74 doctors.

Question 2: Which brands of Atorvastatin come to your mind immediately?



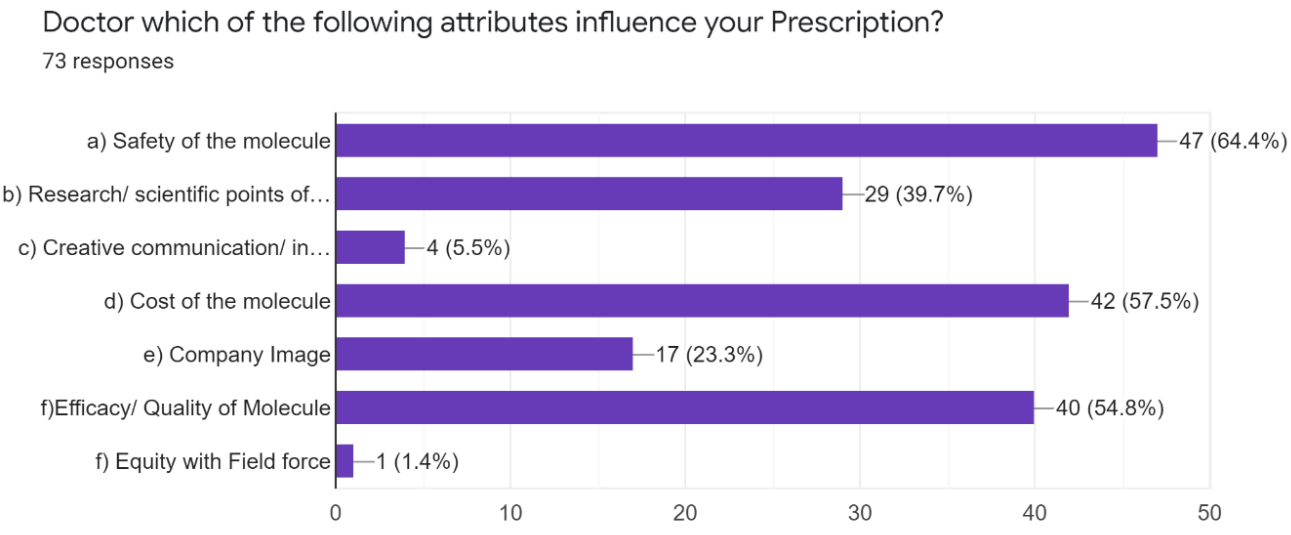
Inference: It was found from the research study that doctors highly recommended is Tonact than Atorva & Lipikind and others are respectively less prescribed data from of 74 doctors.

Question: 3 Whenever a new molecule in this segment is launched, what is your response while adopting it?



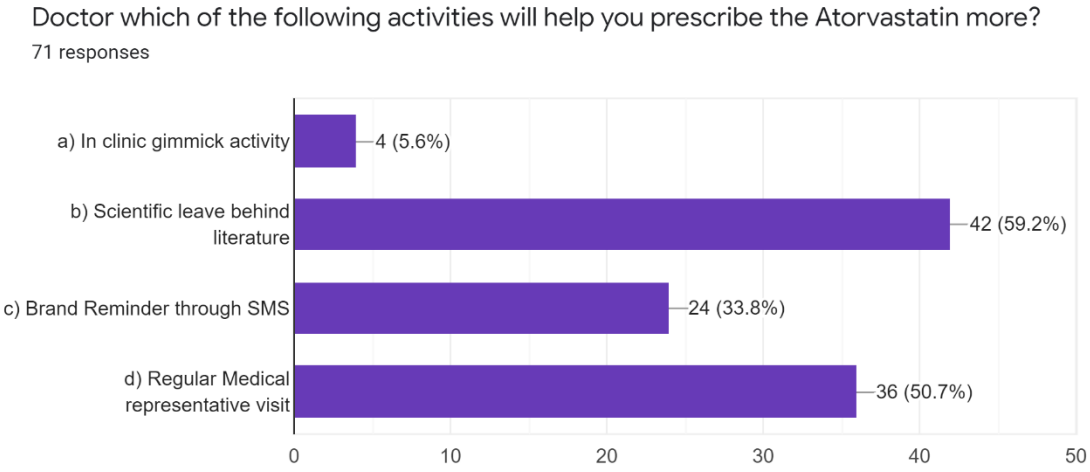
Inference: This graph displays that 63.9%doctors says that it's better to wait and watch the result and 53% wait for a month or two and then will go for it and some of prescribing after other doctor's responses.

Question: 4 Doctor which of the following attributes influence your Prescription?



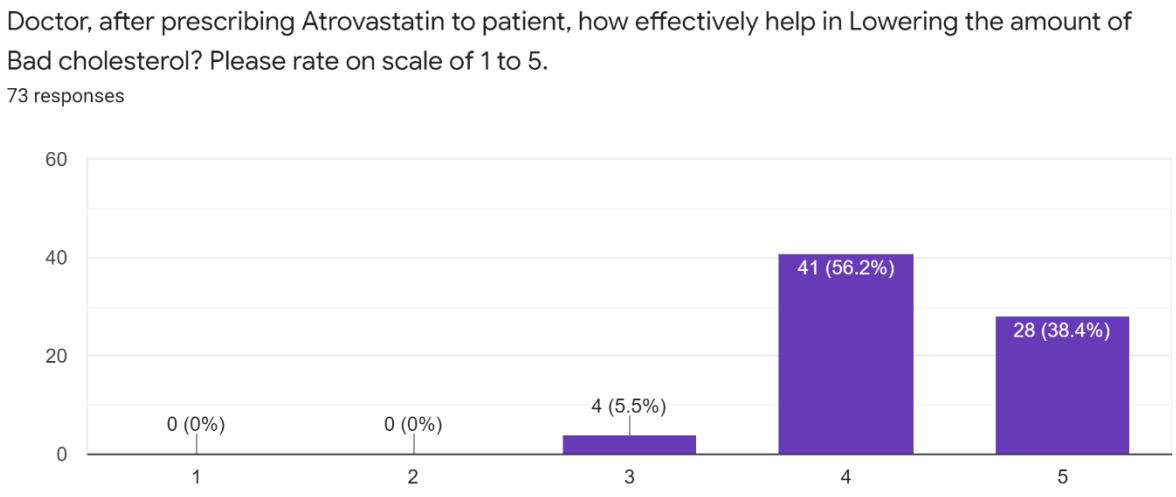
Inference: This question enlightens on all the attributes doctors consider while prescribed any brand, out of all the various attributes mentioned above, doctors feel three major indications i.e., the safety of the molecule & cost of the molecule, efficacy/quality of molecule was also seen.

Question: 5 Doctor which of the following activities will help you prescribe the Atorvastatin more?



Inference: This bar graph displays the response of the doctors that regular medical representatives visit and leave behind/literature activities help prescribe the Atorvastatin more.

Question: 6 Doctor, after prescribing Atorvastatin to the patient, how effectively help in Lowering the amount of Bad cholesterol? Please rate on a scale of 1 to 5.



Inference: This graph displays that doctors say that 38.4% highly effective, 56.2% moderate effective.

CONCLUSION

The overview depended on a qualitative analysis where essential information from 74 specialists was gathered from various locales of West U.P. According to the subject of the study Understand the market of atorvastatin and its preferred brands. It was found from the research study that doctors highly recommended is Tonact than Atorva & Lipikind with considered indication is Dyslipidemia than CAD, PVD & MD and Abnormal lipid level also seen.

LIMITATIONS

- Cardiologists and general practitioners remain silent due to individual viewpoints, unique features, and hierarchical methods.
- A small number of people responded to the scientist's survey. The inability of the targeted population to react due to their hectic schedules was a key challenge. As a result, record access was restricted, limiting the status of further information which would have permitted for greater in-depth analysis.
- Resources constraints were also a significant constraint, with required accounts and a very busy schedule, limiting the specialist's ability to conduct the investigation.

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ANNEXURE

Question:1 Doctor in which Indication do you prescribe the Atorvastatin for patients?

…….

Question:2 Which brands of Atorvastatin come to your mind immediately?

…….

Question 3: Whenever a new molecule in this segment is launched, what is your response while adopting it?

a) It is better to wait and watch the result of the molecule
b) I Will prescribe after a few weeks' responses from other doctors
c) Wait for a month or two and will go for
d) prefer to adopt immediately
e) Never go for new molecules unless proven for a year or more

Question 4: Doctor which of the following attributes influence your Prescription?

a) Efficacy/ Quality of Molecule
b) Safety of the molecule
c) Research/ scientific points of the Molecule
d) Creative communication/ in clinic activity by the molecule
e) Cost of the molecule
f) Company Image

Question 5: Doctor which of the following activities will help you prescribe the Atorvastatin more?

a) In clinic gimmick activity
b) Scientific leave behind literature
c) Brand Reminder through SMS
d) Regular Medical representative visit

Question 6: Doctor, after prescribing Atorvastatin to the patient, how effectively help in Lowering the amount of Bad cholesterol? Please rate on a scale of 1 to 5.

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