Survey on The Sales of Four-Molecule Antihypertensive Medications in The Private Healthcare Sector in Amravati

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Abstract: Hypertension is a significant global health concern, causing 10.8% of fatalities in India and 25% in Maharashtra. It accounts for 51% of stroke deaths and 45% of heart disease deaths. Early identification and treatment of hypertension and other risk factors have reduced cardiovascular disease deaths. Managing hypertension and reducing risk factors like diabetes, dyslipidemia, and smoking are crucial. Lowering blood pressure by 5 mmHg can reduce stroke risk by 34%. A study in Amravati, India, found that doctors prescribe antihypertensive medications like telmisartan for high blood pressure. Some drugs are cost-effective and economically beneficial, while others are less popular due to cost and physician preference. The study aimed to identify market share and address medication concerns. A study in Amravati, India, involving 100 pharmacists, 50 patients, and 10 physicians, found that doctors prescribe telmisartan for high blood pressure. Factors like efficacy, side effects, and comorbidities influenced patient decisions. High sales of certain drug categories, such as Telmikind-40, Concor-5, Beta-cap, Telista Trio CL 6.25, and Furosemide Inj. IP, can inform further pharma marketing and policy changes.

Keywords: Heart Disease, Risk Factors, Telmisartan, Survey, Antihypertensive Medication, High Sales, Maharashtra India, Amravati District.

1.1 Introduction:

In India, hypertension is the cause of 10.8% of fatalities overall. In Maharashtra, the prevalence of hypertension was almost 25%. According to the WHO's Global Brief on Hypertension, which was released on World Health Day in 2013, around 80% of deaths from cardiovascular disease happen in low- and middle-income nations. The progressive decrease in death from cardiovascular disease has been attributed to early identification and treatment of hypertension and other risk factors, as well as public health initiatives that limit exposure to behavioural risk factors. Heart disease and stroke during the previous three decades in high-income nations. Significant advancements have been made in the creation and application of pharmacological therapies for the efficient management of hypertension in recent years. There is a large selection of hypertension medications available, each having unique safety concerns, efficacy profiles, and modes of action. Therefore, in order to decide on the best course of action for each patient, healthcare professionals must have a thorough awareness of the hypertension drug therapy landscape. [1]

Hypertension is becoming recognized as a major global health concern. Around 40% of persons over the age of 25 got a diagnosis of hypertension in 2008, bringing the total number of affected individuals to one billion. The largest percentage of persons over 25 who have hypertension is found in Africa (46%), while the lowest percentage is found in America (35%). Spain (40%), Japan (38.3%), Venezuela (39.7%), and Paraguay (35.4%) are among the nations with significantly higher rates (>35%) of hypertension prevalence. A significant risk factor for stroke and heart disease, hypertension accounts for roughly 51% of stroke deaths worldwide and 45% of heart disease deaths.

High blood pressure, also referred to as hypertension, is a chronic medical disease marked by higher readings that are consistently above normal. It is a major global health concern that, if left untreated, can frequently result in serious complications like heart disease, stroke, renal failure, and other vascular illnesses. Thus, controlling hypertension is essential to lessening the burden of related morbidity and death. [2]

An protracted rise in blood pressure (BP) of 140/90 mm Hg is the traditional definition of hypertension. This threshold identifies a subgroup of individuals who have a high enough risk of cardiovascular disease (CVD) linked to hypertension to require medical attention. [3]

Two numbers are used to represent blood pressure. The blood vessel pressure during a heartbeat or contraction is represented by the first (systolic) number. The pressure in the arteries during the heart's resting heartbeat is indicated by the second (diastolic) number. [4]

A growing global issue, hypertension is linked to a variety of underlying pathophysiological disorders. These comprise endothelial dysfunction, metabolic syndrome, procoagulant condition, oxidative stress, inflammation, and hereditary susceptibility to cardiovascular events in addition to ventricular hypertrophy. In developing nations, the high incidence of hypertension is especially concerning since it fuels the current and projected pandemic of cardiovascular disease (CVD). One of the biggest challenges is managing hypertension while attempting to reduce risk factors like diabetes mellitus, dyslipidemia, and cigarette smoking. T This suggests that there is a critical need for antihypertensive medications that do more than only control blood pressure and offer benefits for the management and prevention of CVD. [5]

Perhaps the most significant risk factor for cardiovascular, cerebrovascular, and renal illness is hypertension, which can be controlled with prompt diagnosis and prompt treatment. [6] Research indicates that lowering blood pressure by 5 mmHg can lower the risk of stroke by 34%, ischemic heart disease by 21%, dementia, heart failure, and cardiovascular disease death by 25%. [7] Studies on the epidemiology of the disease have shown that the prevalence of hypertension is rising quickly in India, ranging from 2 to 8% in rural areas and 4 to 15% in urban areas. every year, hypertension is the cause of an astounding 9.4 million fatalities globally. [8] Throughout the world, antihypertensive medications (AHTDs) are among the most frequently prescribed medications. [9] In the World Health Organization's (WHO) 2015 global report on non-communicable diseases (NCDs), hypertension was defined as raised systolic and/or diastolic blood pressure (SBP and/or DBP) of 140/90 mmHg or more, and it affected one in four men and one in five women. [10]

The selling of antihypertensive medications, which reflects the prevalence and treatment of hypertension in a population, is a crucial component of healthcare economics and public health. A major global cause of cardiovascular illness and mortality, hypertension is typified by increased blood pressure levels. A major factor in regulating blood pressure, lowering the risk of related problems, and enhancing general health outcomes is the widespread availability and use of antihypertensive drugs. The current study aims to clarify the changing picture of antihypertensive medication use by looking at sales data, market dynamics, prescribing patterns, and patient demographics.

1.2 Procedure:

The study aims to analyse the sales volume of antihypertensive medications in the surveyed area over a specific period of three months January 2024 to March 2024

1. **Design of Survey:**

We identified the target market, which we included pharmacies, medical facilities, or people buying antihypertensive medications. We visited 50 patients, 100 pharmacists and 10 Physician. The appropriate sample size was determined based on factors such as accuracy, confidence, and population size, using a suitable sampling technique like random sampling.

2. **Selection of Area:**

We are the Dr. Rajendra Gode Institute of Pharmacy students in Amravati, Maharashtra. We purposefully selected Amravati, Maharashtra as the location for our survey on sale of antihypertensive drug in Amravati, Numerous things influenced our conclusion. First of all, Amravati region provides a wide range of demographics for our study because it is one of the most populated and diversified district in Maharashtra. Second, we have simpler access to the target population and the resources required for the survey because we are situated in Maharashtra.

3. **Development of Survey Report:**

Created a survey that is customized to meet the goals of the investigation. Ask questions concerning consumer demographics, pricing, sales volume, kinds of antihypertensive drugs sold, types of antihypertensive drugs sold, variables influencing purchasing decisions, and satisfaction with medication availability. To found any problems with clarity or comprehensiveness, pre-test the questionnaire on a small sample of people.

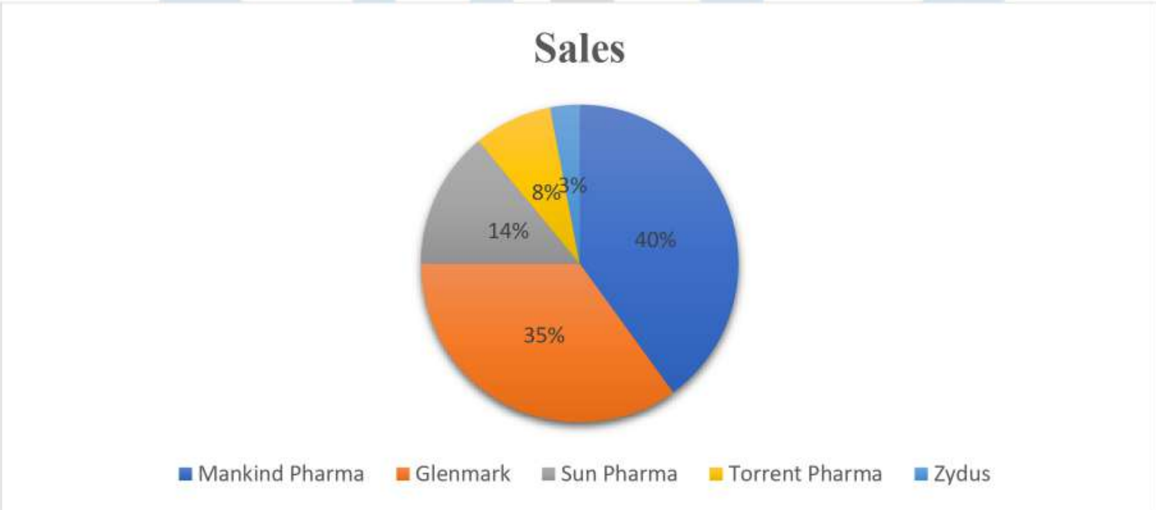
4. **Collection of Survey Data:**

For survey data collection, we used a variety of techniques, including person interview, phone call, online survey via google form, or mail surveys, to distributed the survey to the chosen group. We created survey protocols and communicating with survey participants such as pharmacists, cardiac patients and physicians. Gathered information about antihypertensive medication sales during a predetermined time period, including quantitative (like sales volume) and qualitative (like customer feedback) data etc.

Table No. 1

Sr. No.	Class	Manufacturer	Brand Name	Percent of sale
1.	Angiotensin receptor blocker	Mankind Pharma	Telmikind-40 Telmikind AM Telmikind-Beta25mg	40%
2.		Glenmark	Telmisartan (Telma 40 mg)	35%
3.		Sun Pharma	Olmisartan (Olmezest Am 40mg)	14%
4.		Torrent Pharma	Losartan (Losar 50mg)	8%
5.		Zydus	Azilsartin (Azildac-40mg)	3%

Angiotensin receptor blocker



Percent (%) share of Angiotensin receptor blocker in market

Figure No. 1

Following the survey study, we discovered that the sales of Mankind Pharma are 40%, Glenmark Pharmaceuticals 35%, and Sun Pharma is 14%, Torrent Pharma 8%, Zydus 3%, Compared to other companies, Mankind Pharma has relatively high sales, whereas Zydus, has poor sales in the Amravati district.

Table No. 2

Sr. No.	Class	Manufacturer	Brand Name	Percent of sale
1.	Beta-blocker	Ajanta Pharma limited	Metaprolol (Met XL Trio 25mg)	15%
2.		Merck Ltd	Bisoprolol (Concor-5mg)	35%
3.		Cipla	Propranolol (Ciplar10mg)	10%
4.		Sun Pharma	Beta cap 10mg	38%
5.		Abbott Pharmaceuticals	Propranolol (Inderal 20mg)	2%

Beta blockers

Percent (%) share of Beta-blocker in market

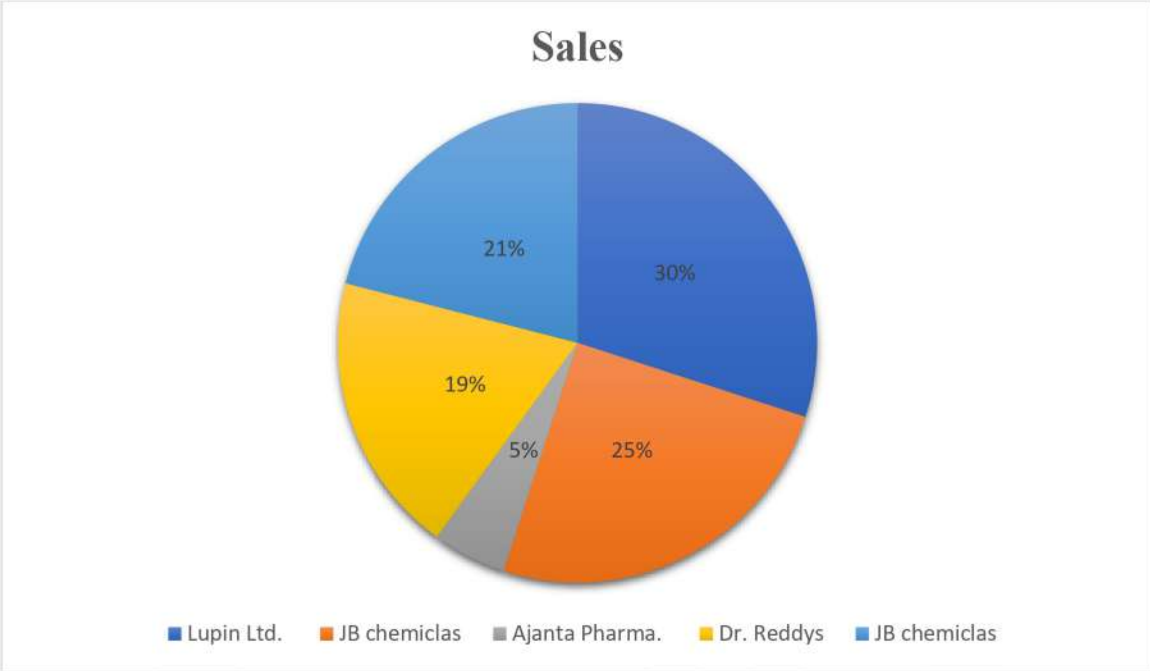
Figure No. 2

Following the survey study, we discovered that the sales of Merck Ltd 35%, Sun Pharma is 38%, Ajanta Pharma Ltd 15%, Cipla 10% and Abbott Pharmaceuticals 2%, Compared to other companies, Sun Pharma has relatively high sales, whereas Abbott Pharmaceuticals, has poor sales in the Amravati district.

Table No. 3

Sr. No.	Class	Manufacturer	Brand Name	Percent of sale
1.	Calcium Channel Blocker	Lupin Ltd	Cilnidipine (Telista Trio CL 6.25mg)	30%
2.		JB Chemicals and Pharmaceuticals Ltd	Nifidepine (Nicardia10mg)	25%
3.		Ajanta Pharma Ltd	Azelnidipine (Azusa 16mg)	5%
4.		Dr. Reddy's	Amlodipine (Stamlo 5mg)	19%
5.		JB Chemicals and Pharmaceuticals Ltd	Cilnidipine (Cilacar 10mg)	21%

Calcium Channel Blocker



Percent (%) share of Calcium Channel Blocker in market

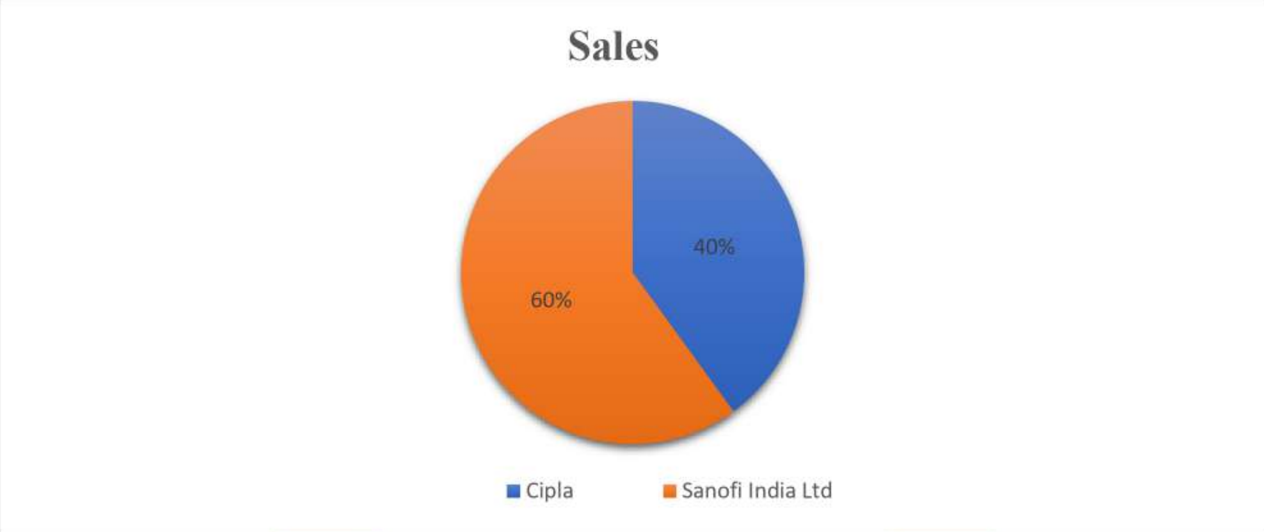
Figure No. 3

Following the survey study, we discovered that the sales of Lupin Ltd 24%, JB Chemicals and Pharmaceuticals Ltd is 25%, Ajanta Pharma Ltd 5%, Dr. Reddy's 19% and JB Chemicals and Pharmaceuticals Ltd (Cilacar10) 21%, Compared to other companies JB Chemicals and Pharmaceuticals Ltd has relatively high sales, whereas Ajanta Pharma, has poor sales in the Amravati district.

Table No. 4

Sr. No.	Class	Manufacturer	Brand Name	Percent of sale
1.	Diuretics	Cipla	Torsemide (Dytor plus 5 / Dytor-5mg)	40%
2.		Sanofi India Ltd	Furosemide Inj. IP (Lasix 10mg/ml)	60%

Diuretics



Percent (%) share of Diuretics in market
Figure No. 4

Following the survey study, we discovered that the sales of diuretics such as Cipla is 40%, Sanofi India Ltd is 60%, Compared to Cipla, Sanofi India Ltd has relatively high sales, whereas Cipla has relatively less sales in the Amravati district.

Comparison study of highly selling drug from different manufacturer:
Table No. 5

Sr.no.	Manufacturer	Brand Name	Price	Sale in percentage
1.	Mankind Pharma	Telmikind-40mg	40.00	60%
		Telmikind AM	75.00	
		Telmikind-20mg	26.68	
2.	Ajanta Pharma Limited	Teltan H 40mg	60.00	20%
		Teltan 40mg	71.00	
		Teltan-MT 50mg	23.50	
3.	Macleods Pharmaceuticals LTD	Telmiduce 40mg	28.83	5%
		Telmiduce AM 40mg	67.50	
		Macsart 40mg	29.00	
4.	Sun Pharma	TeleAct™ 40mg	75.71	15%
		TeleAct™ 20mg	36.62	
		TeleAct™ AM 20mg	140	

Figure No. 5

Following the comparison study, we discovered that the sales of Mankind Pharma are 60%, Ajanta Pharma Limited is 20%, Macleods Pharmaceuticals Limited is 5%, and Sun Pharma is 15% Compared to other companies, Mankind Pharma has relatively high sales, whereas Macleods Pharmaceuticals Ltd. has poor sales in the Amravati district.

1.3 Result and Discussion:

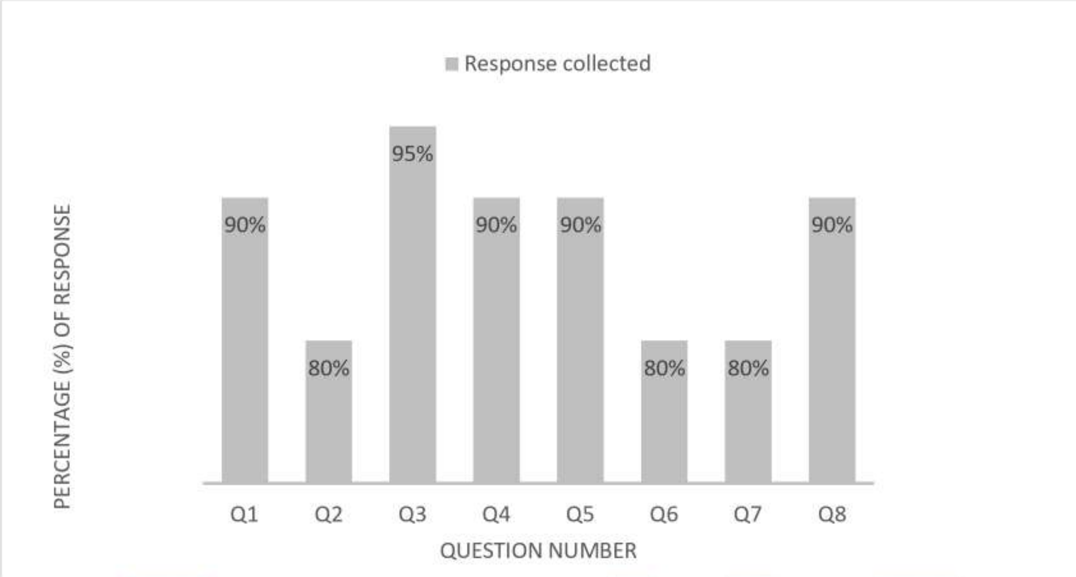
Result:

Some of this questionnaire which are asked to community pharmacy as below:

Table No. 6

Sr.no	Questions	Response Collected
1.	How frequently does your pharmacy dispense antihypertensive drugs?	90%
2.	Which antihypertensive drugs are prescribed the most frequently that you fill?	80%
3.	Which medication brand is this?	95%
4.	Any other brand is this one's competitor.	90%
5.	How much of that medication is sold each year or each month?	90%
6.	What is the patient's rate of recovery from the disturbance?	80%
7.	If that medication has any negative side effects	80%
8.	What additional medications are combined with antihypertensive medications?	90%

Graphically it represented as,



Percent (%) response from pharmacist

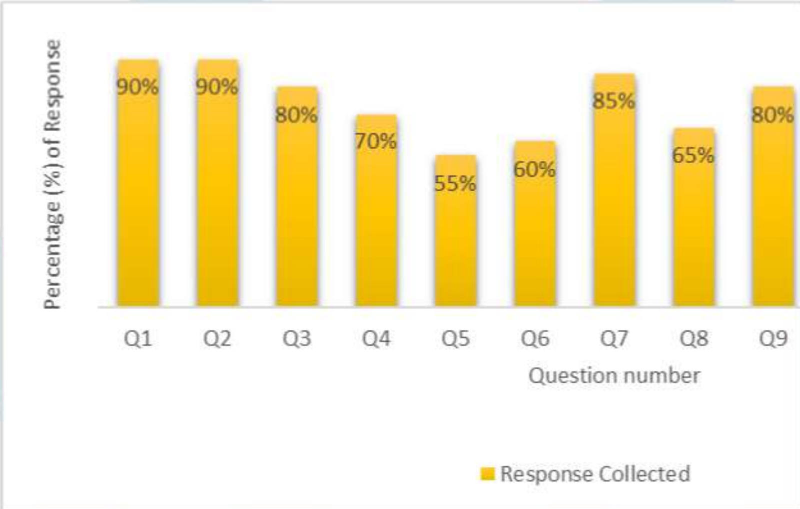
Figure No. 6

This are following questionnaire for physician:

Table No. 7

Sr.no	Questions	Response Collected
1.	In your practice, how often do you see patients with hypertension?	90%
2.	In your practice, which antihypertensive drugs are most frequently prescribed?	90%
3.	What aspects, like as efficacy, side effect profile, and comorbidities, affect your decision when selecting an antihypertensive drug for a certain patient?	80%
4.	How frequently do you change antihypertensive drugs or modify dosages for patients whose blood pressure doesn't get under control?	70%
5.	What proportion of your patients have adverse effects from antihypertensive drugs, and how are these symptoms handled?	55%
6.	How do you evaluate patients' compliance with antihypertensive drug schedules?	60%
7.	What obstacles do you have while trying to get patients to follow their antihypertensive drug regimens? If so, how do you overcome them?	85%
8.	How do dietary and exercise changes fit into the overall therapy of hypertension in your practice?	65%
9.	How do you keep abreast of new findings and recommendations in the field of antihypertensive medication therapy?	80%

10.	Do you encounter any particular difficulties or restrictions in your city when recommending or keeping track of antihypertensive drugs?	70%
11.	What changes would you like to see made to the accessibility or availability of antihypertensive drugs or resources in your city for the management of hypertension?	75%
12.	How happy are you with the services and assistance that your practice currently offers for controlling hypertension?	90%
13.	Do you think your city needs to focus on any particular areas of antihypertensive medication therapy research or attention?	80%



Present (%) response from physician

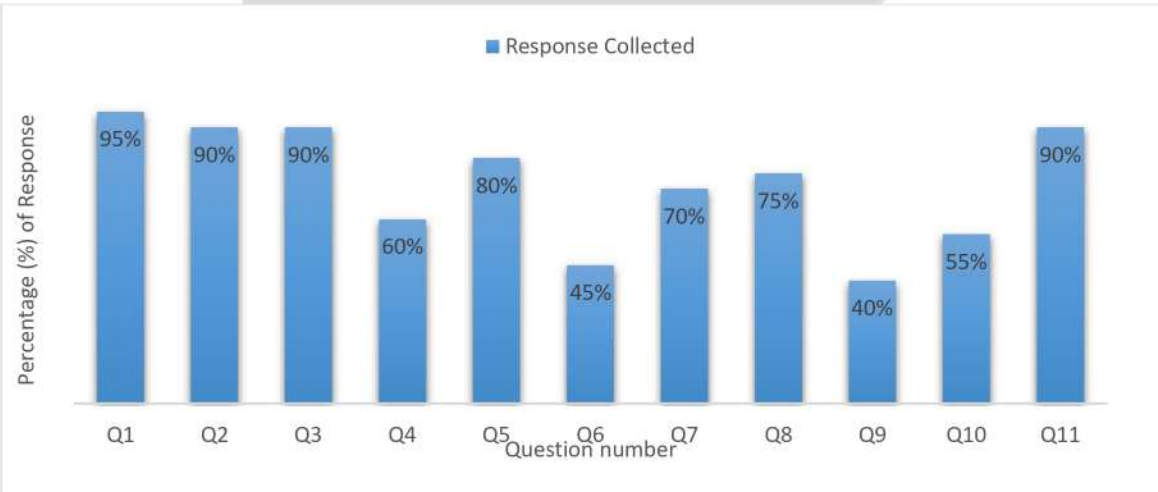
Figure No. 7

Some of the demographic information which was collected from cardiac patients from following table:

Table No. 8

Sr.no	**Questions**	**Response Collected**
1.	Do you presently use any medicine to treat high blood pressure, or hypertension?	95%
2.	If so, what antihypertensive drug or medications do you take?	90%
3.	How long have you been taking the medications for hypertension?	90%
4.	Have the antihypertensive medications you are taking had any negative effects for you?	60%

5.	To what extent do you feel that the antihypertensive medications you are taking are helping to control your blood pressure?	80%
6.	Do you find it difficult to remember to take your prescription antihypertensive medications?	45%
7.	Have you ever changed antihypertensive drugs because of negative side effects or lack of efficacy?	70%
8.	How frequently do you go to your doctor to have your hypertension checked and managed?	75%
9.	How accessible are antihypertensive medications in your city, on a scale of 1 to 10?	40%
10.	Do you think that people in your community are sufficiently aware of hypertension and the significance of taking medications as prescribed?	55%
11.	Do you have any difficulties getting access to or maintaining your antihypertensive medications?	90%



Percent (%) response from patient

Figure No. 8

From January 2024 to March 2024, for three months a100 community pharmacists in and around Amravati city participated in the current prospective study, which aimed to examine the patterns, trends, and analyse selling of antihypertensive medications in the Amravati region. We conducted a three month-long survey in the Amravati district and discovered that doctors typically prescribe telmisartan for high blood pressure. along with some other medication are prescribed by physician and sell by pharmacist such as ca+ channel blocker (cilnidipine), beta-blockers (bisoprolol, propranolol) and diuretics (Furosemide, Torsemide) etc. In this survey fifty patients were participated,we collected information about patients characteristics and their medication intake, how long patients taking that medications, family background etc. for this survey ten physician are involved. We collected information from physician like What aspects, like as efficacy, side effect profile, and comorbidities, affect the decision while selecting an antihypertensive drug for a certain patient, do they encounter any particular difficulties or restrictions in Amaravati district when recommending or keeping track of antihypertensive drugs etc.

Pharmaceutical companies followed some marketing strategies like advertising, educational initiatives for awareness among consumer about medication, promotion to increasing the sale of antihypertensive drugs.Some drugs has high sale in Amaravati District due to the high incentive given by the market representative or manufacturer company to the physicians along with this some drugs are cost effective to the patients and economically beneficial while purchasing in market. That's why drug like Telmikind-40 (Mankind pharma), Concor-5 (Merck), Beta cap (sun pharma), Telista Trio CL 6.25 (Lupin Ltd), Furosemide Inj.IP (Sanofi India Ltd) has highly selling in market. Some other drugs which has poor sale in market such as Telmiduce-40 (Macleods Pharmaceuticals LTD), Inderal (Abbott pharmaceuticals), Ajanta Pharma Ltd (Azusa) etc. due to less incentive given by manufacturer or other reason is cost and choice of physicians and patients. These are some factor which affects the sale of drugs.

Discussion:

This survey is simplified study of sale of antihypertensive drugs all over Amaravati district.

By this survey we concluded that the which category of drug has high selling in Amaravati region with how many percent of share in market. All this data which we are collected by this survey it is useful for further procurement in pharma marketing and it helpful in changes of some policies by healthcare professional and manufacturer. Also by this survey we recognises different physician prescribed different medication by state and convenience of patients. each brand shows various fluctuation in market with their percent share. We also identified what concerned about medication by patients and physician through design questionaries or interviews.

1.4 Conclusion:

A study conducted in Amravati, Maharashtra India, involved 100 community pharmacists,50 patients and10 physician for three months from January 2024 to March 2024 to analyse the selling patterns and trends of antihypertensive medications. The survey found that doctors typically prescribe telmisartan for high blood pressure, along with other medications like ca+ channel blockers, beta-blockers, and diuretics. The survey also collected information from fifty patients and ten physicians, focusing on factors such as efficacy, side effects, and comorbidities that affect patient decisions. The study concluded that certain drug categories have high sales in the Amravati region, with varying market share. The data collected can be used for further pharma marketing and policy changes by healthcare professionals and manufacturers. Some drugs, like Telmikind-40, Concor-5, Beta cap, Telista Trio CL 6.25, and Furosemide Inj. IP, have high sales due to incentives from market representatives and cost-effectiveness.

Summary of survey:

The purpose of the survey was to determine the target market, which includes antihypertensive drug buyers, pharmacies, and healthcare facilities. A good sampling strategy was selected, and the population size, accuracy, and confidence level were used to calculate the right sample size. Amravati, Maharashtra, was selected by the Dr. Rajendra Gode Institute of Pharmacy students because of its easy access to resources and diversified population. A customised survey report was created, containing inquiries regarding sales volume, pricing, medicine availability, and consumer population. Using a variety of methods, including person interview, phone, internet, and mail surveys, data from the survey was collected and handled by qualified survey coordinator. Both quantitative and qualitative information about sales of antihypertensive medications was included.

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