

Study on Potential of Oncology Market in India

By

Amulya Sharma

*Dissertation submitted for the partial fulfillment of the
MBA Pharmaceutical Management*

Academic year, 2016-2018



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TO WHOMSOEVER MAY CONCERN

This is to certify that Mr. Amulya Sharma, student of MBA Pharmaceutical Management, from The IIHMR University, Jaipur has undergone internship training at Blue Berry Pharma Advisory, Mumbai from 9th April 2018 to 2nd July 2018.

The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish him all success in all his future endeavors.



for 
(Prof. Dr. Amul Kumar)
Dean, Academics and Student Affairs 29.7.18.
The IIHMR University, Jaipur


Prof. Rahul Sharma,
Assistant Professor,
The IIHMR University, Jaipur

Blue Berry Pharma Advisory



7th July 2018

This is to certify that Mr. Amulya Sharma student of MBA pharmaceutical management from THE IIHMR University, Jaipur has undergone dissertation from 9th April to 2nd July 2018.

The candidate has successfully carried out the study designated during dissertation and his approach to the study has been sincere, and analytical.

I wish him all the success in his future endeavor.

Subhash Seth
CEO

Blue Berry Pharma Advisory



CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled ' A STUDY ON POTENTIAL OF ONCOLOGY MARKET IN INDIA' and submitted by *Mr. Amulya Sharma*, Enrolment No. IIHMR-U/01/2016-18/0061 under the guidance of *Prof. Rahul Sharma* for partial fulfilment of the *MBA Pharmaceutical Management* of the university carried out during the period from 9th April Feb, 2016 to 2nd July 2018, embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning and knowledge.

Signature



ABSTRACT

Background

Cancer is one of the most dreadful diseases of 21st Century. Cancer affects more than 14.1 million people about people worldwide.

The worldwide trends show that in developing countries that are going through rapid societal and economic changes, the shift towards lifestyles typical of industrialized countries is leading to a rising burden of cancers associated with reproductive, dietary, and hormonal risk factors. The new research study suggests that certain molecular interaction between cells and the scaffolding holding them in place (extracellular matrix) to become unstuck at the original tumour site, cancer cells dislodge, move on and then reattach themselves at a new site. Breast cancer, oral cancer, lung cancer, cervical cancer and colorectal cancer are the top five cancers affecting Indian Population. The objective of the study is to find out the major and potential drug molecules in the anti-cancer segment in global & Indian market.

Methodology

Data Source & Sampling

This study includes data from AIOCD & IMS. The study was done upon secondary Data. This includes sales Output data of 2017 & 2018 of all drug molecules of India in Oncology Market as well as top therapeutic categories popular in Indian Oncology market. This study also includes the major brands having market share in Oncology segment in Indian Pharmaceutical Market. This data reflects number of patients who have used different oncology products in different segments. This data also shows major companies who are manufacturing the top drug molecules and major companies by their revenue in Indian Market. The data was analysed using Microsoft excel.

Result

The growth in Oncology has shifted from chemotherapeutic drugs to Biologics as Sales of Biologics is growing at much faster rate than the chemotherapeutic drugs. The main therapeutic categories which account for oncology sales are Anti-Neoplastics, Vinca alkaloids and Plant products, and Immunosuppressive and Immunostimulating agents. Also, Haryana records highest cases of Cancer in India (39 %). The total Sales of Oncology drug in Indian Market in May 2017 is Rs.2389.6 Cr. Total Sales Oncology drug in Indian Market in May 2018 is Rs.2496.2 Cr. The Value Growth of Oncology Market for a year from 2017 to 2018 is 4.5 %.

ACKNOWLEDGEMENT

A task over a time can only be successful with the help and support of your friends, family and teachers. The energy and the happiness that accompany the successful completion of the project would be inadequate without giving thanks to people who helped me to achieve the dissertation project.

I would like to thanks from the bottom of my heart to our Dean, I would like to take the opportunity to thank and express my deep sense of gratitude to our President, **Dr. S D Gupta** for the timely kind co-operation and providing all the required facilities for our project.

I am also thankful to Dean of Academics **Dr. Ashok Kaushik**, and Dean of Placements **Hem Bhargava**, for denoting their trust in me and giving me this great opportunity of conducting my Dissertation at **Blue Berry Pharma Adversory, Mumbai**.

I would like to show my warm regards to my mentor **Prof. Rahul Sharma** for his help, able advice, guiding, coordination and constructive criticism at each stage of the project.

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Sincerely

Amulya Sharma

MBA PM-08

The IIHMR University Jaipur

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INTRODUCTION

Cancer involves an inadequately controlled division and multiplication of cells that can infiltrate adjacent tissues and, in many types, form distant secondary lesions. The factors that permit metastatic tumor cells to survive

The concept of cancer has evolved through ages from that of a single disease to one of many diseases with many causes. Most prevalent are the carcinomas of the stomach, lungs, breast, cervix, colon, rectum, prostate and liver.

Chief among carcinogens are irritants such as fumes of tobacco & certain metals, ionizing and ultraviolet radiation, Specific chemical compounds, some helminthic parasites and possibly viruses.

Everyone is constantly bombarded by carcinogens of various potencies, but cancer develops in minority of people. A few uncommon neoplasms, clearly are genetically determined, but the degree of resistance to carcinogens also appears to have a genetic basis.

A correct cancer diagnosis is needed for proper and effective treatment because every cancer type requires a typical treatment regimen that encompasses one or more modalities such as surgery, radiotherapy, and chemotherapy. Identifying the goals of treatment and is an important first step, and health services should be integrated and people-centred. The primary target is generally to treat cancer or to increase life.

Prolonging the patient's quality of life is also an important target. This can be completed by supportive & physical care and psychosocial support.

The main classes of cancer treatment are surgery, systemic therapies (chemotherapy, hormonal therapy and biological agents) and radiotherapy, which can be given alone or in combination and either with curative or palliative purpose.

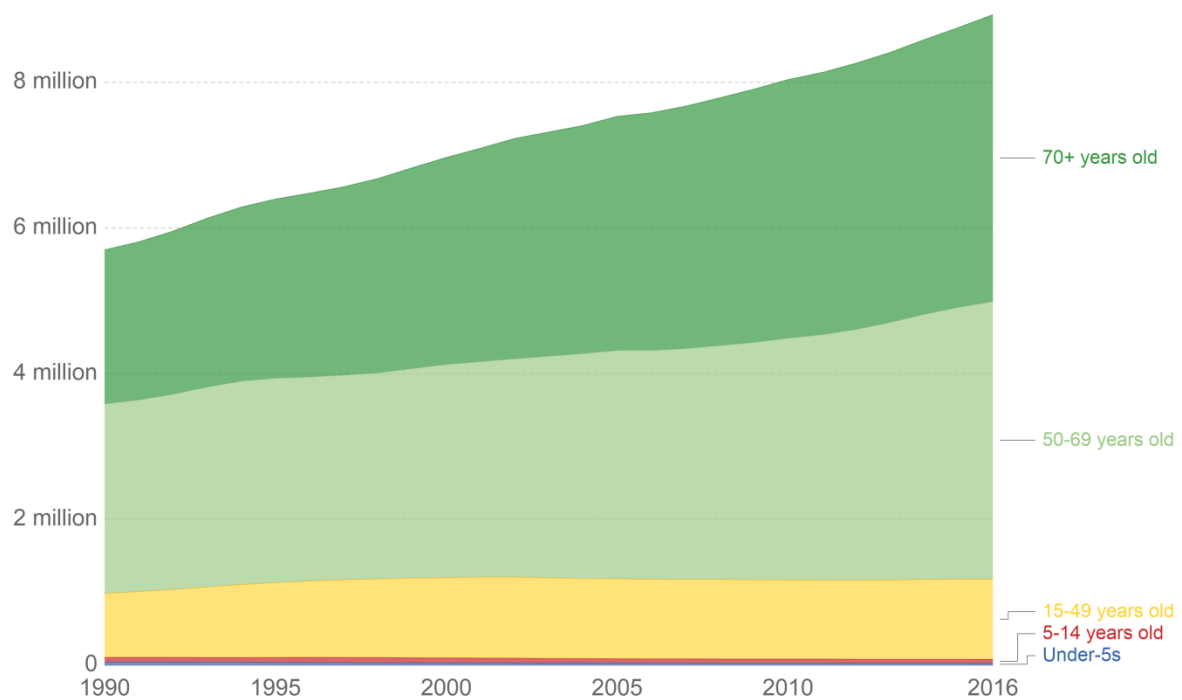
The development of new operational services delivering these therapies is associated with increasingly high costs, therefore making realistic projections is critical to maximize infrastructure, equipment, financial and human resources at a population level.

Taking radiotherapy, the information available has been generated mainly in developed countries; the estimates of service demand are based on expert's opinion, rate of utilization, or on what should be prescribed according to clinical guidelines. However, patterns of cancer incidence, stage at diagnosis and access to treatment in developing countries are distinct, thus indications for surgery, systemic therapies and radiotherapy may vary considerably.

GLOBAL PERSPECTIVE

Cancer deaths by age, World

Total annual cancer deaths differentiated by age category across both sexes. Data includes all forms of cancer.



Source: IHME, Global Burden of Disease (GBD)

OurWorldInData.org • CC BY-SA

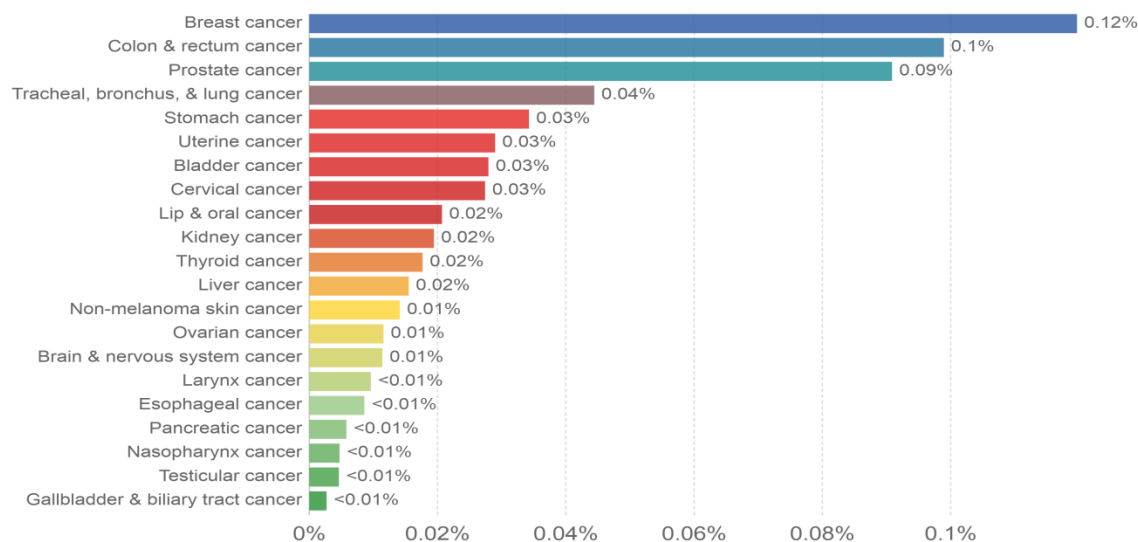
The following statistical data showing number of cancer deaths by Age over the years from 1990 to 2016.

Source- [Ourworldindata.com](https://ourworldindata.com)

Share of population suffering from cancer types, World, 2016

OurWorld
in Data

Share of total population with different forms of cancer, measured as the age-standardized percentage. This share has been age-standardized assuming a constant age structure to compare prevalence between countries and through time.



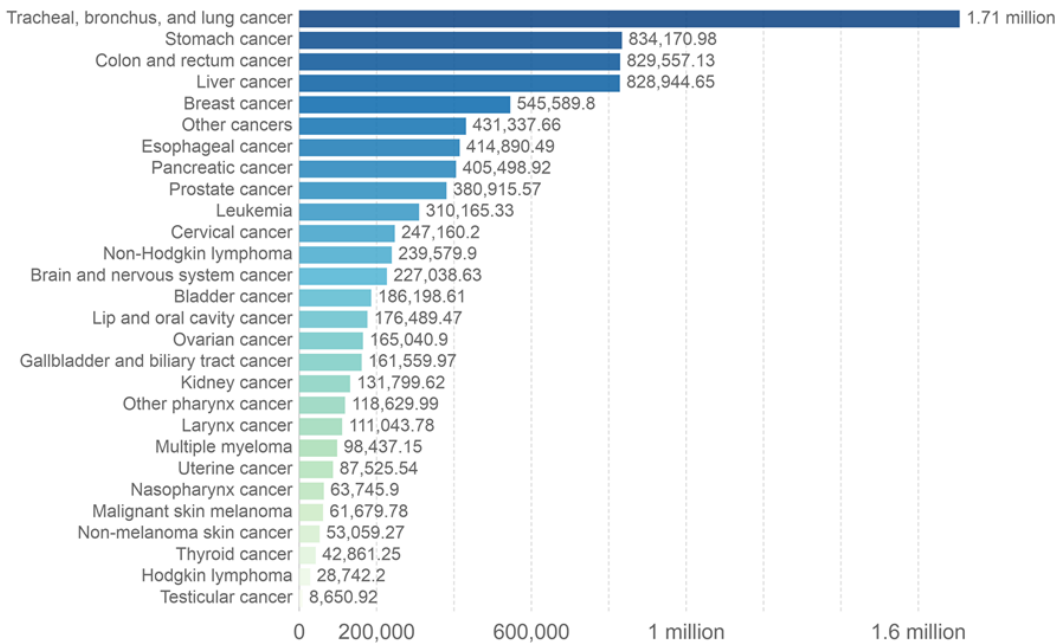
Source: IHME, Global Burden of Disease

OurWorldinData.org • CC BY-SA

The following statistical data is showing the percentage of People suffering from different types of Cancer.

Cancer deaths by type, World, 2016

Total annual number of deaths from cancers across all ages and both sexes, broken down by cancer type.



Source: IHME, Global Burden of Disease (GBD)

OurWorldInData.org • CC BY-SA

This following statistical data is showing the Cancer Deaths by different types of Cancers in world.

LITERATURE REVIEW

1.3

Cancer is a process whereby a loss of control of normal cell division and multiplication produces a tumor that can invade adjacent tissues and metastasis, i.e implant cancerous cells at a site that is non contiguous to their origin , where abnormal multiplication continues.

When Cancer originates in connective tissues, in (bone or a muscle), it is called Sarcoma. When it originates in epithelial tissues (lining tissues and organs such as the breast, lungs or stomach), It is called Carcinoma.

The latter is by far more common. Invasive tumors occur in all complex species and probably antedate the advent of vertebrates.

The concept of autonomy suggests that once a cell has become truly cancerous, it is beyond bodily control.

The fact that Cancer once established can enter a stage of remission- sometimes permanently argues that the body can rally to retard or even reverse previously uncontrolled cell proliferation.

The extent to which the incidence of cancer is increasing is a complicated issue. It is predominantly an illness of middle age and with the exception of few norms such as leukaemia, its relatively rare in children. Although a shift in the Age distribution of a population affects the actual incidence of cancer, Statistics have shown the art factual increases.

These are due to vast improvements in the diagnostic techniques of endoscopy, imaging, and biochemistry that can now be used to detect many asymptomatic cancers and pathological techniques that facilitate the differentiation of neoplastic from inflammatory lesions, primary from secondary neoplasms, and so forth .

For the incidence of a disease to be considered meaningfully, It must be presented in age-specific terms. As the average age of population increases and the proportion of an age group in which various cancers most commonly occur become larger, an increase in the number of cases is expected. This increase can however tend to blur the more important question of whether the incidence of that disease is increasing in a specific age group.

Suspicion of potential carcinogenesis has also fallen synthetic food additives, such as dyes and flavouring agents, and contaminants, such as pesticides & fertilizers, either from direct spraying or from absorption of affected groundwater.

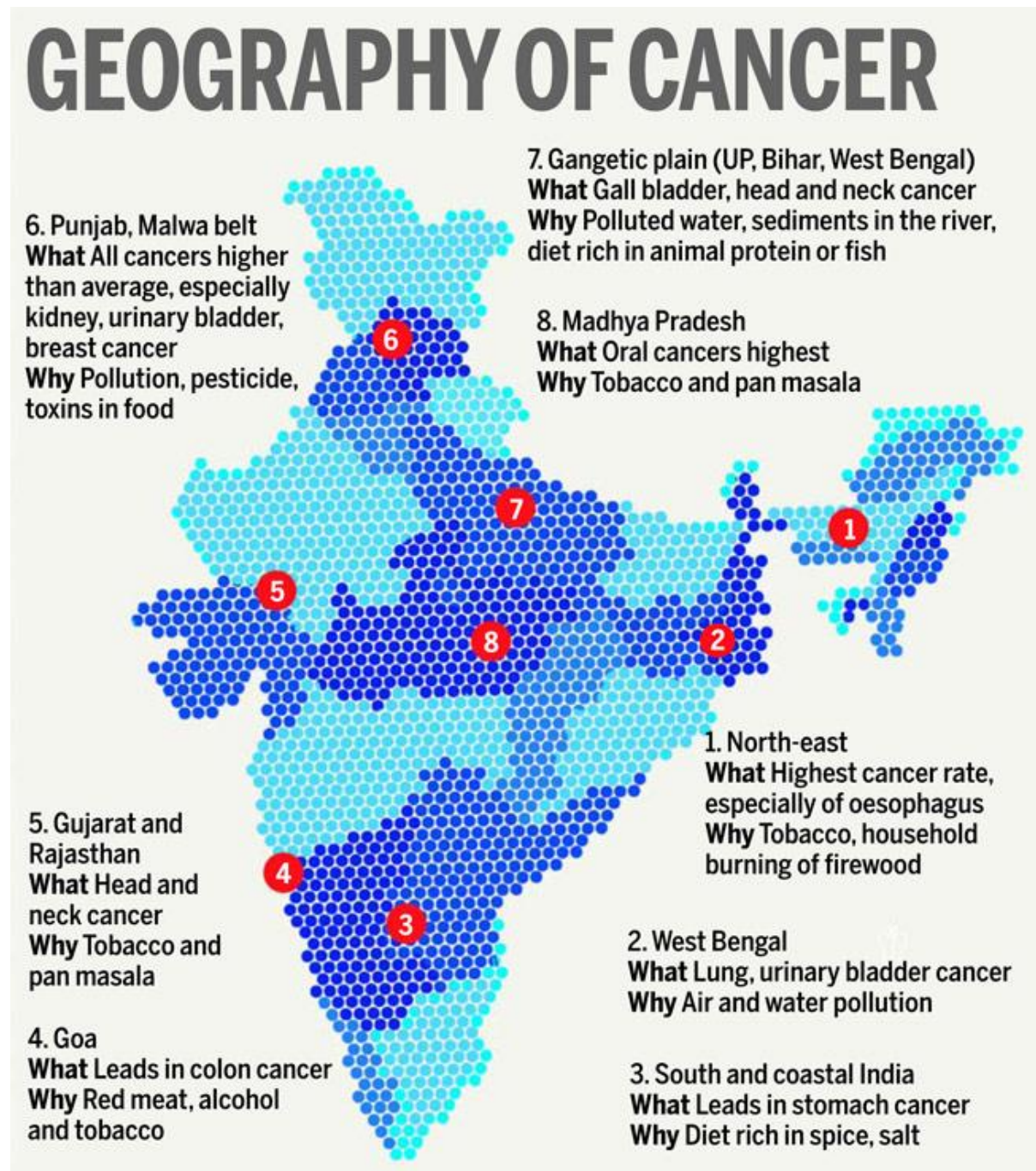
The available treatments are by far generally drastic & poorly selective of the foci of the disease and, in many circumstances not curative.

Earlier diagnosis improves the cure rate of many but not all cancers.

Therefore Public education about the signs of Cancer and further improvements in the sensitivity of diagnostic methods should be sought. However, until our understanding of the fundamental biology of cancer improves, preventive measures, such as minimizing exposure to known carcinogens, will exert by far the greatest benefit to public health.

2.0 CANCER IN INDIA

Geographical distribution of Cancer in India



2.1 STATISTICS & INCIDENCES

There are estimated cancer cases in India are 2.5 Million, While New Cancer cases Registering are 7 Lakhs are every year.

Deaths in groups between (30-69) are 71 % of total cancer related deaths in India

The Major 50 % Deaths in India in Men are Caners of Oral Cavity and Lungs and Cervix & Breast Cancer cases in Women. New cases registered: 1,23,000.

The Top Five Cancers that accounts for 47.2 % deaths in India in men are Lip, oral cavity, Stomach, colorectal, Pharynx, and in Women are Breast, cervix colorectum, Ovary, Lip and Oral Cavity.

Emerging trends in cancer in India are:

- There is an increase in cases of lung Cancer in men, and there is an increase in Colon, Ovary & uterus cancer in women.

The number of oral cancers was more than twice the number of lung cancers in individuals aged 30-69 years, indicating that the range of fatal cancers caused by tobacco in India differs substantially from that in high-income countries.

Cancer strikes more Women than Men, but more Men die of Cancer than Women.

- One woman dies of cervical cancer every 8 minutes in India.
- For every 2 women newly diagnosed with breast cancer, one woman dies of it in India.
- As many as 2,500 persons die every day due to tobacco-related diseases in India.

Report says that Over 39 % of All cancer cases in India are registered in Haryana.

The largest numbers of cancer cases recorded from Indian states were from Haryana at 39.6 per cent followed by Delhi at 27.3 and Uttar Pradesh at 12.7 per cent.

Approximately 17.3 lakh new cancer cases are being estimated by the year 2020 in India, therefore with the present trends Haryana might have around 6.5 lakh cancer cases by then.

Breast cancer has a majority share of cancer cases and is the leading cause for deaths in women suffering with non-communicable disease. According to an Indian Council of Medical Research (ICMR) report, breast cancer shares 10% of all cases.

Types of Most common Cancers in India

- Breast cancer
- Cervical cancer
- Oral cancer
- Colorectal cancer
- Lung cancer

OBJECTIVE:

- To study the Market Potential of Oncology drugs in India.
- To identify current trends in growth of Oncology drugs in India.

Need of Study

Cancer mortality cases are increasing year by year in India, thereby creating a challenge for health services in India to combat with it. India lags behind in providing better infrastructure and health services to cancer patients. The disparity in availability of oncology therapies becomes more severe over a 10-year period (2006-2016), with not even one-third of the 270-odd oncology-molecules being available in India, a country with over 10 million cancer patients, According to a data by QuintilesIMS, a technology-driven healthcare service provider shows.

METHODOLOGY

Data Source & Sampling

This Study includes Data from AIOCD and IMS Anti-Cancer segment in Indian Pharmaceutical Industry done in 2017-18. The Data type is Secondary. The sample includes the sales value of major oncology molecules and various brands (including Pharmacy Sales, Distributor Sales and Hospital Sales) in May 2017 & May 2018. This data reflects number of patients who have used different oncology products in different segments. This data also shows major companies who are manufacturing the top drug molecules and major companies by their revenue in Indian Market. The total samples of 126 oncology drug molecules were studied. The data was analysed using Microsoft excel.

RESULTS

Abbreviations:

TSA Stands for **Total Sales Audit**

MAT Stands for **Moving Annual Total, i.e Total Sales Revenue Including Distributor Sales, Pharmacy Sales & Hospital Sales.**

Table 1-

Top 10 Therapeutic Categories Based Upon Their Market Share.

S.No.	MOLECULE	THERAPEUTIC CATEGORY	TSA MAT VALUE 2017(in Cr.)	TSA MAT VALUE 2018(in Cr.)	MARKET SHARE
1	TRASTUZUMAB L1X10	ALL OTHER ANTINEOPLASTICS	126.0	150.7	6.0%
2	PACLITAXEL L1C8	VINCA ALKALOIDS AND OTHER PLANT PRODUCTS	149.4	133.4	5.3%
3	GEFITINIB L1X15	ALL OTHER ANTINEOPLASTICS	163.1	129.3	5.2%
4	IMATINIB MESYLATE L1X16	ALL OTHER ANTINEOPLASTICS	134.2	119.6	4.8%
5	ERLOTINIB L1X30	ALL OTHER ANTINEOPLASTICS	102.3	111.4	4.5%
6	RITUXIMAB L1X9	ALL OTHER ANTINEOPLASTICS	97.1	110.1	4.4%
7	MYCOPHENOLATE MOFETIL L4A6	IMMUNOSUPPRESSIVE AGENTS	105.2	98.2	3.9%
8	FILGRASTIM L3A2	IMMUNOSTIMULATING AGENTS EXCLUDING INTERFERONS	128.0	95.0	3.8%
9	LENALIDOMIDE L1X48	ALL OTHER ANTINEOPLASTICS	61.8	85.8	3.4%
10	ABIRATERONE ACETATE L1X43	ALL OTHER ANTINEOPLASTICS	44.2	81.1	3.2%

Table-2

Top 10 Brands in Anti-Cancer Segment based on their market share.

S.NO	BRAND	SUBGROUP	TSA MAT Value May 2017 (in Cr.)	TSA MAT Value May 2018 (in Cr.)	Growth (in %)	MARKET SHARE
1	GEFTINAT	GEFITINIB L1X15	146.5	118.5	-19.1	4.7%
2	ERLONAT	ERLOTINIB L1X30	94.9	101.4	6.8	4.1%
3	VEENAT	IMATINIB MESYLATE L1X16	103.7	88.6	-14.6	3.6%
4	LENALID	LENALIDOMIDE L1X48	40.9	76.9	87.8	3.1%
5	VIVITRA	TRASTUZUMAB L1X10	67.2	63.3	-5.8	2.5%
6	FOLITRAX	METHOTREXATE L1B1	42.2	47.4	12.5	1.9%
7	SORAFENAT	SORAFENIB L1X40	43.3	46.2	6.7	1.8%
8	CANMAB	TRASTUZUMAB L1X10	29.4	43.0	46.2	1.7%
9	REDITUX	RITUXIMAB L1X9	49.9	39.2	-21.3	1.6%
10	ABIRAPRO	ABIRATERONE ACETATE L1X43	21.5	38.9	80.7	1.6%

Table-3

Top 10 Companies in Anti-cancer Segment based on their Market Share.

S.No.	CORPORATE	MAT VALUE (in Cr.) MAY 17	MAT VALUE (in Cr.) MAY 18	GROWTH (%)	MARKET SHARE
1	NATCO PHARMA LTD	478.7	510.7	6.7	20.5%
2	ZYDUS + BIOCHEM	344.3	332.0	-3.6	13.3%
3	DR. REDDYS LABORATORIES LTD	353.2	213.9	-39.4	8.6%
4	INTAS PHARMACEUTICALS LTD	145.1	181.9	25.4	7.3%
5	PFIZER + WYETH	54.9	107.1	94.9	4.3%
6	PANACEA BIOTEC LTD	120.2	102.3	-14.9	4.1%
7	EMCURE + ZUVENTUS	130.7	92.7	-29.1	3.7%
8	SUN + RANBAXY	60.4	92.1	52.5	3.7%
9	FRESENIUS KABI INDIA PVT LTD	106.2	89.7	-15.5	3.6%
10	HETERO HEALTHCARE LTD	25.8	89.3	246.3	3.6%
	Grand Total	2389.6	2496.2	4.5	100.0%

Table-4 List of Top 18 Potential Molecules based upon Competition.

S.No.	Molecule	No. of Brands	MAT Value(in Cr.) May 2017	MAT Value(in Cr.) May 2018	Gr. %	MAT unit (in Th.) 2017	MAT unit(in Th.) 2018	Gr. %
1	SORAFENIB	3	56.0	53.7	-4.1	128.9	91.5	-29.0
2	REGORAFENIB	2	16.7	45.5	172.4	4.6	14.5	212.3
3	ANTITHYMOCYTE IMMUNOGLOBULINS	3	17.0	29.6	74.6	16.1	22.4	38.9
4	TRIPTORELIN	3	18.5	23.0	24.5	94.0	117.9	25.4
5	PALBOCICLIB	1	0.3	21.6	8178.6	0.08	3.2	8730.6
6	CRIZOTINIB	1	6.9	19.3	178.9	0.9	2.8	196.8
7	CETUXIMAB	1	4.4	17.0	286.7	2.9	11.4	293.6
8	FOSFESTROL	2	17.1	16.9	-1.2	846.1	804.8	-4.9
9	PAZOPANIB	1	4.3	16.9	292.7	3.8	13.0	242.3

S.No .	Molecule	No. of Brands	MAT Value(in n Cr.) May 2017	MAT Value(in Cr.) May 2018	Growth (%)	MAT unit (in Th.) 2017	MAT unit(in Th.) 2018	Growth (%)
10	SUNITINIB	2	6.4	16.3	154.7	2.4	7.1	193.4
11	INTERFERONS BETA	3	4.6	14.5	217.2	3.0	4.3	44.8
12	POMALIDOMIDE	5	0.0	13.3	#DIV/0!	0.0	15.1	#DIV/0!
13	PEGYLATED INTERFERON ALPHA 2B	4	15.6	12.4	-20.7	14.4	10.1	-30.3
14	NIMOTUZUMAB	2	10.2	9.7	-5.0	2.4	2.3	-5.3
15	SUBSTITUTED UREA	3	11.0	8.2	-26.1	1397.0	1023.6	-26.7
16	ENDOKINE	1	4.5	7.5	66.1	30.4	47.4	55.9
17	EXEMESTANE	5	7.5	6.6	-12.2	59.2	50.9	-14.1
18	DENOSUMAB	2	3.0	6.5	116.5	1.4	3.0	116.7

Table- 5

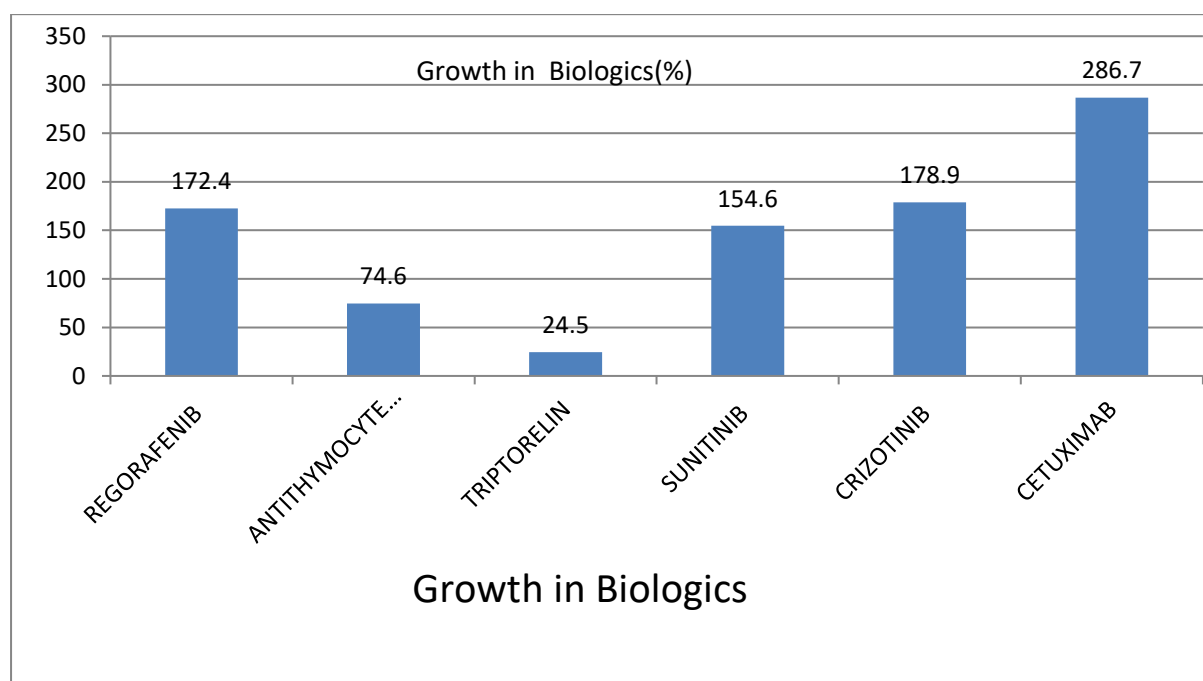
Top 20 Small Molecules (excluding biologics) based upon revenue.

S.No.	SUBGROUP	MAT Value MAY 17 (in Cr.)	MAT Value MAY 18 (in Cr.)	GROWTH(%)	MAT UNIT(in Thousands) MAY 17	MAT UNIT(in Thousands) MAY 18	GROWTH (%)
1	GEFITINIB	163.1	129.3	-20.7	394.0	317.2	-19.5
2	PACLITAXEL	149.4	133.4	-10.7	351.9	356.5	1.3
3	IMATINIB MESYLATE	134.2	119.6	-10.9	984.9	811.8	-17.6
4	MYCOPHENOLATE MOFETIL	105.2	98.2	-6.7	1867.0	1758.2	-5.8
5	ERLOTINIB	102.3	111.4	8.9	113.5	123.9	9.2
6	DOCETAXEL	70.9	45.0	-36.4	98.4	72.3	-26.5
7	BORTEZOMIB	64.8	50.5	-22.1	67.9	54.8	-19.3
8	LENALIDOMIDE	61.8	85.8	38.9	144.1	151.6	5.2
9	METHOTREXATE	58.5	59.8	2.1	8007.9	7923.1	-1.1
10	SORAFENIB	56.0	53.7	-4.1	128.9	91.5	-29.0
11	CAPECITABINE	53.7	42.7	-20.6	443.1	436.9	-1.4
12	TEMOZOLOMIDE	52.8	24.4	-53.7	94.6	48.5	-48.7
13	TACROLIMUS	51.1	55.4	8.3	1995.2	1964.1	-1.6
14	GEMCITABINE	40.0	40.8	2.0	169.1	179.7	6.3
15	PEMETREXED	36.5	51.4	40.8	48.0	64.7	34.7
16	OXALIPLATIN	34.7	27.3	-21.4	88.0	79.5	-9.6
17	CARBOPLATIN	34.6	36.5	5.5	327.3	361.6	10.5
18	AZATHIOPRINE	33.1	34.4	4.0	4426.3	4639.6	4.8
19	CYCLOSPORIN	33.0	41.2	24.8	1255.3	1608.2	28.1
20	LETROZOLE	30.1	67.0	122.4	2203.3	5411.0	145.6

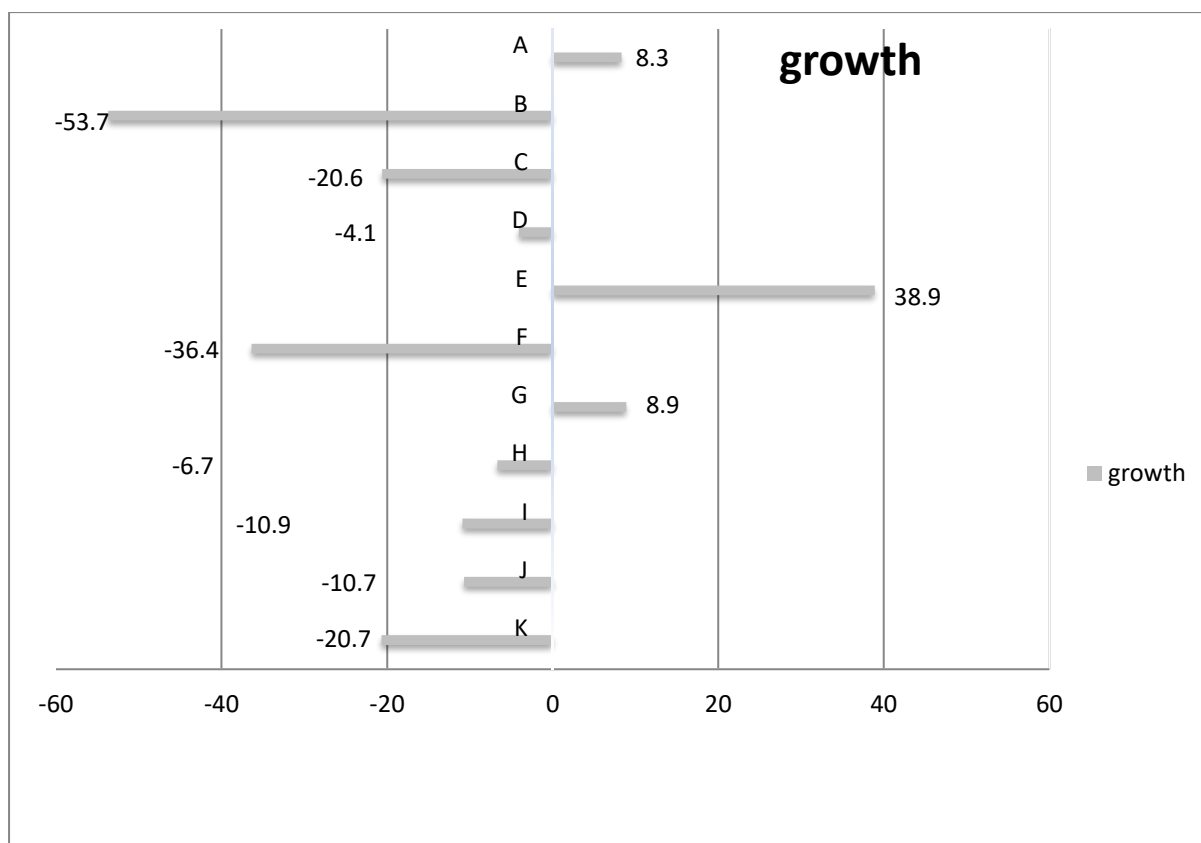
FINDINGS-

1. Top 10 brands account for **27 %** of market share in oncology segment.
2. Top 10 companies contribute **72.70 %** of Total oncology market.
3. **Anti-Neoplastics, Vinca alkaloids and Plant products, and Immunosuppressive and Immunostimulating agents** contribute for 45 % of Revenue in Oncology market.
4. The main therapeutic categories which account for oncology sales are **Anti-Neoplastics, Vinca alkaloids and Plant products, and Immunosuppressive and Immunostimulating agents.**
5. **Haryana** records highest cases of Cancer in India.
6. **Small molecules** (Chemotherapeutic drugs) have high revenue, as compared to biologics (Monoclonal Antibodies)
7. Potential segment areas in cancer are **Lung Cancer, Oral Cavity, Cervix Cancer & Breast Cancer.**

Graph-1- Growth in Biologic



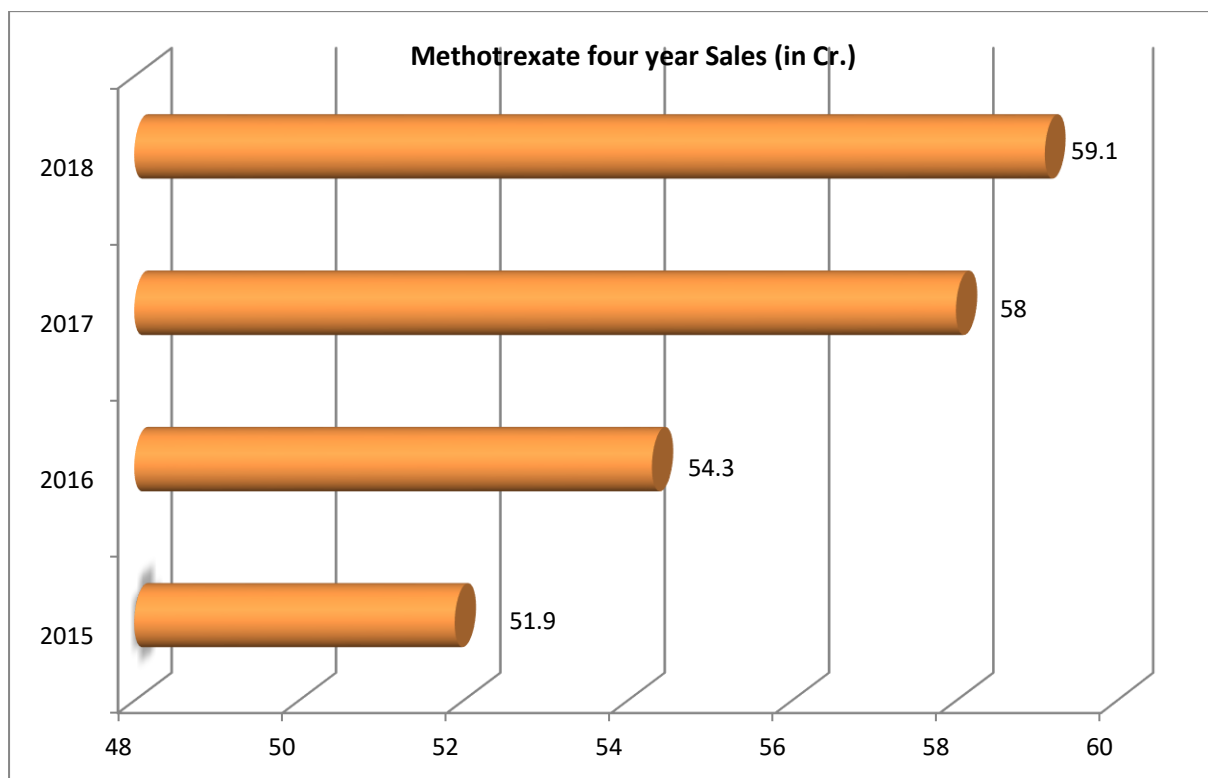
Graph 2- Growth of Chemotherapeutic Molecules



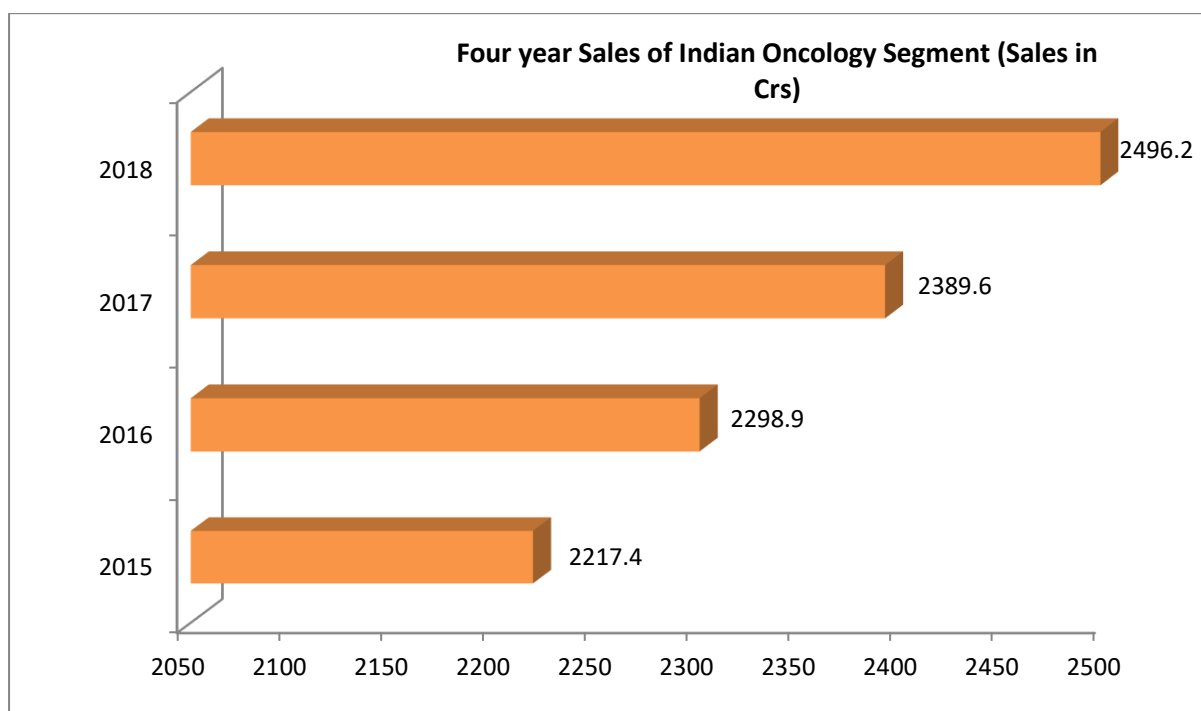
NOTES-

TACROLIMUS	A
TEMOZOLAMIDE	B
CAPECITABINE	C
SORAFENIB	D
LENALIDOMIDE	E
DOCETAXEL	F
ERLOTINIB	G
MYCOPHENOLATE MOTEFIL	H
IMATINIB MESYLATE	I
PACLITAXEL	J

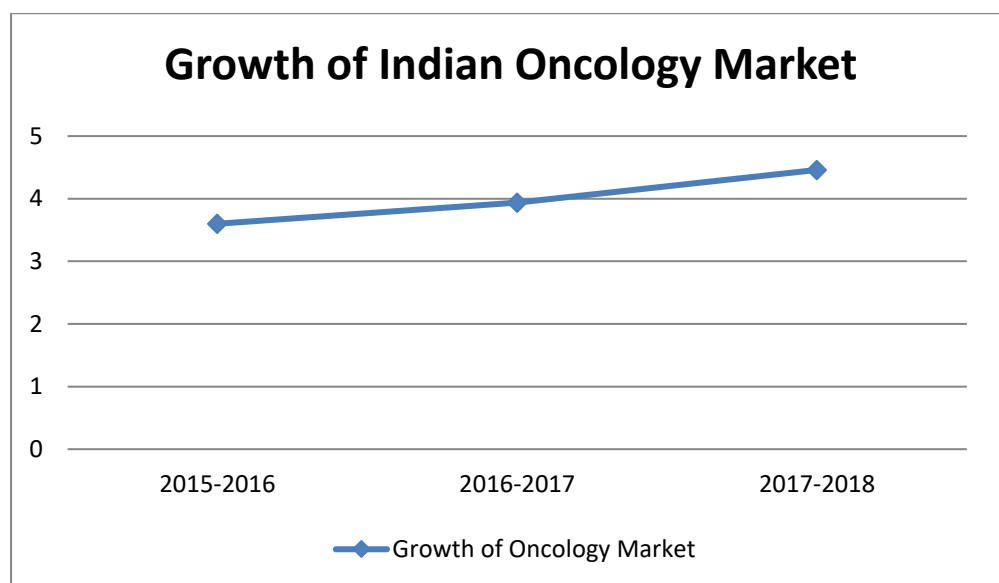
Graph 3- Methotrexate four Year Sales



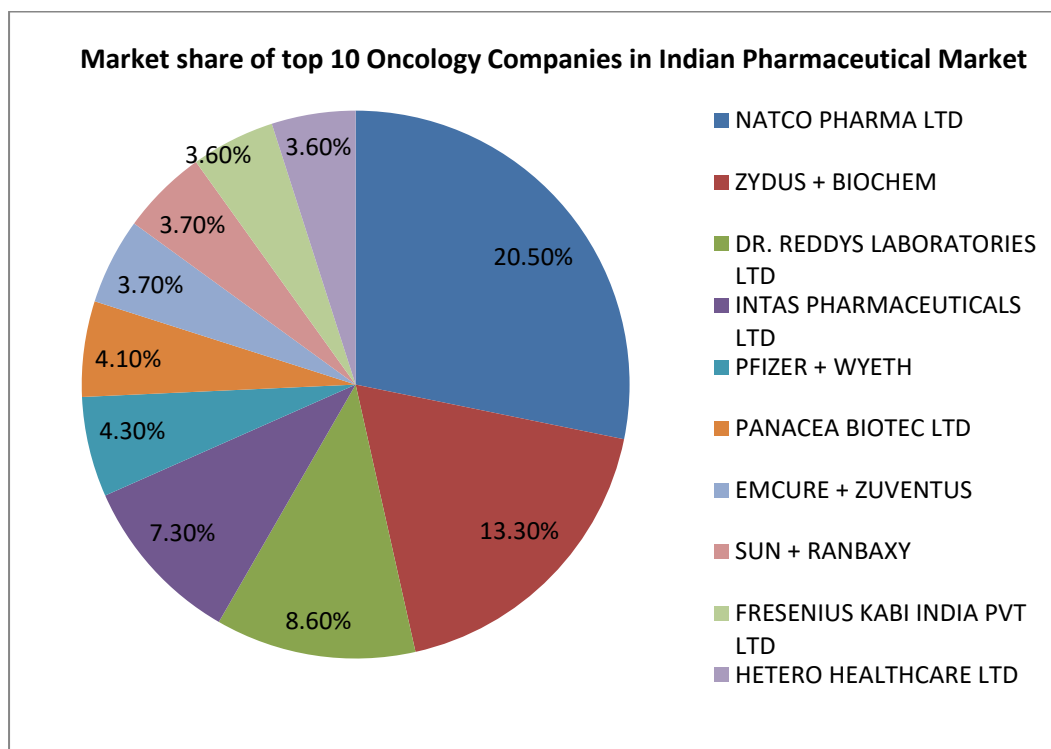
Graph 4- Four year Total Sales in Indian Oncology Market



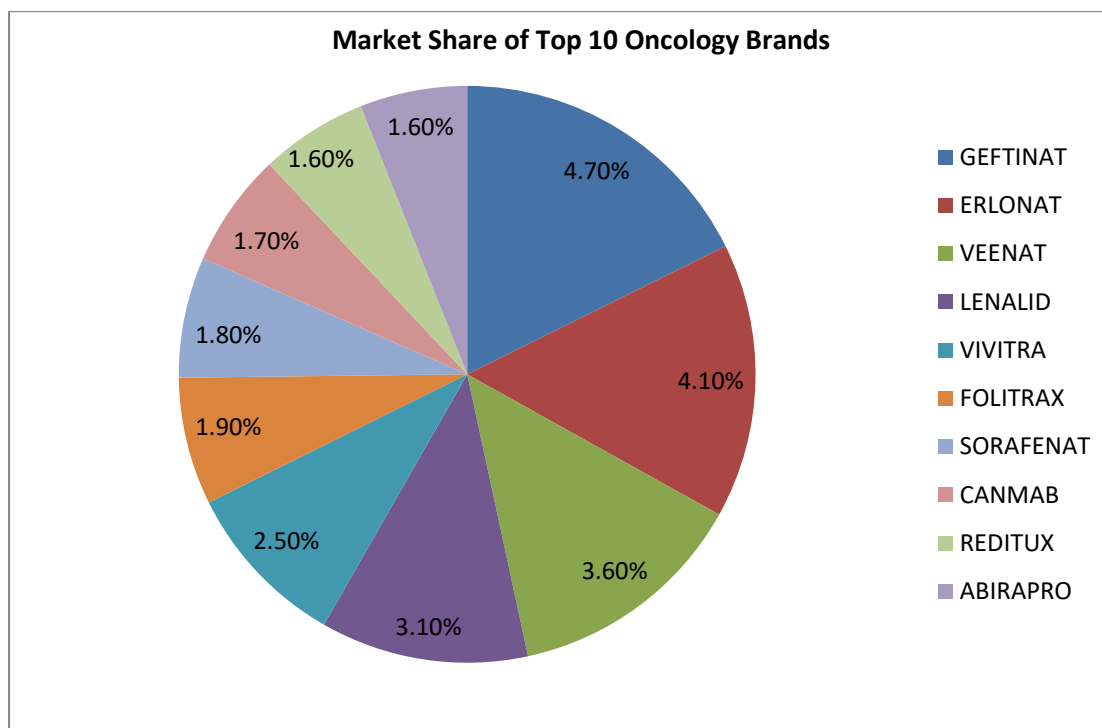
Graph 5- Growth of Indian Oncology Market over Four years



Pie chart 1- Market Share of top ten oncology companies in Indian Pharmaceutical Industry



Pie Chart 2- Market Share of top 10 Oncology Brands



CONCLUSION

Oncology is the growing market in Indian Pharmaceutical Industry despite Its low growth rate indicating higher costs of medicines is incurred for patients.

The growth in Oncology has shifted from chemotherapeutic drugs (i.e Small molecules) to Biologics (eg. MABs) as Sales of Biologics is growing at much faster rate than the chemotherapeutic drugs.

Value Growth of Oncology Market for a year from 2017 to 2018 - **4.5 %**.

Total Units Sold in May 2017- **33,689 (in Thousand)**.

Total Units Sold in May 2018- **30,135 (in Thousand)**.

Unit Growth of Oncology Market- **11.79 %**.

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