

Growth and future of orthopedic devices in India according to patient's behavior

Dissertation Submitted to



The IIHMR University, Jaipur

for the partial fulfillment for the award

of the degree of Master of Business

Administration (MBA) in

Pharmaceutical Management by

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2022

DECLARATION BY STUDENT

I hereby declare that this dissertation titled **Growth and future of orthopedic devices in India according to patient's behavior** 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Information derived from the published or unpublished work of others has been duly acknowledged in the text.

Nishtha Vivek Agarwal

23-06-2022

CERTIFICATE

This is to certify that dissertation titled **Growth and future of orthopedic devices in India according to patient's behavior** is a record of the research work undertaken by Nishtha Vivek Agarwal 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/her approach to the research study has been sincere, scientific, and analytical.

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ABSTRACT

A condition that affects your joints is arthritis (areas where your bones meet and move). Inflammation or joint degeneration (breakdown) are typical symptoms of arthritis. When you use the joint, these modifications may hurt. Although there is no known treatment for arthritis, there are methods you can use to control your symptoms. The severity of the arthritis, its symptoms, and your general health will all affect your therapy options. The medical process known as joint replacement surgery entails the removal and replacement of damaged or arthritic joint components with a prosthesis. This is frequently made of ceramic, plastic, or even met. In India, joint replacement surgery is becoming more popular. This joint surgery has a success rate of over 98 percent when it comes to treating symptoms, primarily discomfort and increased mobility. In India, joint replacement surgery is becoming more popular. This joint surgery has a success rate of over 98 percent when it comes to treating symptoms, primarily discomfort and increased mobility. Patients with osteoarthritis and rheumatoid arthritis have this joint replacement operation. When this occurs, an experienced and qualified orthopedic surgeon must replace the entire joint to relieve the patient's persistent and intolerable pain. Before deciding to complete it, a person must also consider a variety of other factors. Only a qualified, trustworthy, and caring joint replacement surgeon will be able to direct you toward the best help that is appropriate and highly required. To understand the intensity of the pain, given the question of that arthritis pain is bearable or extreme. Around 61% of people said that it was bearable, and we can consider the fact that people from age 25 to 45 must be having pain which is bearable but for people who are more than 45 or more than 65 years of age they were having extremely unbearable pain. They were not able to bear it, they used to take a different kind of pain killers to control the pain and on asking any conditions which based the pain was getting back, the answer was it was temperature based as many of the respondents told that when they are sleeping in AC or spending more time in AC their joints starts to pain a lot, or even if they sit for a long time on the floor or for hours, they're not able to change their position to next from their movement. So, because of that also their pain used to get increase for some seconds or minutes, and after some time it used to decline. To understand the theory of replacement of their injury or pain area, the question to the patient respondents were given that do they think that arthroplasty was a onetime solution for their issue. Around 46 percent of people said no it was not. They were happy with

the oral medications and different kind of combination of drugs they were taking or injections as well. But some people said that yes, they found it to be good and it was that one-time pain solution and for one surgery they were ready to pay the amount as well. After understanding the concept for arthroplasty, the next question was asked to them was that do they want to get it done in near future. The new patients who were under oral medications said that they were happily going to take that in future, if their condition gets worsen but they were also 20% of people who were not ready to go for this replacement surgery and it was this category of people who were from the age of 45 plus or 65 years or plus and 16% of people who were doubtful that should they get it or not and they were more into the fact that let's see in the future that if the pain is bearable or it gets somehow subsides so they won't have to go for surgery or replacement. Because it is a surgery and it is not an easy task and it is financially quite high in price as compared to having just oral medications, so when surgeons prescribed that it's time for the surgery to the patients because of age or the affected area has been too much suffered, or any other reason patients used to react like 45% people were easily agreeing. Patients of 35 to 45 years were easily ready to get the surgery done because they had a lot of time to live their life. 15% of people were the people in which 65 years or above said to the doctors that they won't have much of life as their consideration and so they don't want to waste so much of money in this, so they refuse for the surgeries. Although 30% of people used to disagree because of the high price so it is a clear fact that price is a great matter for patients in India for arthroplasty. We can also observe here that many insurances company who have been covering these things in their plans have not covered or those patients have not got their medical insurance done as these things can affect their finances and reason being not able to take the higher price risk of arthroplasty and 10% of patients used to take time as soon as the doctor prescribes for surgery. In this case we can say that maybe they must be not agreeing with the factor of finances or if they want to just watch out their own to take different precautions and make themselves better without the arthroplasty.

ACKNOWLEDGMENT

It gives me immense pleasure to acknowledge and thank all those who have given consistent guidance, advice, and encouragement. I take this opportunity to express my deep, sincere gratitude and heartfelt thanks to my academic mentor Mr. Rahul Sharma, Associate Professor, school of Pharmaceutical Management, IIHMR university for their exceptional guidance, suggestion, functional freedom, critical evaluation that inspired and motivated me throughout the dissertation period.

I would like to thank all the pharmacist and people, who gave me their valuable time during their busy schedule and helped me to pursue my project.

Also, I extend my deep gratitude to my parents, family and friends for their love, concern encouragement and moral support throughout my life in all my endeavors.

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Introduction

More than 100 different diseases and disorders that affect the body's joints collectively fall under the umbrella term "arthritis." Points where two or more bones touch are known as joints, and examples include the wrist, knuckles, hips, knees, and ankles. When you have arthritis, your joints are inflamed, which hurts and is uncomfortable. People of all ages can be affected, and it can range from moderate to severe. The three forms of arthritis that affect most frequently are:

1. Osteoarthritis
2. Arthritis rheumatoid
3. Gout

Individuals with arthritis experience different symptoms. However, if you have arthritis, you almost likely have joint-related symptoms like:

1. Pain
2. inflammation in a joint
3. warmth and redness in a joint
4. a joint's rigidity or decreased range of motion

Some individuals also experience issues unrelated to their joints. Other typical signs include:

1. Tiredness
2. slim down
3. feeling not well [1]

There are numerous treatments for arthritis that can aid in symptom management and shield the joints from harm. The type of arthritis you have, the joints it has impacted, and your symptoms will determine the best course of action. As part of treatment, you could:

1. Medications, such as narcotic pain relievers, anti-inflammatory drugs, or drugs to slow the progression of the disease (called disease-modifying antirheumatic drugs, or DMARDs, used for inflammatory forms of arthritis such as rheumatoid arthritis,

ankylosing spondylitis, and juvenile idiopathic arthritis), and pain management techniques, such as meditation.

2. Surgery might be required in extreme circumstances to replace or repair damaged joints.

The medical process known as joint replacement surgery entails the removal and replacement of damaged or arthritic joint components with a prosthesis. This is frequently made of ceramic, plastic, or even metal. In India, joint replacement surgery is becoming more popular. This joint surgery has a success rate of over 98 percent when it comes to treating symptoms, primarily discomfort and increased mobility.

Patients with osteoarthritis and rheumatoid arthritis have this joint replacement operation. When this occurs, an experienced and qualified orthopedic surgeon must replace the entire joint to relieve the patient's persistent and intolerable pain. Before deciding to complete it, a person must also consider a variety of other factors. Only a qualified, trustworthy, and caring joint replacement surgeon will be able to direct you toward the best help that is appropriate and highly required.

India's medical facilities are compared to those that meet international criteria for accessibility and availability. So, it wouldn't be inaccurate to state that they are on par with the medical facilities that are available in Canada, the UK, and the USA. Indian medical institutions are now fully and professionally outfitted with cutting-edge, ultra-modern services to give people the greatest degree of care and medical services at higher and more affordable prices than those found in other nations. The good news is that many individuals travel to India for surgery as part of medical tourism from other areas of the world, which is the greatest part.

There are a lot of risks involved with joint replacement surgery in addition to the high success rates, and nobody can dispute that. But keep in mind that these possible dangers can impact a patient's post-recovery condition as well as their mobility and capacity to do tasks. The following are the dangers associated with joint replacement surgeries:

1. Infection

2. Joint in question becomes looser

3. Blood clotting Stagnation

These issues from joint replacement surgery are prevalent, but skilled and knowledgeable surgeons can readily control and handle them. They will take care of everything and make sure there are no gaps in any system that might, in the future, have an impact on someone's health. [2]

Literature Review

In today's scenario, Chronic diseases are becoming more burden to the people than before. Along with, unhealthy lifestyles and genetic diseases, auto immune diseases are prevailing and adding more burden to the people. Chronic diseases are acting as accelerator to most of the diseases. Arthritis is one of the most prevailing disease in today's scenario. The prevalence of the arthritis is more than any disease till date. Around 15% of Indian population, means 210 million population is suffering from the disease. [3]

Among the osteoarthritis, Rheumatoid arthritis, gout are the different kind of arthritis which are prevailing. Osteoarthritis have the prevalence of 22-39% in India, which is most common joint problem. Among which women are the most affected than males, and it affects people over 65 years. Rheumatoid arthritis is another autoimmune disease which is affecting the joints. 0.5-1% Population is having the disease. The most affected age population is 35-55 years. Among women are getting affected three times more than men. Gout is common inflammatory arthritis. It affects the 50 years or above age group. It affects men more. [4]

Treatment and treatment options has been advanced over the time. In Early stage of the disease, medical treatment and changing lifestyle will help the condition, pain killers, steroid are the one among doctor recommendation to the mild to moderate pain conditions. But longer administration of the pain killers and steroids is not a better option for a good life. Removing the aetiology cause will help, for starters. Like smoking and stress. Along with implementing life changing habits like exercise and diet modifications will reduce the severity. Knee and hip are the most affecting joints in the arthritis, which are weight bearings. Other joints are hands, lower back, neck are the other common joints to get affected by this. [5]

When the pain is severe and when non-surgical options are no longer working as treatment, then surgical options are the next best option to restore the condition of joints.

Reasons to be considered for surgical options for replacement of joints, when non surgical options are no longer working, intense pain, frequent pain episodes, limited mobility, swelling, difficult to do daily activities. These are some of the reasons to consider surgical options [6].

When it comes to replacement of joints, India market is growing exponentially over time. In 1994 there was only 300 replacements, in 2000, 6000 cases have been recorded, further it jumped in Multifoods during 2010 with 54,000 cases, in 2017 total India record was 1,75,000 cases. As India is 15% more prone to arthritis compared to other countries [7]

In India, replacement of knee arthroplasty to be around 2,00,000 only in 2020. And hip replacement is expected grow in between 2020-2026 [8]

Knee replacement is expected to grow at a faster rate in Asia – pacific region. Only lack of services in rural and tire 5 cities are the drawback for people not getting replacement [9].

When it comes to hip replacement, Indian patent prefer suffering from pain than spend money on the replacement cause of cost [10].

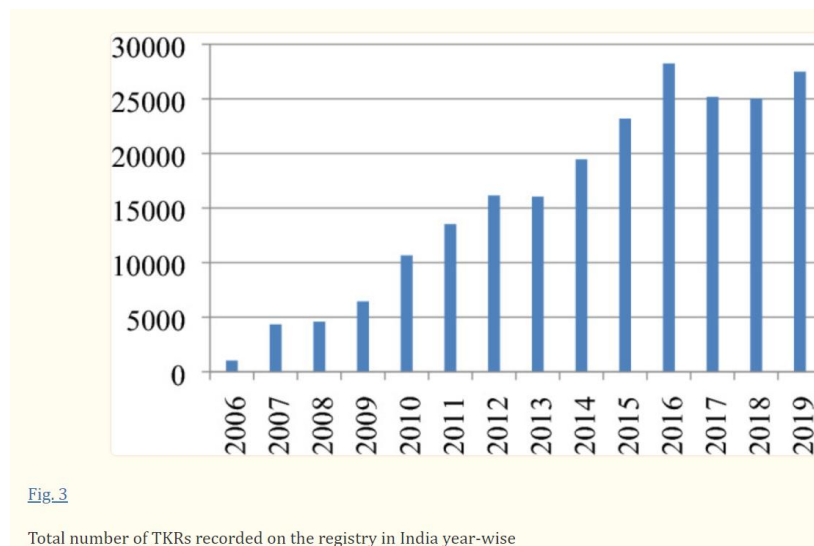


Fig.1. Year wise total knee replacement surgeries in India [10]

United states performs around 6,00,000 total knee replacement surgeries in a year [12]

Global knee replacement market is valued around USD\$ 4,211.7 million in 2022, expected to grow USD\$ 6,127.5 million by 2030, at CAGR of 4.8% [13]

Growth driving factors –

Osteoarthritis – 15% of population means around 180 million people are suffering.

Increasing in incidence of accidents.

Increasing in incidents of osteoporosis.

Add on to arthritis, increasing the incidence of the diabetes and obesity.

Increasing in aging population.

State and central government schemes are changing, which are helping people in ortho area.

Accessibility is increasing Year on year. In terms of treatment and replacement surgeries.

As India offers the world class better treatment options, India medical tourism is getting more attention.

Minimally invasive procedures are getting popular.

These are some drivers which are accelerating and motivating people to get replacement surgeries. When the progression is getting severe it became sole option to get back to normal.

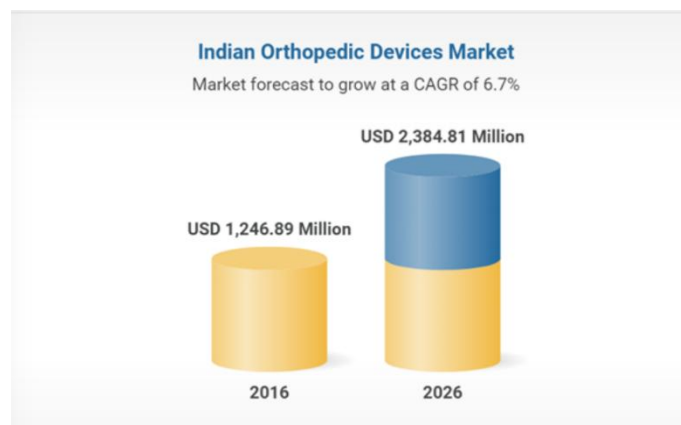


Fig.2. Indian market size over time period [14]

Indian replacement market is mostly covered by the multinational companies in knee and hip replacement.

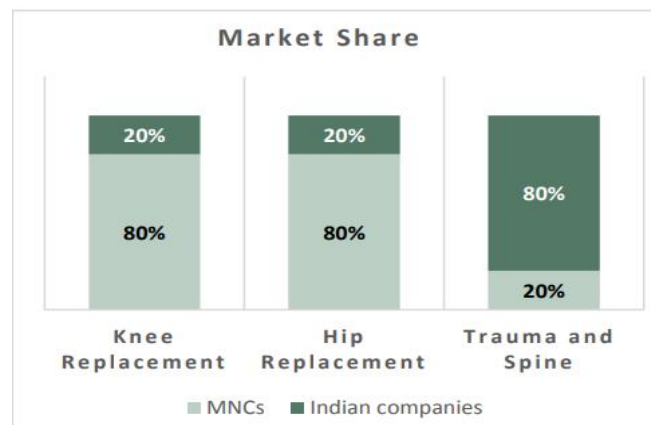


Figure 2 Market Share - Domestic Vs Imports

Fig.3. Companies market share [8]

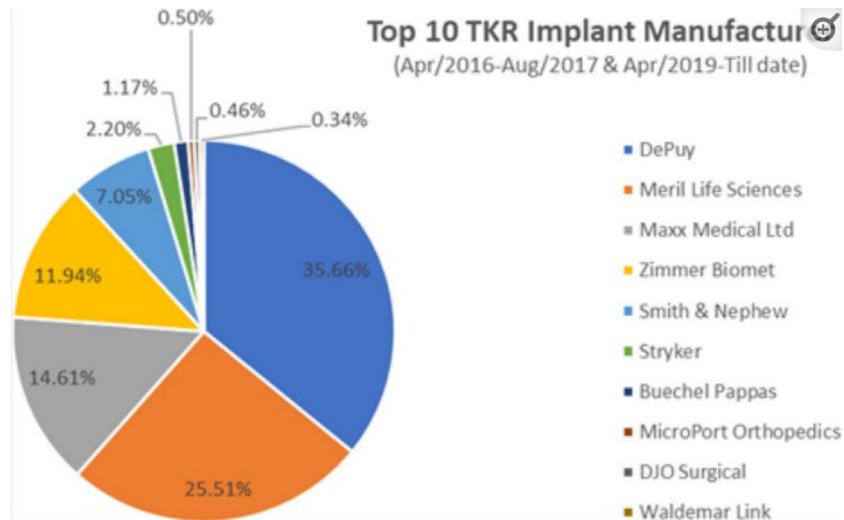


Fig.4. Market share of different companies [9]

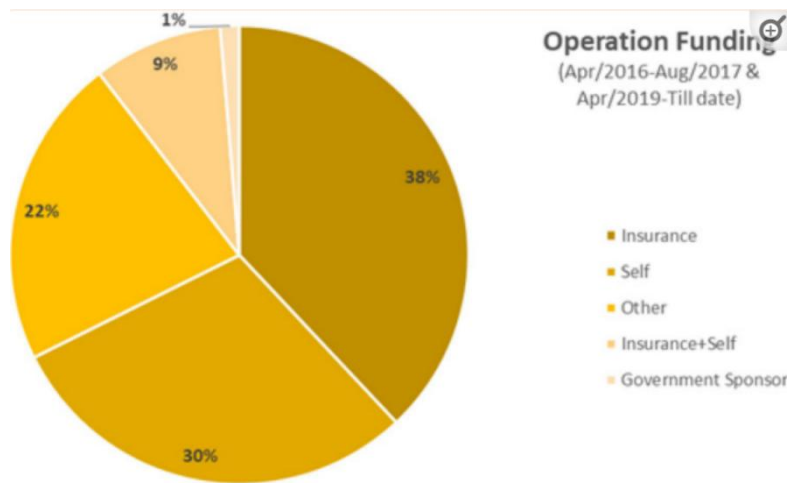


Fig.5. Insurance coverages

Objectives

- To understand the patient's attitude towards Arthritis.
- To analyze the market segments of orthopedic devices industry.
- To identify the surgeons' approach towards Arthritis patients.

Methodology

The Study was about “An analytical study of the market access of Orthopedic Medical Devices globally” the key research background was to evaluate the how covid has changed the market dynamics, The reason for market change is mainly cause of behavior change of a customer, which is root cause of market dynamics change in the orthopedic segment. Understanding the effect of behavior change on the market by survey of patients and surgeons.

- **Study population** – Patients and surgeons
- **Sample size** – 74 patients, 25 surgeons
- **Inclusion criteria** - Surgeons who have the idea of surgery and its tools.
- **Sampling method** – Simple random sampling methods.
- **Study Area** – Patients: Pan India, Surgeons- Uttar Pradesh
- **Duration of the study** –3 months
- **Research procedure** – Quantitative research
- **Study design** – Exploratory cross-sectional research.
- **Data collection** – Mix of primary and secondary data research.
- **Study instrument** – Questionnaire
- **Data collection tool** – Microsoft forms
- **Administration of questionnaires** – Questionnaire was administrated via direct interview of responses for the patients and surgeons.
- **Method of analysis** – Study was analyzed using MS Excel using sample and cross tabulations.
- **Ethical consideration** – The study was approved by IIHMR university. The respondents were informed about the objectives and that the participation in the study is voluntary and that they can discontinue from the study at any point of time. the preamble also ensured that no questions would seek their direct personal identification, confidentiality about the

identity of respondent and data will be maintained

Results

Questions for Patients

Q1. Age of the respondent-

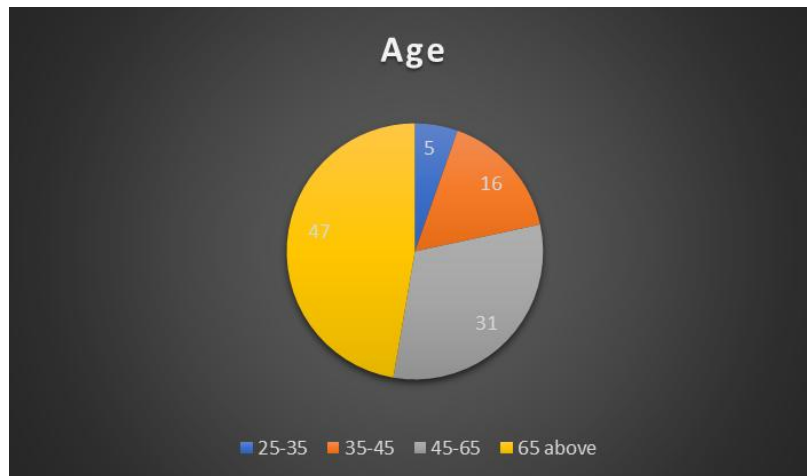


Fig.6. Respondents age range

Q2. Gender of respondent-

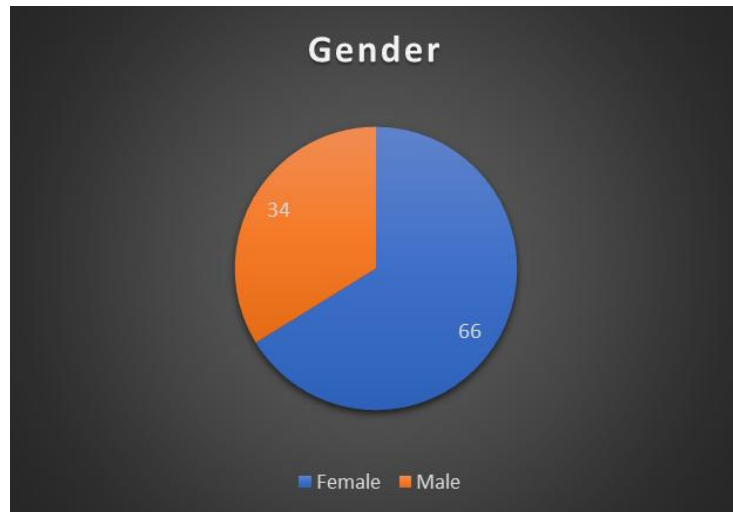


Fig.7. Gender analysis

Q3. How long respondent have been suffering from arthritis pain?

Fig.8. Percentage of period of arthritis pain

Q4. Did they had any family member, who is/was suffering from arthritis?

Fig.9. Percentage of hereditary history of patients

Q5. Exactly at which body joint you feel the pain?

Fig.10. Percentage of hereditary history of patients

Q6. Does patient's arthritis pain is bearable or extreme?

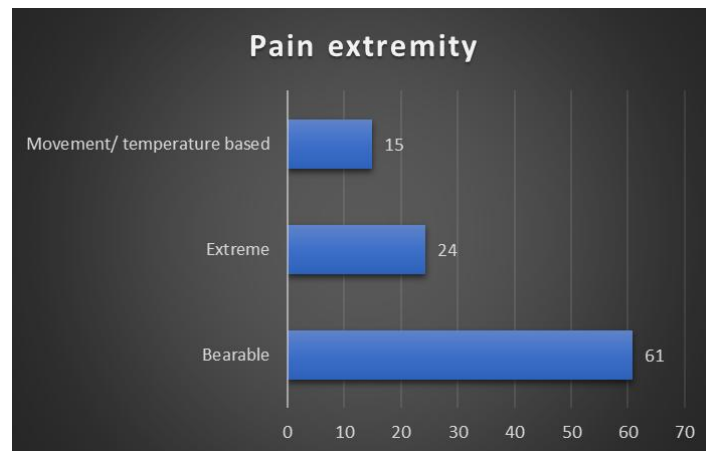


Fig.11. Bar chart for pain level in patients

Q7. Do they feel that arthroplasty (replacement surgery) is one time solution for their arthritis pain or not?

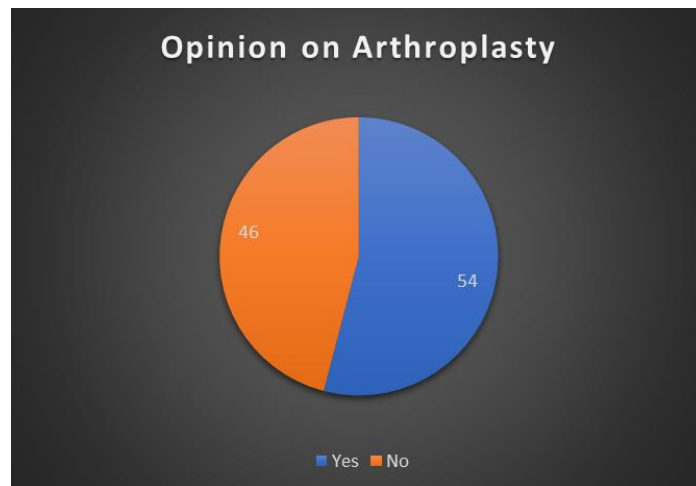


Fig.12. Chart of solution for Surgery

Q8. Do they consider of getting arthroplasty done in any near future?

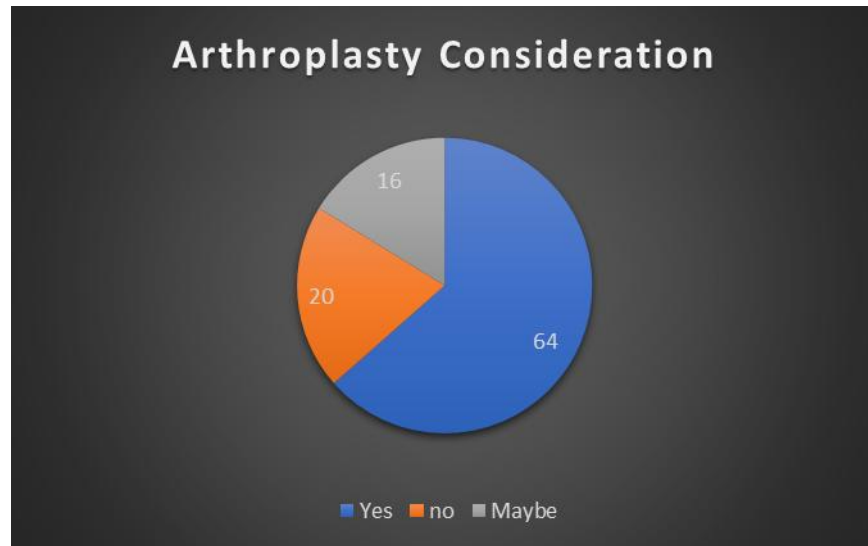


Fig.13. Chart of patient's Arthroplasty choice

Questions for Surgeons

Q1. What age group patients they treat the most?

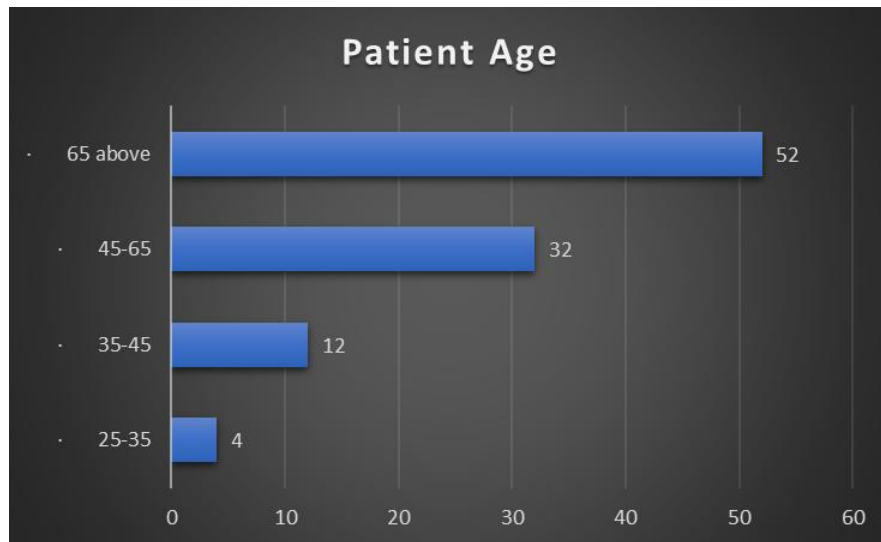


Fig.14. Bar chart for age range of patient's

Q2. Between Rheumatoid arthritis and osteoarthritis which patients they have treated the most

Fig.15. Chart for types of patients

Q3. Between Knee and Hip replacement which patients they have treated the most

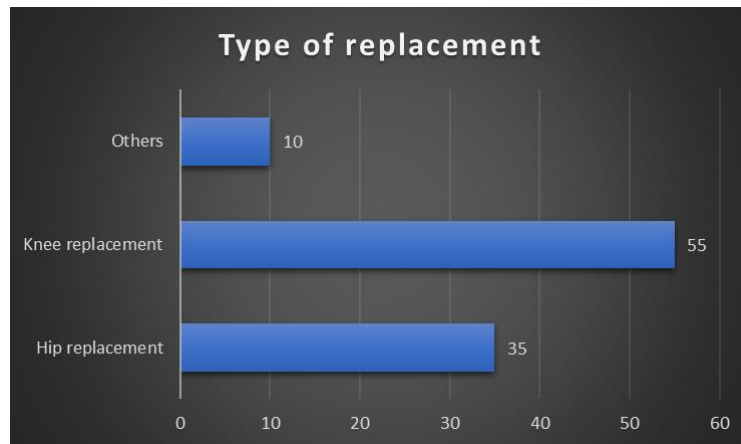


Fig.16. Bar graph for types of replacement

Q4. What are their views on the orthopedic devices used for the patients, belongs to which market?

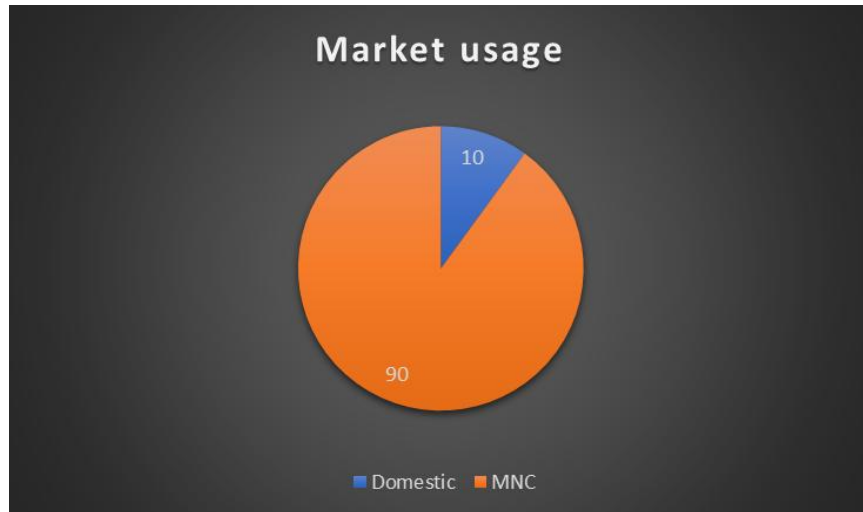


Fig.17. Depiction of market analysis of orthopedic devices

Q5. How do your patients react when they suggest them the surgery as an option?

Fig.18. Depiction of market analysis of orthopedic devices

Discussion

The study had 25 surgeons as respondents and 74 patients as respondents. This study is pan India in terms of patients and surgeons from Uttar Pradesh in terms of Doctor's reviews.

Observations through patients

According to the survey conducted patients above 65 years are more tending towards the issue of arthritis but patients between 45 to 65 years of age have also a good amount of noticeable arthritis as their disease. Moreover, patients from 35 years to 45 years are entering into a large amount of arthritis as the issue and surprisingly the people with the age 25 to 35 year are also falling into the category of having arthritis pain

Gender is one of the most important considerations, observations can be seen that females have almost the double amount of arthritis in percentage as compared to males. in the survey we can see that 66% of females are with the arthritis pain and 34% of male have a arthritis as a disorder.

When asked to the patients that what was their period of having arthritis pain in the body, it was seen that people with more than 15 years have arthritis as their major suffering. So, arthritis is suffering to the patients from very long years almost decades. New patients who have just five years in arthritis pain was also observed under this survey.

To understand the data when asked that, if their family member had any hereditary history because arthritis is one of those disease where we can observe that it can be genetically transferred from other family members. Through this we can understand that arthritis can be controlled if patients would have the knowledge of its hereditary transfer. A good amount of percentage of respondents did not know that this can also be something from where they have got arthritis from. So, if there's a proper study or information provided then this arthritis can be controlled in India.

To attain the understanding of the joint pain, so when asked the respondents at which point of the body, they felt the most pain to be felt that was knee joint. Also, hip joint is one of the places where 28% of people felt the pain. So, from here we can derive the fact that in the survey 65 years and above people have been most suffering with arthritis and here also we can see that 61% people have the issue in the knee, so it's directly proportional that with age arthritis has been formed a place in the knee area. As soon as the age is increasing the joints

are specially the knee area get sensitive enough to attain arthritis.

To understand the intensity of the pain, given the question of that arthritis pain is bearable or extreme. Around 61% of people told that it was bearable and we can consider the fact that people from age 25 to 45 must be having pain which is bearable but for people who are more than 45 or more than 65 years of age they were having extremely unbearable pain. They were not able to bear it, they used to take a different kind of pain killers to control the pain and on asking any conditions which based the pain was getting back, the answer was it was temperature based as many of the respondents told that when they are sleeping in AC or spending more time in AC their joints starts to pain a lot, or even if they sit for a long time on the floor or for hours, they're not able to change their position to next from their movement. So, because of that also their pain used to get increase for some seconds or minutes, and after sometime it used to decline.

To understand the theory of replacement of their injury or pain area, the question to the patient respondents were given that do they think that arthroplasty was a onetime solution for their issue. Around 46 percent of people said no it was not. They were happy with the oral medications and different kind of combination of drugs they were taking or injections as well. But some people said that yes, they found it to be good and it was that one time pain solution and for one surgery they were ready to pay the amount as well.

After understanding the concept for arthroplasty, the next question was asked to them was that do they want to get it done in near future. The new patients who were under oral medications said that they were happily going to take that in future, if their condition gets worsen but they were also 20% of people who were not ready to go for this replacement surgery and it was this category of people who were from the age of 45 plus or 65 years or plus and 16% of people who were doubtful that should they get it or not and they were more into the fact that let's see in the future that if the pain is bearable or it gets somehow subsides so they won't have to go for surgery or replacement.

Observations through surgeons

Surgeons was asked the question; of what age group patients they have been treating the most. They have been treating more than 50% of people who was 65 years and above and 30% of

other years which was clearly a good range and were quite like the people who are having arthritis that of respondents as patients and the answers that we got from the surgeons matches. To understand what type of arthritis surgeons have been observing in the patients to which gave them the two options, one rheumatoid arthritis and second osteoarthritis. Out of which osteoarthritis had 68% of the answer. Many surgeons said that most people are getting because of lower level of calcium or with the age bones getting brittle and joints get very much affected through it and 32% it was rheumatoid arthritis. This can also be one of the reasons that as mentioned earlier that people who don't know about the hereditary history of arthritis that it can be caused by any other family member having and it can be caused to the family members behind. So, we can observe that one point can also be observed that this could be one reason that rheumatoid arthritis has been given the amount of 32% by the surgeons.

To get the knowledge about which location was the most that surgeon did the surgery. Answer to it was, the knee replacement, 55% of patients all who are suffering from arthritis in the knee joints have got their knee replacement done and 35 % of patients get hip replacement as well. It is quite evident that people over 65 years of age were gotten knee replacement done, as we can see in the earlier statements as well that 65% of people were being suffering from knee joint arthritis and out of which 55% are getting their replacement.

Market understanding of the orthopedic devices was also one question given to the surgeons, they themselves were using different kinds of orthopedic devices. They mentioned that they used to give options of different brands according to the prices to the patients, or to the patient's family so that they can afford it according to their finances. In that case 90% of people opted international brands because they had more faith that international is definitely better than the Indian brands and only 10% of people believe that Indian companies can give them a good quality of orthopedic devices for arthroplasty.

Because it is a surgery and it is not an easy task and it is financially quite high in price as compared to having just oral medications, so when surgeons prescribed that it's time for the surgery to the patients because of age or the affected area has been too much suffered or any other reason patients used to react like 45% people were easily agreeing. Patients of 35 to 45 years were easily ready to get the surgery done because they had a lot of time to live their life. 15% of people were the people in which 65 years or above said to the doctors that they won't have much of life as their consideration and so they don't want to waste so much of money in

this, so they refuse for the surgeries. Although 30% of people used to disagree because of the high price so it is a clear fact that price is a great matter for patients in India for arthroplasty. We can also observe here that many insurance company who have been covering these things in their plans have not covered or those patients have not got their medical insurance done as these things can affect their finances and reason being not able to take the higher price risk of arthroplasty and 10% of patients used to take time as soon as the doctor prescribes for surgery. In this case we can say that maybe they must be not agreeing with the factor of finances or if they want to just watch out their own to take different precautions and make themselves better without the arthroplasty.

Strength of the study

There are numerous research and publications that demonstrate how the market of orthopedics have changed. Regarding expansion, demand, scarcity, and every facet of a market-related paradigm change, which describes how a shift in consumer behavior and a rise in the awareness of preventative measures of arthritis have caused in the market.

To better comprehend the trends in these areas, the respondents include both patients and surgeons.

Limitation of the study

Size of the sample is limited.

Conclusion

As we can see that in today's scenario in world, there is increasing prevalence of arthritis. At the same time changing a lifestyle having chronic diseases add more fuel to the problem with addition to people who are having prior hereditary history are more in danger than normal people. There are many factors making people to consider this arthroplasty age, financial situations, severity of the problems. These are few factors based on which people are considering arthroplasty.

When it comes to rheumatoid arthritis, the more incidents are occurring in the age gap of 35 to 45, which means these are the people having more expectancy of the life in future. The people who are above 65 years having another perception towards arthroplasty.

According to people's perception those who are in the middle age are considering arthroplasty as a one stop solution for further problem, because once the arthroplasty is done they believe that, at least they can get back to their normal life up to a point without bearing all these suffering. But when it comes to people who are above 65 years having different perception, like they meant to say that they have very little time left and they don't want to be a burden to anyone in the sense of financial help. Most of the Indians believes that if the insurance coverage is not helping them out most of the money has to be out of pocket expenditure, because of the same reason the older people are not thinking this as an option. While I was surveying, I got to know different perception of those people who are in between 65 and above age, they have one more fear that if at all they want to consider this as an option they are considering the probability of not getting it successful. They meant to say that at least now we are surviving on our own, but once the operation is done if this a healing is not happening as we estimated we're going to be a burden to someone. So, we feel that having pain and serving with non-surgical options is better than suffering after arthroplasty.

Pain is one more influencer which is acting as here considerable decision making. People who have the age above 60 to 65 above are considering it as one stop solution. Because the pain they are bearing is extreme at the same time few people are having weather as a factor for the pain. If all other options are positive for them, they are considering the arthroplasty as a solution.

When it comes to pain and financial situations are two different options which are influencing the decision of the patient, we came to know that, very few people are backing off because of high prices and maintenance. among them few people are taking some time to decide. Based on

this we can conclude that, prices acting as a decision maker in arthroplasty at the same time pain is changing their view on arthroplasty. Among his older people and those people who are considering price is a problem for the arthroplasty, they are saying that is little monetary help from insurance and other coverages, they may consider arthroplasty as a solution.

Based on the living style and hereditary history of the family chronic diseases these all are feeling up the arthroplasty incidences in India. in today's scenario almost 15% of Indian population are suffering from arthritis. the prevalence rate of arthritis ease higher than diabetes and aids. which meant to say that patient number is getting increasing and people who are considering the arthroplasty as a solution are also increasing, with this we can conclude that orthopedic devices and implant market is increasing exponentially compared to the data of people who have done arthroplasty in 1990s is nearly 300 but in today's scenario in 2020 only in India around 2,00,000 arthroplasty operations have been done successfully in India.

So orthopedic devices market in India along with global market dynamics are shifting knee replacement and it getting done at higher rate than hip replacement and any other joint arthroplasties. patient behavior and awareness or playing an important role over here in near future risks high scope for orthopedic device market.

In Indian orthopedic device market, 2 are the major players one is International another is Indian companies. Most of the doctors said that when it comes to arthroplasty, they are using implants which are belongs to International even the data such as the same. India market is dominated by foreign companies in both hip replacement and knee replacement. This international market are capturing almost 80% of the market in knee replacement and hip replacement, which leaves 20% to the domestic market. at the same time when it comes to spinal injuries and trauma cases Indian market is capturing 80% of the market share leaves only 20% to the foreign companies.

With this I conclude that, there is huge scope for domestic companies to capture the market in near future at the same time there is high scope for orthopedic growth. The change in living style, chronic diseases family histories, problems they are facing, awareness they are having we understand that people are shifting and considering arthroplasty as an option. Very few people are not considering it only because financial condition and the age factor. Based on this I conclude that, there is a huge growth in near future for orthopedic devices market.

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Annexures

Questionnaire

Questionnaire for Patients

1. What is your age?

- 25-35
- 35-45
- 45-65
- 65 above

2. Which gender you belong to?

- Female
- Male
- Others

3. How long you have been suffering from arthritis pain?

- Less than 5yrs
- 5-10
- 10-15
- More than 15

4. Do you have any family member, who is/was suffering from arthritis?

- Yes
- No
- Maybe
- Don't know

5. Exactly at which body joint you feel the pain?

- Knee
- Hip
- Wrist
- Fingers
- Back
- Neck

6. Is your arthritis pain bearable or extreme?

- Bearable
- Extreme
- Movement/ temperature based

7. Do you feel that arthroplasty (replacement surgery) is one time solution for your arthritis pain or not?

- Yes
- No

8. Do you consider of getting arthroplasty in any near future?

- Yes
- No
- Maybe

Questionnaire for Surgeons

1. What age group patients you treat the most?

- 25-35
 - 35-45
 - 45-65
 - 65 above
2. Between Rheumatoid arthritis and osteoarthritis which patients you have treated the most.
- Rheumatoid
 - Osteoarthritis
3. Between Knee and Hip which patients you have treated the most.
- Hip replacement
 - Knee replacement
 - Others
4. What is your view on the orthopedic devices used for the patients belongs to which market?
- International
 - Indian
5. How do your patients react when you suggest them the surgery as an option?
- Easily agree
 - Disagree
 - Disagree (high price)
 - Takes time to think